

---

This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Google™ books

<https://books.google.com>







A. hydr. 56 <sup>rh</sup> - 1861

Magazine



5-7





**THE**  
**NAUTICAL MAGAZINE.**

**<36624493300016**

**<36624493300016**

**1 Bayer. Staatsbibliothek**









LIFE-BOAT SERVICE.



THE  
NAUTICAL MAGAZINE

AND

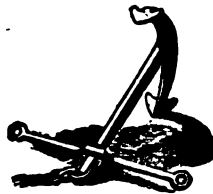
Naval Chronicle

FOR 1861.

A JOURNAL OF PAPERS

ON SUBJECTS CONNECTED WITH

MARITIME AFFAIRS.



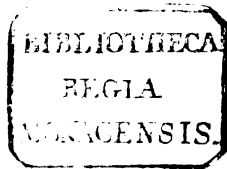
London :

SIMPKIN, MARSHALL AND CO., STATIONER'S HALL COURT;

AND

J. D. POTTER, 31, POULTRY, AND 11, KING STREET,  
TOWER HILL.

74-6g.



LONDON :

WALTER SPIERS, PRINTER, GREAT PRESCOT STREET.



## CONTENTS OF VOLUME FOR 1861.

### ENLARGED SERIES.

---

- A Cruize in the Pacific,—the Tokalau Group, 470  
Adriatic,—Gobbo Shoal off Salvore, 453  
Amazon Bank, 568  
An Earthquake in the East, 553  
A New Method of Finding the Latitude by Double Altitudes of the Sun by Means of Logarithmic Differences, 36  
Another Batch of Bottles, 509  
A Peep at Pekin, 13  
Australia,—North-East and North Coasts, 221  
Avarice: a Turkish Tale of Real Life, 65  
A Visit to the Cedars of Lebanon, 493  
A Visit to the Geysirs of Iceland, 661
- Bird-Catching on the South Arran Islands, 236  
Bombay Harbour,—its Lights, Dangers, and Defences, 625  
Bottle Papers, 161
- Campbell Reef, Torres Strait, 108  
Cancoa, Cochin China, Eastern Side of the Entrance to the Gulf of Siam, 52  
Changes in the Whale Fishery, 555  
Channel Ports, 19  
Charlestown Light and Beacons, 103  
Charts and Coast Views, 455  
Cotton Culture in China, 577  
Crossing the Line, 513  
Cyclones and Saxby's Weather System, 487, 622  
Cyprus and the Kara-mania Charts, 515
- Electric Cables, 621  
Exploring Voyage on the Yang-tsze River, China, 349

- Extracts from a Lecture on the late Royal Visit,—Delivered before the Young Men's Christian Association and Literary Institute, Charlottetown, December 13th, 1860, by the President, Captain Orlebar, R.N., 131
- Fanning Island,—an Incident, 432
- Finding Compass Deviation at Kronstat, 619
- French Naval Reserve, 621
- Gleanings of the Japanese, 123
- Glendinning Shoal, Indian Ocean, 109, 167
- Ianthe Shoal, Caroline Islands, 166
- Iron-Cased Ships of the British Navy, 661
- Iron Ships and their Docks, 373
- Isle Hainan, China, 639
- Isle Reunion,—late Bourbon,—Indian Ocean, 113, 176
- Japan, the Amoor, and the Pacific, 379
- Lunars, 50
- Lunar Equinoctials, 69, 164, 190, 263, 342, 384, 492
- Magnetic Variation. By G. B. Airy, Astronomer Royal, 344
- More about the Feejees. By B. Seeman, Ph.D., 478
- More Bottles, 564
- Mossel Bay as a Harbour of Refuge, 562
- Natchendall Island, Indian Ocean, 620
- Nautical Notices, 52, 102, 165, 218, 342, 397, 453, 510, 566, 599, 612, 694
- New Books :
- Cook's Voyages. Edited by John Barrow, Esq., 223
- Journal van de Reis naar het Oubckende Zuidland, inden jare 1642 door Abel Jansz Tasman, &c., 224
- Letters from High Latitudes : being some Account of a Voyage in the schooner yacht "Foam," &c. By Lord Dufferin, 695
- The Physical Geography of the Sea and its Meteorology. By M. F. Maury, LL.D., U.S.N., 111
- Transactions of the Institute of Naval Architects, Vol. I. Edited by E. J. Reed, M.I.N.A., Secretary of the Institution, 111
- Winds and their Courses,—a Practical Exposition of the Laws which Govern the Movements of Hurricanes and Gales, &c. By G. Jinman, Master Mariner, 343
- New Charts, 56, 110, 167, 280, 398, 456, 512, 568, 694
- Note on a Method of Reducing the Apparent Distance of the Moon from Sun or Star to the True Distance. By Admiral C. R. D. Bethune; 205

- Note on Navigating the Strait of Belle Isle. By Admiral H. W. Bayfield, 511
- Notes on a Journey across the Andes, in Peru. By E. D. Ashe, Lieutenant, R.N., 409
- Occasional Papers of the Nautical Club, 38, 95, 146, 210, 267, 330, 390, 435, 499, 561, 677
- On Mechanical Invention in its Relation to the Improvement of Naval Architecture. By Nathaniel Barnaby, Esq., M.I.N.A., 543, 582
- On the Manning and Officering of the British Navy, 519
- On the Officering of the Royal Navy and Merchant Service, 595
- Our Coast-Line and its Changes. By S. M. Saxby, Esq., R.N., 427
- Particulars of Lights Recently Established, 102, 165, 218, 397, 566, 612, 694
- Port Blair, Andaman Islands, as a Refuge in Foul Weather, 510
- Piratical Attack on the Schooner "Good Hope," and Passage of the Crew across the Desert of Arabia Petrea, 327
- Piracy in the East, 169
- Price on the Longitude, 49
- Remarks on Different Anchorages, &c., in the Strait of Magellan, while Employed in Verifying the Position of a Supposed Shoal between the First and Second Narrows. By Mr. G. Reid, Master, R.N., 313
- Remarks on the Defective Explanation given in the "Nautical Almanac" for 1861. By James Gordon, M.A., 368; for 1864, 649
- Report on the French Imperial Navy. By M. de la Tour, of the Corps Legislatif of France, 281
- Saxby's Lunar Equinoctials, 385
- Steam Trip from Honolulu to Lahaina, 652
- Submarine Telegraphy, 560
- Submarine Volcanic Action in the Atlantic Ocean, near the Equator, 453
- Superstitions and Customs Common among the Indians in the Valley of the Assiniboine and Saskatchewan. By H. Y. Hind, M.A., Professor of Chemistry and Geology, Trinity College, Toronto, 27
- Testimonial to Captain Cracroft, of H.M.S. "Niger," 549
- The Armstrong Gun, 200
- The Bar of the Quilimane River—When to Cross it, 34
- The British Association for the Advancement of Science,—Address of the President, Wm. Fairbairn, Esq., F.R.S., LL.D., 524
- The Channel Islands and their Defences, 423
- The Coral Reef and Great Barrier Reefs,—Showing the Inner and Outer Routes to Torres Strait, 104
- The Danube,—Sulina Mouth, 342



- The Feejee Islanders—Their Religion, Laws, Manners, and Customs, 257
- The Harbour of Noncowry, Nicobar Islands, 632
- The Lighthouse Report, 238, 319
- The Loyalty Islands, 401
- The Lunar Eclipse,—Journal of a Voyage from Quebec to Labrador, *viâ* New York. By Lieutenant E. D. Ashe, R.N., Director of the Observatory at Quebec, 1
- The Merchant Service Afloat,—Lloyd's and Underwriters,—Owners and Captains,—Inefficiency of the Merchant Shipping Act to Check Insubordination,—Morality, 457
- The Mauritius Hurricanes of February and March, 1861, 643
- The Northern and Southern Routes to Canada, 630
- The Oar, 556
- The Paumbun Pass, 222
- The Recent Voyage of H.M.S. "Bulldog," Captain Sir F. L. M'Clintock, for Deep Sea Soundings,—Færoe Islands, Iceland, Greenland, and Labrador. Report to the Hydrographer of the Admiralty, 74
- The Reefs of Pernambuco, 345
- The Replenishing the Lower Ranks of the Navy from the Mercantile Marine, 366
- The Royal and Mercantile Services, 399
- The Spanish Coast between Adra and Almeria, 612
- The Strait of Banka Completely Described. By Mr. W. Stanton, R.N., Commanding H.M.S. "Saracen," 80
- The Strait of Belle Isle: As to its Eligibility for Navigation in the Route to and from Quebec, 475
- The Strength of Iron Ships. By J. Grantham, Esq., Memb. Council I.N.A., 141, 202, 359
- The Summer Palace of the Chinese Emperors, 91
- The Viper Shoal, China Sea, 220
- The Wreck Register and Chart for 1860, 589
- Third Trip of the "Morning Star" to Micronesia, 105
- Time from the Sun's Altitude, 386
- Waters of the Amazons, 231
- Whaling Adventures in the Pacific. By L. H. Vermilyea, 248
- Winds and Currents on the Coasts of Japan, 57
- Wrongs of the Merchant Service Afloat, 225
- Zealandia Shoal, 567

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle

---

JANUARY, 1861.

---

THE LATE ECLIPSE,—*Journal of a Voyage from Quebec to Labrador, viâ New York.* By Lieutenant E. D. Ashe, R.N., Director of the Observatory at Quebec.

Having heard that an American Expedition was about to visit Cape Chidley, the northern point of Labrador, for the purpose of observing the total eclipse of the sun on July 18th, 1860, I made application to the Hon. Minister of Finance for an appropriation to enable me to join it, and a sum was granted for that purpose. Sir Edmund Head, Governor-General of British North America, wrote to our Ambassador at Washington, Lord Lyons, and the result was that I received a most kind invitation to join the American Expedition either at New York or at Sydney, C.B., with the understanding that I should be incorporated with the American astronomers, and that my observations should be given to them.

All things being now arranged, I made up my mind to join the expedition at New York instead of meeting it at Sydney, and on Saturday the 23rd of June I left Quebec by the morning train.

Not feeling particularly well, and rather unmanned by leaving my wife,\* in true sailor fashion, in tears on the beach as the ferry boat left

\* It is but justice to note that our Government were more considerate than to admit of this here, as several ladies, it is very well known, were of the astronomical party in the *Himalaya*. And had the American astronomers been aware of it, the *Bibb* would surely have been large enough for her visitors, however small she might have been.—ED.

the shore, I kept away from the crowd, and succeeded in getting a seat in the cars to myself, and was completely wrapped up in my thoughts until we reached Richmond. Here a glass of port wine and a biscuit, and the fact of having to rouse up to change cars, improved my spirits; but still I was far below the chatting point.

Immediately in front of me were two newly married couples on their wedding tour. How attentive the men were, and how amply were they repaid by the sunny smiles of their young brides. They laughed and talked for many a mile, until at last the heads of the fair ones drooped and finally rested on the bosoms of those who were dearer than all the world to them. In the most romantic part of the White Mountains they left us, and I then thought what an intolerable bore it would be to the ladies if their husbands were always as attentive as they were during the honey moon.

About nine p.m. we arrived at Portland, and I put up at the Preeble House.

*Sunday, 24th.*—After a good night's rest and a capital breakfast, I walked up some of the principal streets and was perfectly astonished at the quietness of the town; not a single living creature was to be seen, and Pompeii or Herculaneum could not impress one more forcibly as a city of the dead, than did Portland at that hour. About a quarter before ten this stillness was broken by all the church bells, which rang for about five minutes, and all was again quiet. This, I suppose, was a warning for the lazy to finish their breakfast, and for the young ladies to commence putting on their bonnets,—a thing not to be done in a minute, as I have learned by experience the time it takes, when a lady tells you she is quite ready, and has only to put on her bonnet, before she makes her appearance.

At about ten minutes to ten all the bells again pealed forth and the streets, that were before deserted, were now full, people going in every direction,—it had much the appearance of an ant's nest when you lift up the stone that covers it; only instead of running off with their eggs they had Bibles and Prayer-books, and I could not help remarking that notwithstanding the warning the young ladies had had given to them, still their little bonnets were only half on their heads.

I had got plain sailing directions to reach the episcopal church, but not making sufficient allowance for leeway, at a corner of a street I encountered a strong Wesleyan tide, lost my landmarks, and was carried into one of their churches, and had to let go my anchor, which I did in a very comfortable berth, and heard an excellent sermon about the piety of the Pilgrim Fathers.

On my way back I saw on a board,—

“Spiritualist Meeting.”

Morning Conference Free.

Afternoon and Evening Lectures.

Speaker, Miss Lizzy Doten.

So here every one could be accommodated, and had an opportunity of either worshipping God or ———

In the parlour of the Preeble House is this piece of information given to the public.

“No Gentleman will smoke in the Parlour.”

Now considering the trouble the proprietor has taken to make them comfortable with nice sofas and carpets, I think that the gentlemen are unkind, to say the least of it, and although I don't smoke, I had a great mind to call for a mild cigar, in order to appease the lamentations of the landlord.

25th.—Went by train to Boston, and on my arrival crossed the town to the New York terminus, and obtained a ticket for New York,—part of the way was to be performed by rail and part by steamboat. At about four p.m. the train left Boston, and at about six we arrived at Fall River, where the steamboat *Metropolis* was waiting to receive us. As the living freight of the cars was passing up the gangboard of the boat, I thought that it much resembled the entrance of the animals into the ark,—the huge boat looked very much like an ark,—and the people, some with trunks and some without, with different coloured woollens on their backs,—some looking sheepish, and many wolfish, were not, I think, very unlike the animals.

The moment I got on board I tried to find my berth, and as 101 was the number marked on my ticket, I went in quest of a state room with a corresponding number, and was much disappointed at not finding one. After supper I continued my search in the gentleman's cabin, which requires some description in order to fully understand what follows:—As the *Metropolis* is intended chiefly for passengers, the entire hold is converted into a cabin and the sides are fitted up with sleeping berths; there are four tiers, and the height of the cabin must be about sixteen feet. The best idea to give of it is to compare it to a cliff on the sea shore, with innumerable sea gulls' nests in the different holes, and when the gentlemen put out their heads with white nightcaps on, the resemblance was perfect. To my utter consternation I found that No. 101 was situated in the upper tier. I looked up at it, and although very easy of access to a sea gull, I had very serious apprehensions that in my crippled state I should never be able to accomplish such a feat of activity;—however, I took a glass of brandy and water, thought of the days when going to the mast-head was a matter of course, and commenced the perilous ascent. I succeeded in getting into 101 and found it clean and comfortable,—clean, because it was not reasonable to suppose that any one had ever the temerity to risk his neck for a few hours' rest.

In order to compose myself for sleep, I began thinking over some of the many dreadful accidents that occur to these boats, and commenced calculating the chances of being either burnt, boiled, or drowned; and as the chances were considerably in favour of being comfortably drowned, I fell asleep. A fearful shriek from the steam whistle, as the boat was going alongside a wharf, awoke me from my slumbers; and trying to gain the sitting position, I dashed my head against a beam, and in my confused state thought the boat was blown up, and I somewhere between the earth and moon.

At daylight I put my head out of my nest, and from my giddy height beheld my boots no bigger apparently than those belonging to General Tom Thumb. I commenced my descent, making use of my feet in the same way that a parrot does its claws, by clinging on to the sides of those berths that were beneath me, and succeeded in reaching the deck in safety, and thankful that I had not put my toe into the mouth of one of the occupants of the nests below me.

As my bag with shaving traps was only represented by a brass cheque, and I was without the slightest chance of seeing it before I arrived at New York, I went forward to the barber's shop and wash room, which was already filled with male passengers, washing, shaving, and "stimulating," for there was a great display of bottles, and those who wanted an excuse for taking a dram, found it in the motion of the ship.\* My turn came to occupy the chair, and I was shaved by the black barber, who took as few liberties with my nose as is usual to expect on such occasions. When I reached the upper deck we were going alongside the wharf at New York, and I was very much pleased at the seamanlike way in which they secured the vessel.

As our party was to assemble at the Brevoort House, I put my traps into a cab and drove there, and found it one of the nicest hotels out of England.

On Wednesday the 27th most of the expedition had arrived, and Professor Bache, who had the formation of the party, made the several members known to each other, and we drank success to the expedition in a glass of champagne.

On the morning of Thursday the 28th, after breakfasting on board the vessel that was to take us to Labrador, (the U.S. coast surveying steamer *Bibb*,) Professor Bache mustered all the party with their

\* The bar of an American steamboat abounds in great varieties of these stimulators, no less destructive in their effects on the human system than they are attractive by their engaging names. The game seems to be kept up on the shores of the Pacific as actively as on these of the Atlantic by the following extract from a California paper, which says on California drinks:—

A new and appalling sort of beverage, says the *Sierra Citizen*, is "on hand and for sale" at Virginia city. With frightful significance it is termed by surviving drinkers "Washoe Brandy." In comparison, "Minie Rifle" and "Chain Lightning" are mild and soothing beverages, the drinking of which after "Washoe" is said to greatly relieve the internal scald. An acquaintance arriving there somewhat exhausted, began to peer about for something to drink, and having been advised of a place where "good" liquor was to be had, incautiously swallowed thirty or forty drops of the Territorial Destructive. The effect was instantaneous and appalling. He first turned white, then red, then round and round, and finally horizontal; his countenance at first depicting the emotions and physiognomical phenomena of a wild cat with her tail in chancery; afterwards his face is said to have assumed that smiling expression peculiar to travellers found in everlasting sleep in the Valley of Sardis. The man recovered, however, and describes the internal sensation as that of a stomach full of galvanic batteries, yellow hornets, pepper sauce, and vitriol.—ED.

instruments, which consisted of Lieutenant Murray, U.S.N., Commander; Professor Stephen Alexander, Professor J. A. P. Barnard, Lieutenant E. D. Ashe, R.N., and Professor Smith, Astronomers; Professor C. S. Venakes, Oscar Lieber, and William Henry, Meteorological Department; T. C. Goodfellow and Henry Walker, Magnetic; Peter Duchochais and A. W. Thompson, Photographers; and Oscar Lieber, Geologist and Draughtsman.

About ten a.m. our little vessel steamed out of the harbour and passed through Hell Gate, inside Long Island; and our expedition was now fairly afloat. Boxes began to be stowed away, and the party to know each other; and we all felt quite at home although we were at sea. At an early hour we retired to our berths for the night. In the middle watch I heard the cry of "Man overboard," and went on deck. It was a calm night, with smooth water. The vessel was soon stopped and a boat lowered. The man was heard crying out astern, but as there was no lifebuoy he sank before the boat reached him. The young sailor who fell overboard had a brother in the same vessel, who naturally was in the greatest state of suspense while the boat was away, and when she returned without him, and the order "Go ahead" was given, it was truly distressing to witness the agony of the poor boy: far worse than hearing the clay rattle on the coffin of a loved one, for in your sad moments you can return to the grave and weep in silence,—but here, all traces are for ever gone,—the close affection of brotherhood snapped in a moment,—and the feelings crushed by the routine of the ship going on as if there never had been such a person on board.

We had light fair winds for the first two or three days, with tolerably smooth water; but not sufficiently so to prevent the Professors from feeling that most dreadful of all maladies—sea sickness.

*Monday, 2nd.*—Smooth water: all the party in good spirits. Eight p.m., rounded Scatarie Island, and stood in for the harbour of Sidney, and anchored close to the coal wharf.

*3rd.*—Found H.M.S. *Cossack* here, commanded by an old messmate (Moorman); and as our vessel had to take in coal, I went on shore to North Sidney with him, and had a talk of bygone days and of former messmates. Some had risen to the top of the profession, others were dead, and some worse than dead—they had turned out drunkards. Some of the most noble and gifted of our profession had fallen victims to that vice. I look upon it as a disease, and no more capable of being cured than cancer.

We completed coaling and started again that night about eleven p.m. Captain Murray had wisely contrived to charter a schooner with coal to go some 500 miles to the northward, on the Labrador coast, to meet us on our way back at a fishing station (Domino).

As I was charged with the astronomical arrangements for getting time, before starting I had the materials for a small wooden observatory cut out, so that I should have nothing to do when I arrived at our place of destination but to nail it together.

*4th.*—Strong winds and much sea. At eleven a.m. all hands as-

sembled in the cabin to drink the "American Independence." I joined most cordially, being the only Britisher on board, and was glad to see so much enthusiasm, for without it no nation can be great.

5th.—Gale blowing from the N.W., and our little craft was scarcely making headway; there was a great sea on and we shipped a great deal of water. I was much pleased with the sea qualities of the *Bibb*. Set the fore trysail and kept away E.N.E. Noon, weather more moderate.

6th.—Fresh breezes from the North. Labrador coast in sight. Set fore and aft sails. Showed our colours to the *St. Laurence*, steamer, going to Quebec. In the afternoon passed the lighthouse on Point Amour. Several large icebergs in sight. Night fine and clear.

7th.—Beautiful weather. Passed Belle Isle and kept close to the Labrador shore; patches of snow on the land and several curiously shaped icebergs in sight. They are of all sizes and forms, and vary in colour according to the light they are seen in. A common form for the icebergs that are seen in these low latitudes, and that have weathered many gales of wind, is that of a decayed tooth, the centre part being filled with water; some look like Parian marble, whilst others are the colour of blue vitriol, and some are a beautiful sea green with purple streaks. Most of them have rents or cracks that run across them, and which are filled up with frozen water, and then these veins present beautiful colours as different lights fall upon them. As we got to the northward they increased in size and number. Nothing could be more dangerous to navigation than these icebergs; in a fog they cannot be seen the length of a ship, and have sharp projections beneath the water far more fatal to a ship than a rock, for alongside the iceberg there is deep water and the ship goes down before the boats can be lowered. One of the pilots told me that he was in a brig on the coast of Labrador that ran into an old decayed iceberg and the smooth water in the centre enabled them to lower their boats, and ultimately they were picked up by a schooner. A fisherman from Sydney told me that he was in company with a fishing schooner that tried to pass between two icebergs, but struck against a projecting piece of ice beneath the water and went down immediately, the crew saving themselves by jumping overboard, and were picked up by the other schooner.

I have not the slightest doubt that many of the missing vessels have been lost on these islands of desolation.

We kept close in with the land and spoke a fishing-boat. There are several hundreds of fishermen that come every spring from Newfoundland, Nova Scotia, the States, and even from England, erect their huts on one of the thousand islands that are off the coast, leave their wives and families on shore to clean and dry the fish, whilst the men are out catching more. Small American and other schooners make a good thing of it by exchanging provisions for the green fish, and bartering for skins from the Indians.

The fishing ground extends up the coast as far as lat. 56°; beyond

this the water at the bottom is too cold for cod. Our charts were not of much service to us, no two being alike, and none having any pretensions to accuracy. Great caution was therefore necessary and a most careful look-out had to be kept. We had a great advantage in having a strong twilight all night, even in lat. 53°.

*Monday, 9th.*—Strong fair winds all night; kept off shore. At sunrise no land in sight; altered course and kept well in for the land. About four p.m. saw several islands about Nukasusuktok; ran in, and at nine p.m. anchored between some islands. Keyed up the engine and put on a new float to replace one that had been knocked off by the ice.

*10th.*—Detained by fog. Went on shore to the island with a party and collected plants and geological specimens. Obtained observations of the sun at noon with artificial horizon; lat. 56° 43' N. Caught a few fish.

*11th.*—Strong gales from the N.E., with rain. Noon, gale broke and weather cleared up; got underway and commenced picking our way between the islands. It is a complete archipelago, and often difficult to discover how you got in and still more so how to get out. Saw several of the Esquimaux, and in exchange for tobacco and biscuit obtained fish. I was glad to see that they refused spirits when offered to them. We were not far from the Moravian settlement of Nain, but could get no information of our position or on any other subject, although we tried them with Dutch, German, French, English and Irish.

Some of the passages were very narrow, and, rounding a point, the *Bibb* ran with great force upon a ledge of rocks, and carried away the fore foot and a great part of the false keel. As she had run upon the rocks at the rate of about eight knots, we found that there was about four feet less water under her bows than she required to float in. I was very anxious to see if she made much water, as in that event our case would have been hopeless and the astronomical expedition would have ended there, and we should have been obliged to have coasted along a bleak and desolate shore without help for five hundred miles in open boats; but our little vessel was staunch, and no leak of any great consequence had been sprung; so we set to work with a will to get her off by laying out two anchors astern, and bringing one of the hawsers to the donkey engine and clapping all hands on the other. The men worked well and were all sailors,—a rare thing in these days. About eleven p.m. we managed to get her off and rode by one of the anchors until four a.m. (12th), when we got underway and stood to the northward. Being completely landlocked, and not having the slightest idea of the way out amongst so many islands, I proposed to Captain Murray that we should land and get on the top of a mountain, and learn the way out.

We accordingly landed on one of the islands that had a commanding height, and commenced the ascent. The island was covered with rich moss, with a few coniferous trees. It was like walking on a spring mattress, the moss was so rich and elastic. Captain Murray,



who was a long way ahead was brought up by a ravine, whilst I, a few yards to his right, had a good road, and succeeded in being the first up.

From our position we observed the ocean, which was separated from us by numerous islands, and that our passage out was most intricate. I, however, drew a plan of the most likely way to gain the open sea; after which we commenced our descent, and when we got on board again we found that some Esquimaux had been on board, and one had drawn the way out on the log slate, which exactly agreed with the bird's eye sketch I had taken.

In the kyacks that came alongside were two women; one young and good-looking enough, the other had a baby in her arms,—so there are babies even in this outlandish place. They appeared to be perfectly happy and without any care.

The navigation was of a very remarkable nature. We had to pass between very high rocks, and close under mountains that appeared to rise perpendicularly out of the water. They had not the slightest vegetation on them, and those enormous masses of granite had several streams of water tumbling down their sides, giving the scenery a grandeur that far surpassed anything that I have seen.

We succeeded in reaching the open sea about noon, near the place marked Port Manvers on the chart. From Cape Mugford to Cape Chidley the land has the same aspect of extreme desolation, with a high range of mountains without any vegetation, having only patches of snow on them. It is impossible to conceive a grander or more sublime scenery than that exhibited on this coast. The rugged outline of this vast chain of mountains presents a barrenness and an unfitness for human habitation not to be described.

At noon of the 13th we were in latitude  $59^{\circ} 4' N.$ , and during the afternoon we had to run between numerous sunken rocks and breakers. Had there not been daylight and clear weather I do not think we could have gone six miles without being wrecked. About midnight we entered a bay that was thought by Captain Murray to be the place we were looking for; and, although there was plenty of light for all purposes of navigation, we let go a kedge until sunrise, when we could take observations and ascertain if we were on the central line of the eclipse.

14th.—At about seven a.m. went on shore and took observations, and at noon found our latitude to be  $59^{\circ} 48'$ , three miles only to the southward of the computed centre; and as there was a beautiful harbour we got the vessel in, and selected a site for our observations on the westernmost side of a small neck of land that connected a high mountain at the entrance of the harbour with a range that appeared to run along the island. By this means the fog that came in from the sea was dissipated by the warm surface of the land that we had between the sea and us.

All hands were now busy in landing the different instruments and pitching tents. As I had brought a house already cut out, I commenced, with the assistance of Captain Murray and Mr. French (our

talented engineer), to put it up. It came on foggy and squally from the S.E., and during the night it blew very hard in squalls. About daylight the wind shifted to the N.W., and blew with equal violence.

15th.—Windy and foggy; squalls from the N.W.; some of the party on shore.

*Monday, 16th.*—Fine clear weather; wind N.W. The different parties employed in getting their instruments into position. I got my hammock on shore and took up my quarters there. A barrel with the heads knocked out, partly sunk in the ground, filled with earth and well rammed, and then having a flat stone placed upon the top, offered a firm support for my transit instrument. The magnetic and meteorological parties were supplied with tents, and had taken up a position some little way off.

The difficulty that I laboured under was that the short interval that stars of the fourth or fifth magnitudes were visible—the only slow moving stars near the pole that passed at that time,—gave me so little time that I was unable to get the transit instrument into the meridian, and had to get time with sextant and artificial horizon: but as Professors Alexander and Smith also observed, we had the time to a fraction of a second.

The night came on stormy and cloudy, wind from S.E., and no observation could be taken.

17th.—More moderate, but still cloudy. The astronomers employed fixing their telescopes for to-morrow; great anxiety about the weather. Afternoon, strong wind from N.W.

18th.—At daylight, passing clouds from N.W., with open blue sky. Six, a.m., weather improving; great hopes of having clear weather. The different parties were now actively employed in making final arrangements. All the telescopes were placed close together and all round our chief—Professor Alexander, who was in the middle. Near him Mr. Henry was placed, with a chronometer, who counted the seconds aloud in order that each astronomer might note the exact time of any phenomenon. The photographers were close behind, so that at any given signal a picture of the sun could be taken. The meteorological and magnetic departments were well attended to and had every convenience. We all had our instructions given to us.

At about half past seven the party, after a hurried breakfast, formed, and there were fine clear openings in the clouds which promised to give us an uninterrupted view of the eclipse.

I must now confine my remarks to the eclipse as seen by me. My telescope had a 42-inch focus, aperture  $3\frac{1}{2}$ -inches, by Dollond. I used a power of about 40. It was mounted upon a tripod having a rack and pinion motion, and was so adjusted that by moving it in right ascension only I kept the object in the middle of the field.

I was comfortably seated, and was steadily looking at that part of the sun where the first contact was expected to take place, when, at 8h. 8m. 5s. (mean time at place), the dark edge of the moon was

seen upon the sun's surface. I must confess that notwithstanding I had promised to keep myself quite calm and collected, I was so much startled by the phenomenon that I am doubtful of the time to two seconds. The signal to the photographers was given, and they instantly pulled the trigger, and in the smallest fraction of a second they had a good picture showing the moon's limb just entering upon the surface of the sun, as seen in plate i. There did not appear to be any disturbance of the sun's limb before contact.

Clouds passed occasionally over the sun's surface, but they did not prevent our taking the time of the moon's passing over the principal spots on the sun's surface, which took place without any apparent attraction or repulsion between the moon's limb and spots. Two high mountains were seen on the surface of the moon just under the upper cusp, and which are distinctly seen in plates iv. and v.

About eight minutes before the total eclipse I removed the coloured screen from the telescope; and as there was a light thin cloud over the sun, I could look on the bright part without protection to the eye. At this time I looked around upon the several objects that were before brightly illuminated by the sun, but now a great change had taken place: a gloomy, unearthly light fell upon the surrounding objects, impressing me with the idea that some fearful calamity was about to happen, and well can I imagine that armies engaged in battle would lay down their arms when Nature threw such a ghastly light upon the combatants.

When the bright crescent was reduced to a thin line of light extending round the edge of the moon about 130 degrees, it was a beautiful object to behold. Shortly afterwards it broke up into fragments—"Baily's Beads"—which appeared to swim from the centre towards the cusps. At 9h. 13m. 32s. the last speck of light vanished and a bright halo surrounded that part of the moon that I was looking at, and at about twenty degrees in the second quadrant I saw distinctly a white flame shooting up to a considerable distance. A dense cloud now passed over the sun, preventing further observations being made until the emersion.

At the time of total eclipse the wind, which had been blowing in gusts, now fell, and a deathlike stillness prevailed; a little solitary bird poured forth a melancholy song, and then the stillness appeared even greater than before. Between the clouds I saw Capella shining brightly with its natural light. The darkness was not so great as I had anticipated. I could see the remarks in my note book without much trouble. The light is very different from that of morning or evening, and well calculated to excite great fear in the minds of the ignorant.

The emersion was seen, and the time (10h. 25m. 2.6s.) taken with great accuracy. The least portion of the sun's surface was sufficient to light up the surrounding country: it was like bringing a candle into a dark room. I could follow the edge of the moon off the sun for nine or ten degrees. The cusps of the sun appeared sharp and

well defined, excepting on one occasion, when the lower one, instead of coming to a point, appeared to be broken off, which was caused no doubt by a mountain in the moon intercepting the light. The faculæ on the sun's surface round the edge of the moon at the last part of emersion, appeared very plain, more so than I had ever seen them before. The corona was seen by those on board with the naked eye, and a good drawing was made of it.

I have spoken of the parts of the sun and moon as seen through an inverting telescope, and supposed a vertical line drawn through the sun, and the time given is the mean time at place of observation. As my observations are incorporated with those of the American expedition, I must wait until they are all reduced before any deduction is made with regard to the longitude of the place of observation.

19th.—Professor Alexander, Professor Smith, and myself were busy in taking every opportunity of getting the time. I remained on shore and took observations for time and latitude.

20th.—All the parties returned on board, leaving me only on shore. I remained in my little wooden hut on this bleak desolate land in order that I might continue my observations until the last moment. As I was walking backward and forward during the night, waiting until certain stars passed the meridian, I thought what an uncomfortable position I should be in if a bear came to reconnoitre the place left by the other parties, as the only weapon in my possession was a clasp knife. It so happened that on board the vessel, shortly after sunset, they saw a bear coming down the mountain, but I am happy to say it was not on my side of the harbour.

21st.—I took my house down and went on board, hoping that we should be able to get to sea at noon.

After the eclipse we had more time to look about, and several parties were formed to survey and explore. We discovered that we were on the island called Anlezavik. One party went into an Esquimaux hut that apparently had recently been occupied, for they discovered several portions of deer, and also the head and paws of a young bear, so cleanly picked that they made capital specimens.

There is plenty of game, as the marks of deer and other animals were seen; but we were so much taken up with our respective duties that no time could be spared for the sportsmen.

We were detained until Tuesday, 24th, by heavy gales of wind, and felt very thankful that we had the shelter of a good harbour, instead of being at the mercy of the winds and waves outside, amidst so many dangers that beset that iron-bound shore.

At sunrise of the 24th the gale abated, and at 6h. a.m. we got underway and stood out under easy steam. There was a great swell outside, which broke on all the sunken rocks, and thereby showed us how to avoid those dangers. We found that in consequence of losing our false keel and forefoot some of the seams had opened, and that our little vessel was making much water. We had but one hand pump, which threw a stream no bigger than that which comes from

a teapot, and should the leak increase would not enable us to free the ship; therefore Mr. French made an excellent pump of some boards, which, together with that worked by the engine, could keep under any leak that might reasonably be expected.

26th.—Fine day, with smooth water. We had made great progress. At noon passed Cape Webuck and succeeded in taking a photograph of an iceberg. The night came on overcast and rainy.

27th.—Thick weather, with rain. Ran past Domino, where we had ordered our coal schooner to meet us, and had to turn back. At noon we arrived there. It is merely an anchorage between two islands where some fishermen have erected huts to clean and dry their fish. There are excellent fishing grounds in the neighbourhood. We saw a great number of boats employed, and obtained some fish from a boat that came alongside: gave the men whiskey, bibles, and tracts in exchange, for which they seemed very thankful.

28th.—Went on shore with Captain Murray at one of the islands which is about fifteen miles from the mainland. A few small shrubs and rich mosses compose the vegetable kingdom. We caught a few small trout. We went into a fisherman's hut before going on board: found his wife and grown up daughters, who were delighted to see us. They live in one of the bays of Newfoundland, and come every spring to these shores, and remain until the beginning of November. They were very sorry that we did not stay for Sunday, in order that they might go on board to church. They offered us cake and spruce beer, but I positively was unable to drink the spruce beer—although I made several attempts to do so—which I fear was put down to want of cordiality. We went to sea in the evening, and as we had not taken all the coal out of our schooner (the *Tickler*), we took her in tow.

Sunday, 29th.—Passed Belle Isle. Wind fresh, with heavy sea. Noon, kept away for Chateau Harbour, and about four p.m. let go our anchor.

Went on shore in the evening, and the Rev. Professor Barnard read prayers in a fisherman's hut, which was much too small for those who wished to join us.

This is a very fine harbour and completely landlocked, with a small stream running into it at the head, which is filled with large trout; but the flies and mosquitoes are so numerous that it was impossible to remain on shore, so after catching a few very large ones, we were fairly driven away and glad to escape from our tormentors.

We remained until Tuesday before the gale was over, and then a fog came on; but in the afternoon we steamed out, leaving our coal schooner (cleared) behind.

2nd.—Fair wind and weather. Cape Ray on the beam. Arrived at Sydney at eleven p.m.

3rd.—The U.S. coast surveying steamer *Bibb* completed her coaling and proceeded to sea, and then I parted company with my American cousins, who had treated me with kindness and hospitality and

showed so much attention and civility to me that I shall ever look back with extreme pleasure to the fortunate occurrence that brought us together. On arriving at Quebec, *viâ* Halifax, I found myself just in time for all the gay proceedings consequent on the Prince's visit.

[The Roman figures in the foregoing refer to the photographs which will appear in the American report.—Ed.]

---

### A PEEP AT PEKIN.

Pekin more than any other city of the world may be compared with Paris. There is, in fact, a remarkable similarity between them. They are both seated in the northern part of the empire, thus serving as a barrier to incursion from the North and tending always to progress southward. It contains about two millions of inhabitants,—much about the same as Paris does now. Pekin has for its port Tien-Tsin, where the large trading junks reach; and the similarity between the two cities becomes still more striking when it is considered that the capital of the Chinese empire as well as Paris are nearly at the same distance from the sea, nearly in the same latitude, and at the two opposite parts of the old continents.

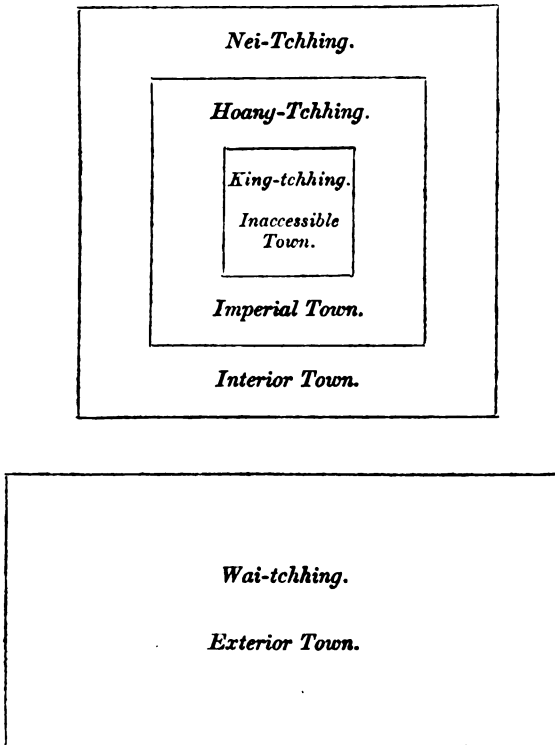
The environs of Pekin are wretched. Seen from its eastern side, the view of the city is said to be imposing, and the appearance of numerous edifices standing in the midst of foliage is very effective on the horizon. But seen from the West, Pekin more resembles a forest than a city, so much does it abound with gardens and umbrageous ground. Every one knows that the Chinese are the first of gardeners and delight in surrounding themselves with trees, notwithstanding the little space they have for them. On the North the walls of Pekin are very high, for the Chinese had long to fear the Mantchoos, who subsequently possessed themselves of the whole empire. The construction of the walls is here and there very remarkable, and the gateways are formed of marble and ornamented with statues.

Pekin has certainly a most winning appearance when seen from the outside; but no sooner is the interior of it gained than that impression is gone. The sculptures are placed in courts, but they are concealed by a mass of foliage; and if one seeks those parts of the city that contain the dwellings of the merchants or the lesser mandarins, nothing but streets are found formed of ugly looking houses with cracked walls, and yet filled with merchandize, and separated by filthy passages where you are elbowed about by crowds of Chinese and their coolies.

It matters little to the voyager whether a Chinese city is ill or well constructed. What interests him and strikes him above everything is the display of character, and for this Pekin is remarkable. Badly

enough as the houses in general are constructed, there is something about them that particularly catches the eye. The diversity of their character and the variety of their colours is particularly attractive to the visitor. Some of them are painted red, others, again, are as blue as the sky; and these are varnished, while those are gilt!

The northern part of Peking forms a quadrilateral figure, about twenty-seven English miles in circuit, and is divided into two towns: the imperial town, or King-tchhing, and the exterior one, or Wai-tchhing. These figures will convey a tolerable idea of Peking.



The imperial town forms a complete quadrilateral, round which is the exterior town, another quadrilateral, the residence of merchants and artisans. The imperial town encloses the forbidden or sacred red town, which contains the residence of the Emperor; in whose palace, as well as in the adjacent buildings, the most rigorous construction has been observed. Everything is scrupulously regular. There is not a stone without its fellow of the same character and dimensions. The very gates by which this part is entered have all a particular signification, established by the most rigorous laws of etiquette, which is

as powerful as law itself in China. There is a gate by which the annual calendars are distributed to the people, who take good care to pass out one at a time by another. There is a room in which the genuflections of more or less humility are made by rules of mathematical accuracy. Among the sumptuous apartments there is also a spacious historical gallery, where the Emperor Khiaouloung showed himself, in 1585, a good prince. He made some thousand old men over ninety years of age dine with him, but all of them standing.

Few Europeans, it is well known, have penetrated within the walls of King-tching. Nevertheless, P. Astier, a French Jesuit, who obtained permission to visit it, has given a curious description of it. He has drawn a wonderful picture of the imperial palace. According to him the eyes of the visitor are perpetually dazzled by gold and precious stones. The gardens are in keeping with the palace of the sovereign. The lakes, which have a marvellous effect, are scattered over with vessels, wherein Chinese art has concentrated all its power of absurdities: for art in the extreme East is less the production of the beautiful, such as we consider it, than a sort of learned lucubration, timid yet offensive, and replete with fanciful notions. What pleases us in architecture is its noble simplicity, where there is little of the ornamental; but in China the more the buildings are bedizened with colour and overloaded with ornament the more they please the eye of the Chinese. Thus nothing surpasses the Emperor's palace.

In the midst of a lake, which is about a mile across, is seen a rocky islet, surmounted by a superb palace which has more than a hundred apartments. The neighbouring heights are covered with aromatic plants and dwarf trees, and their summits are crowned by kiosques and pavilions.

Hoang-tching is nearly all occupied by the imperial gardens, most spacious, beautiful, and no less useful: that of mulberry trees is nothing else than an immense *magnaneria*. There is a temple in it, dedicated to the protecting genius of insects, where the great mandarins, accompanied by the ladies of the court, condescend to rear silkworms!

If we leave these magnificent gardens for the southern town, we find nothing there but streets not paved and houses badly arranged, and generally without an upper story. The crowd of passengers is enormous, and to move among them most difficult. Palanquins, persons on horseback and on foot thread their way with difficulty between the stalls which project from the houses and make the road still narrower than it really is. Wells, also, in the middle of the street serve to impede the circulation, for the atmosphere is infected with the exhalations from these receptacles, heaped up with filth. Nevertheless, the shops give a picturesque effect to the scene, even by the variety and quantity of their merchandize. Their owners, unable to display it all in their shops, spread it in front of them on a kind of mat extending tolerably out from them. These mats, ornamented with gilding, paintings, and ribbons of all colours, bear inscriptions in gilt characters indicating the nature of the merchandise



for sale; and these again are enlivened by a variety of lanterns, formed of horn, muslin, silk, and paper, of every shape and pattern.

The principal street is named "perpetual repose." It is said to be 200 feet wide. There are no remarkable squares in Pekin, but a considerable number of triumphal arches, forming handsome terminations to the streets. The handsomest temples are those of Yung-ko-kuang and Thang-tseu, dedicated to Buddha or Fo.

The Emperor pays an annual visit to the temple of Thien-than (the Eminence of Heaven) in great splendour for the purpose of making sacrifices to heaven. Not far from it is the Temple of Agriculture, where another important ceremony is performed annually at the beginning of spring. Here the Emperor himself takes the handle of the plough and cuts the first furrow. This festival, which is one of the grandest in China, is also a proof of the wisdom with which such institutions of the Chinese empire have been established.

Pekin contains many monuments dedicated to science and literature; also an observatory and establishments similar to our medical halls and colleges. The principal one is that of history and literature, where those are examined who aspire to the office of Mandarin. On the whole, Pekin is rather a city of etiquette and seminaries than one of luxuries, rather one of science than war, and more a focus of commerce than one of industry.

[The foregoing was in our printer's hands before the recent telegram of China affairs arrived. We therefore append the following in reference to the flight of the Emperor from Pekin.]

The *Moniteur de l'Armée* gives the following details of the place to which the Emperor of China has fled:—Moukden is not in Tartary properly so called, but in Mandchouria. The country of the Mandchoux forms part of the interior provinces of the empire, and comprises three departments. The first is that of Ching-King, having for its chief town Moukden or Foung-Thean; the second, Ghirin, with a chief town of the same name; and the third is Sakhalien-Oula Khoton, with Tsi-Tsikar as its capital. It is in the country of the Mandchoux that are to be found the most devoted partisans of the Tartar-Mandchoux dynasty, which effected the conquest of China in 1644, and still reigns over that vast empire. Mandchouria is separated from the province of Petchi-li, in which Pekin is situated, by that of Laotang. Between the two last named provinces are the high mountains of Than-Yen, which are of difficult access, and must have protected the retreat of the Emperor. Moukden is about 250 miles from Pekin. If the Emperor had retired into Tartary properly so called, he would have had to make a journey across Mongolia of 625 miles, and pass through some provinces the inhabitants of which are completely hostile to him.

We may add, in order to explain the English despatch, that at Hong Kong, Shanghae, and in the ports on the coast inhabited by Europeans, all the Chinese possessions which have been formerly conquered by the Tartars and by the Tartar-Mandchoux—such as Mon-

golia, Mandchouria, Dzoungaria, Daouria, and Chinese Turkestan—are all comprised under the general and usual name of Tartary.

Moukden was the residence of the sovereigns of China until 1644, the period of the conquest. It comprises two distinct cities—the imperial one, which has a circumference of two miles and a half and a magnificent palace; and the other, which surrounds the former, and is seven miles and a half round, and enclosed by a wall much more considerable than that of Pekin. The population of Moukden does not now exceed 500,000. The city contains very fine temples and magnificent buildings of all kinds.

[We may conclude the foregoing with the following extract from the *Daily News*, announcing the fall of Pekin.]

Since the day of our arrival negotiations have been going on through the authorities in the city with Prince Coong, who is supposed to be somewhere in the neighbourhood. The Emperor and his court fled some days before our arrival, as well as all the grandees of the empire, so that no one of high rank is left in Pekin. The people are reported to be in great fear and excitement, and the principal men with whom any intercourse has been held are evidently in the same state, fearing not only the allied army without the walls, but the armed city guards within. The result of all this has been that yesterday afternoon, at four o'clock, we were gladdened by the arrival from the city, where they had been in confinement, of Parkes, Loch, five Frenchmen, and one Sikh soldier, all of whom were taken prisoners on the 18th ult.

When our army advanced and the Emperor fled, they were taken from prison, and from that time kindly treated. They have had a marvellous escape. Of the others we know nothing. They are not in the city; but the old mandarin who showed the most kindness to Parkes and the others who have been released, affirms that they are alive, at least most of them, and that they will be given up to us as soon as they can be brought back.

In the meantime we are in hourly expectation of one of the gates of the city being given up to us, and if that is done, Pekin is of course at our mercy—indeed it is almost so now, for our engineers and artillerists are confident they can breach the wall in a few hours, and the siege guns are now within a few miles of our camp, and will arrive this evening. What our subsequent proceedings will be depends, I presume, in a great measure on Lord Elgin. So far, with the exception of the unhappy capture of the prisoners, all has gone prosperously with the army. The men are in fine health and spirits, and able and ready for anything, and the climate is most charming.

The Emperor's summer palace is a succession of detached buildings, with large courtyards, artificial mounds of earth planted with trees, fish ponds with rustic bridges, artificial rocks, and all those varieties of ornamentation you may see depicted on Chinese crockery and drawings. The buildings have small pretension to architectural beauty externally, and are more grotesque than handsome. Within

they are more striking. The audience hall is a well-proportioned lofty room, the floor of marble, the roof richly painted, supported on wooden pillars; the throne is a magnificent piece of wood carving. The whole suite or suites of apartments were furnished in the most costly style, and after the French troops had been sacking them for two days presented a most singular appearance. The whole place had been ransacked. The French camp was like Vanity Fair. The rooms were in utter confusion, and crowds of soldiers were turning everything upside down, or hurrying forth from the doors laden with spoil.

It is impossible even to enumerate a tithe of the various articles found in the palace. Fine bronzes, costly ornaments of jade stone; the copper enamel vases for which Pekin is famous, of marvellous beauty and fabulous value; old china, French watches, and articles of English and French jewellery,—amongst them the presents sent to the Chinese Emperor by Lord Macartney; silks, satins, and embroidery, fans and bracelets, all in enormous quantities, and most of them of the most costly description. The courts were strewed, the rooms were knee-deep in such a variety of articles, such a strange combination of shapes and colours, such a heterogeneous collection of all things imaginable and many unimaginable, as probably no human eye ever rested on before. Besides all these, a quantity of treasure in gold and silver was found. This latter was not allowed to be plundered, but was divided between the forces, to be distributed as prize. A number of articles also, of more or less value, have been secured for the English army, and will be sold by auction, and the proceeds added to the treasure and divided.

The palace and extensive grounds and detached buildings are surrounded by a high stone wall. The country round is very pretty. There is a range of low hills immediately behind, and on the summits of some of these are ornamental pagodas. Evidently very great care and taste, and enormous sums of money, have been expended on the place. A few hours sufficed to destroy the work of years, and to scatter the millions that have been lavished with an unsparing hand to the winds. It is no exaggeration to say that the total amount of spoil contained in these buildings was considerably more than the whole army could have carried away had every man been marched in and allowed to bring out as much as he could stagger under. The quantity of silks and satins was something quite incredible; and after plunder had been going on wholesale for two days, the quantity remaining seemed hardly diminished.

The Chinese vagabonds in the neighbouring villages, seeing what was going on, entered into the spirit of the scene, broke into many of the more remote buildings which had not been visited by the French, and carried on the work with much relish. Plundering is always demoralising to an army, and it is subject of congratulation that the English soldiers were not exposed to the same temptation as their neighbours—the more so, as they will still have a share in the booty.

## CHANNEL PORTS.

In our last number some remarks were made on Dover. In this paper on Channel ports we may introduce some further observations on the same place:—

Dover, from its geographical position, stands foremost in the Channel, and being the nearest port to Dunkirk on the East, and Dieppe on the West, should command the straits; and so that with an efficient harbour and a watchful look out, not a vessel of any description could pass into or out of the German Ocean without our knowledge.

Let us then consider what is the present state of Dover Harbour.

It consists of an outer harbour, which dries at low water, and two inner basins or docks, where vessels can be always kept afloat, and which basins are capable of accommodating a large number of vessels, from 1000 tons downwards, or a squadron of gunboats ready for offensive or defensive purposes. The harbour is not, however, of that public utility, either for national, commercial, or packet services, it ought to be, for want of funds to do what is absolutely required.

In order to make Dover Harbour more useful and capable of meeting the urgent requirements of the country, it is necessary that the outer harbour should be deepened to six or seven feet below the low water spring tides, and that a new, wider, and deeper entrance should be formed from the outer harbour to the inner basins. With these improvements (the rise of tide being greater than at any part of the coast) gunboats could run in and out at all hours, whilst vessels of larger size and draught of water could make it available at the other states of the tide.

The harbour is managed by the Lord Warden and ten Commissioners.

The amount raised by passing tolls during the last few years, is between £11,000 and £12,000 per annum. The tonnage dues, wharfage, &c., for the same period, amounted to about £1,200 per annum.

The sums expended on new works for the improvement of the harbour, from 1854 to 1860, were,—for enlarging and deepening the pent, £27,000; cranes, posts, &c., £2,700; works in progress at the Union Bridge, £16,000; the ordinary annual repairs, renewals, and expenses, being about £4,000.

The works contemplated and required are—new entrance into the basins, £18,000; permanent groin to retain shingle, £6,000. These the Commissioners have been anxious to carry out, as well as the deepening of the outer harbour, &c.; but they have been obliged to let them stand over for want of funds, a large part of the sum received for tolls, &c., going to pay off the heavy debt.

The harbour, however, is in a much more efficient state than it was fifteen years since, and it would be admirably adapted (with the improvements suggested) for all the requirements for the defence of this

part of the country; more particularly as the new harbour of refuge and fortifications progress, and the new line of railway, which is nearly completed, is in connection with all the principal garrisons and arsenals in the United Kingdom.

Secondly—I consider that sufficient attention has not been paid to the position and importance of the harbours on the opposite coast, in the immediate vicinity of Dover and the S.E. coast of England, viz., Dunkirk, Gravelines, Calais, Boulogne, Treport, and Dieppe, besides the minor inlets of Ambleteuse, Wimereaux, the Canche, and the Somme, all of which are within three or four hours of Dover.

Commencing from the eastward with Dunkirk:—this is now a large naval port, with commodious wet docks, extensive quay room for any number of vessels, from 1200 tons downwards, rapid railway and canal communication to the camps and arsenals of the North of France, viz., Valenciennes, Cambrai, Lille, Douai, Arras, St. Oüen, &c., and to the celebrated coal mines of Mons, Charleroi, &c.

From its nautical position, lying inside the Flemish banks, its roads or harbour can only be approached from the westward, except at tide time, there being no outlet to the northward or eastward at low water for vessels of any moderate draught of water. Consequently, its advantages for the facilities of embarking troops or warlike stores are greater than at any place to the eastward of Cherbourg; and I have seen from 150 to 200 sail of vessels leave the docks and port in one tide, without the aid of steam. Its distance from the coast of Kent (Dover) being only between thirty and forty miles, and from the coast of Essex (Harwich) between sixty and seventy miles—an easy distance to run over to either coast in one tide.

Gravelines is a garrison town ten miles West of Dunkirk. It has a tidal harbour extending some distance from the sea, and is capable of holding a number of moderate sized steamers, &c., which could be ready to join any expedition from Dunkirk or Calais, Gravelines being half way between these two ports.

Calais is the next place of importance. It is situated about twenty miles from Dunkirk, and about the same distance from Dover. It has a large citadel and is well fortified. Great improvements and additions to the harbour have been made within the last few years, at a large expense—viz., the construction of a wet dock, extending the piers and quays, and forming a powerful sluice, which has so far deepened the channel that there is now from five to six feet at low water, spring tides, and from seven to nine feet at neap tides, making Calais by far the best and deepest harbour in this part of the English Channel.

Calais possesses a rapid railway communication to all parts of France, Belgium, and the whole of the continent of Europe, terminating on the port and docks. The town is within an hour's distance of the camp at St. Omer, and connects itself with all the great towns in the North of France, whilst its canal communication with the interior of the country leaves nothing to be desired. The harbour accommodation is ample for any number of steam-vessels from 1000

tons downwards; and the port, being situated at the narrowest part of the straits of Dover, is in the best possible position to annoy or intercept our commerce to and from the Thames and the North Sea or the British Channel.

Between Calais and Boulogne are the two small inlets of Ambleteuse and Wimmereaux, close to the great camp at Boulogne, where a large number of small vessels of easy draught of water can be safely moored.

Boulogne of late years has become an important town and harbour. Large sums of money have been granted from time to time, and this year an additional grant of several millions of francs for making large wet docks, deepening the harbour, &c., which when completed, will make Boulogne an important naval station, within two hours' run of the coasts of Kent and Sussex, and will require more than ordinary watching in the event of a war, to protect our shores and commerce.

There is in the immediate neighbourhood of Boulogne a large permanent camp. The town possesses rapid railway communication to all parts of France, and is within a tidal distance of Calais and Dunkirk.

A few miles to the westward of Boulogne are the rivers Canche and Somme, where small craft can assemble in any numbers for an emergency. After these rivers come Treport, also important in collecting vessels; and, lastly, Dieppe, an extensive port, with docks, railroad, and a large maritime population, and calculated to fit out any number of armed steam-vessels for the annoyance of our trade, or of molesting our coasts. Dieppe being also within the range of Dover, could collect a large auxiliary force to join the expeditions fitted out from the places already mentioned to the eastward, whilst places to the westward of Dieppe could be looked after from our next nearest point, viz., Portsmouth.

I trust I have pointed out, as briefly as possible, the great importance and necessity of a place of safety at Dover, as being the only point of these parts of our coast where a safe and constant look out could be practically kept up on all the harbours and places on the opposite side of the Channel.

To the foregoing we add the following extract from the *Moniteur de la Flotte*, in which the care of our neighbours in looking to the improvement of their smallest ports is remarkable. But where is the same to be found in ours?

. *Ports of the Department of La Manche in 1859.*

The *Phare de la Manche* contains the following extract from the report of the Council de la Manche, from their chief engineer Deslandes, in reference to the commerce of that department and the harbour works belonging to it, dated 15th July, 1859.

*Carentain.*—This port, which has a large tidal basin, is of recent formation, and the works of it are in good condition. They comprise an entrance, with gates, from the sea, three fresh water locks, a quay

820 feet long, the basin, and a portion of canal. The sum granted for it in 1859 was £250. This is scarcely sufficient for its requirements, and is mostly absorbed in keeping down the deposits formed along the locks.

The improvement of the channel of Carentain has always been urgently desired by the seamen and inhabitants of the neighbourhood. The works of improvement were proposed in 1857, approved in August, 1858, and decreed in December following. The cost of them is estimated at £12,000, and a sum of £4,000 was granted in 1859 for their commencement.

*St. Vaast.*—At St. Vaast there is only a jetty, sheltering the port from the S.E., besides a quay 920 feet long. The sum of £70 is now assigned for preserving them, but is not sufficient, and should be increased to £120.

The works at present going on in the port of St. Vaast have two different objects. The first is the enlargement of the ships' berthing-place at the quay and the formation of two breakwaters of stone from the rocks. The cost is estimated at £2,000, for which this year a sum of £1,000 has been voted. The works are proceeding rapidly: the entrance of the berthing-place is enlarged and the first breakwater is finished, except at the northern end. The second work is the lengthening of the quay and berthing-place about 500 feet. The cost of this will be about £4,700, and the sum granted in 1859 was £1,000. The quay requires lengthening about 50 feet, and this small sum will soon be expended.

*Barfleur.*—The financial resources of this place scarcely suffice for keeping up the jetty, although it is capable of being made an important place, both for ship-building and a fishing station. It would be desirable to construct a quay here, and to remove the rocks which obstruct it. The plan of such a quay has been approved of, but as yet no funds have been assigned for its construction.

*Cape Levi.*—A plan for the restoration of this port was approved in September, 1858. The cost was estimated at £3,500, and would be further increased by an alteration which was ordered. This large sum renders it doubtful whether it will not be some time before the work can be undertaken.

*Cherbourg.*—The works for maintaining the port of Cherbourg consist chiefly of repairs to the locks, the swinging bridge, the transporting buoys, the brickwork, pavements, and stone work of the piers. The sum assigned for these works in 1859 was £900, which is insufficient, and it is reduced by the lighting expenses, which amount annually to about £180. In 1848 the funds for maintaining the port of Cherbourg were £2,000; and, notwithstanding the statements of the engineers they have since then always been reduced.

As the outer port was not deep enough, dredging was commenced in its western part, and during 1855 and 1856 cost a sum of £800. This work has been going on according to a plan approved in December, 1856, and ordered in March, 1857. The cost of the works is estimated at £2,600: out of which, in 1857, £360; in 1858, £1,000;

and in 1859, £800 have been expended;—£440 still remain to be appropriated. It is hoped that another supply will be granted to complete this useful work in the course of this year, the delay being doubly injurious as navigation is impeded by the works.

Various projects had been submitted to the administration for improving the port of Cherbourg, but by the decision of October, 1858, the Minister only agreed principally to the deepening of the outer port, the repairing and lengthening of the East quay, and driving piles between this quay and the East pier. These works, first estimated at £18,000, form the subject of a detailed plan, which, after undergoing a nautical enquiry, and being submitted to the conferences ordered by the decree of August, 1853, was laid before the superior Board. The cost is estimated now at £18,800, in consequence of the deepening of the channel being added, a measure recommended by the nautical commission and the conferences. A plan for repairing the gates of the locks of the basin and the canal has been drawn up; the cost of which is estimated at £1,600.

*Goury.*—The stone jetty which protected this little port having been destroyed by the sea, a plan for rebuilding it was finally approved in August, 1857, at a cost of about £1,500. The general council of the department has voted a supply of £120 for this work, but nothing has yet been done.

*Diélette.*—Diélette, so called from the little river at the mouth of which it is situated, is in the commune of Flamanville. It was constructed about the middle of the seventeenth century by the Marquis of Flamanville, Hervé Bazan, and purchased by Louis XIV during the latter part of the Colbert administration.

The port was originally protected from winds and sea by a pier, which occasionally suffered but was always kept in repair. Humble as it was, it rendered good service to shipping, affording shelter from the storm or, in war, safety from the enemy. In the 7th year a brig from St. Malo bound to Havre, with a rich cargo, reached Diélette, which only just saved her from being captured by a Jersey privateer. In 1807 another Breton vessel, bound for Rouen, took refuge there, avoiding capture by a Guernsey vessel.

When the works for the port of Cherbourg were commenced in 1803, and large blocks of granite were required from the cliffs of Flamanville, they were shipped at Diélette, and the port received some important improvements. An official document published by the minister of public works in 1837 gives the following account of it:—

The entrance to this port for shelter in bad weather is difficult, the channel being exposed 650 feet across between the reefs; but a ship once inside is safe, and the wind that is fair for leaving it is also fair for rounding Cape La Hogue. A pier of masonry, 600 feet long, shelters the port from westerly winds; another, 130 feet long, partially protects it against those from N.E. The port suffers from the frequent accumulation of sand, which is carted away occasionally.

The works then required for the improvement of the port of Diélette were calculated at £4,000, and are thus specified by the minister



in his statistics of the sea ports:—Rebuilding of the western pier-head, £2,400, and extension of the eastern pier, removal of rocks, £1,200.

A plan for improving this port was approved by the Director-General of Works on May 13th, 1837, consisting of repairing the old pier, lengthening it 65 feet, and terminating it with a semi-circular pierhead, with two small towers for lights, to indicate the direction of the channel between the reefs at the entrance. But the Lighthouse Commissioners did not consider Dielette of sufficient importance for lighting, and they were suppressed in a definitive arrangement contracted for on the 30th April, 1839.

Dielette is the only port of refuge from storms between Cherbourg and Granville for the numerous coasting vessels which frequent that dangerous coast, and a great number of vessels owe their safety to it. Indeed, but for the protection which Dielette affords, many vessels would have been captured during the war. Two only have been mentioned, but such escapes are common. Convoys of the state, laden with provisions and other supplies, avoid there the attacks of English cruisers; and privateers there await the propitious moment for starting and returning with their prizes.

The port of Dielette may be small, but its situation renders it of great importance to vessels in the dangerous part of their route; and it is because vessels seek shelter at Dielette in bad weather, and consequently under difficulty, that it is important the channel should be well lighted, and the Council for the district of Cherbourg and the General Council of the Lights of the Channel exclaimed bitterly against the suppression in the ministerial project; but it is only after fifteen years' urging this point that their views are likely to be approved. By a decision of 30th July, 1853, the Minister of Public Works authorised the formation of two lights for the entrance of Dielette, but on condition that the Corporation of Flamanville should defray the expenses,—which the Corporation refused to do. At length, by the decision of 12th July, 1856, the Minister granted the establishment of these two lights, and that the expense of keeping them up should be defrayed by the state. This was carried out in the course of 1857, and the lights appeared.

These lights, which when in line show the course to be steered for entering the port, consist of—First, a fixed light, visible at five miles, on the pierhead, and lights the whole of the horizon, and stands in  $49^{\circ} 33' 7''$  N.,  $4^{\circ} 11' 54''$  W. Second, a fixed red light in the interior of the port, 500 feet S.E. of the former, 75 feet above the surface of the sea, visible 9 miles. It would be desirable also that Dielette should have a lighthouse.

This port, for the improvement of which the District and General Councils make promises every session, well deserves the attention of the Government. Not only from its situation in this dangerous locality is it the resort of numerous vessels under stress of weather, but it is also of importance on account of its shipments of granite and agricultural productions, as well as a large oyster fishery which is

now carried on in its neighbourhood. Its importance will considerably increase by the working of the abundant strata of minerals and iron discovered in the port itself and its neighbourhood, that is of a very fine quality, and may be compared to that obtained from the best mines of Sweden.

But Dielette, with regret we say it, is far from being favoured. The annual amount for keeping it up is about £40, a very insufficient sum. It was necessary, however, to do something to improve it. The District Council of Cherbourg has proposed constructing on the eastern side a quay from the angle of the small pier, and joining the South quay. The length of this quay would be only about 200 feet, and the expense not much, as materials would be found on the spot. Then vessels which now can only take in cargo at low water, could do so at any time of the tide; and, again, at no very great expense both the port and channel might be deepened some feet.

The time of high water full and change at Dielette is 6h. 44m. High tide, 13ft. 10in.; the great equinoctial tides are 33ft. 2in., and the lowest tides 8ft. 2in.

This little port, having two piers and a small quay, is the place for shipping granite in such large quantities from the quarries of Flanville and its neighbourhood. It is supported by funds which are common to the three ports of Dielette, Carteret, and Portrail, which amount this year to £120. But it is too inconsiderable to admit of the different improvements being made that are necessary for the port of Dielette, the only port of refuge offered by our coasts along this route.

*Carteret.*—In this port there is nothing but a dyke of clay and a barrier of rocks that protect the downs of the shore, and preserve the channel in the same direction. Its preservation depends on keeping this dyke in repair, and closing the breaches which the sea sometimes makes in it.

*Portrail.*—Portrail derives importance from its proximity to the British Isles, and its export trade with them. The repairs, which are defrayed from the same source as the two former, consist in keeping up the clay dyke along the downs and immediately repairing any breach.

*Blainville.*—The improvement of this harbour, so continually urged by the communes, which voted a very large part of the necessary funds for it, consists in opening a new mouth and closing the old one, which is too difficult for navigation. The plan will cost about £1,400; out of which the state furnishes £600, the department £100, and the communes interested in it (Agon, Blainville, and Gouville) £700. In 1858, £1,200 were expended on it.

The works, commenced in 1856, were carried on till 1858, when the cutting of the new channel was opened and its barrier formed; but the sea causing the sand to fall in, filled up the cutting every day; and the sea being thus prevented from entering the harbour, there was no back scour from it. The barrier was overflowed, and the sea would soon have carried it among the moving sands, in spite of the

means employed for preserving it. As the resources did not permit of undertaking works on a larger scale, instead of keeping up a useless struggle with the sea, the engineers proposed to suspend these works, which had already exhausted a considerable sum.

The communes interested in the harbour still urging the works, the engineers have declared that the harbour of Blainville as a port is not of sufficient importance to justify any great expenditure, having scarcely 13 feet of water at springs, allowing at most seven or eight days a month; that the only method offering any chance of success, without throwing away large sums of money, would be to cut a wide channel, at the same time forming a barrier to it which could not be covered by sand. But this would require a new outlay of £2,000, without ensuring a satisfactory result in proportion to the sum expended. The question remained under consideration.

*Regneville.*—This, which is only a natural harbour, is of some importance in relation to Jersey and St. Malo. A plan for improving the port and channel of the Sienne, as far as the bridge of La Roque, has formed the object of various inquiries, which resulted favourably to it. The cost is estimated—for Port Regneville, £1,600, and for the channel of Sienne, £6,000. By means of these works, this port will be connected with Coutances by a navigable canal.

*Granville.*—Granville now possesses, besides its large anchorage, a wet dock used by merchant shipping since 10th December, 1856, with a quay of 2,300 feet, an area of 3 hectares, and will contain seventy ships. The entrance to it by the Sas Channel admits of vessels going in without waiting for the tide, and the Sas can receive three or four ships together.

The sum allowed for maintaining this port in 1859 was £320, which was only sufficient for the works of the anchorage; the maintenance of the works, and especially of the channel, requiring the application of the funds as being of more importance than new works. But this will not last long; and when from these same funds all the works of the port of Granville have to be kept up, and the lighting expenses added, amounting to £100, the funds for this port should not be less than £650.

The basin, with all its accessories, especially the port for fishermen and the low quay to the West, is now finished. The cost of which altogether will amount to £140,000. An order of 24th June, 1858, requiring a plan for a second tidal basin at Granville, the engineers have prepared a design, which is now under the consideration of the Government. The cost of it is estimated at £80,000.

*Lights.*—There are but two first-class lights on the shore of this department,—those of Barfleur and Cape La Hogue; one light of second class,—that of Carteret; two lights of third class,—those of Granville (Cape Lihou) and Chaussey; one light or beacon of fourth class,—a fine model, that of Cape Levi; twelve small lights of fourth order,—those of the Island St. Marcouf, La Hogue, Morsalines, Reolle, the two at Barfleur, those of the fort of Isle Pelier, the central fort of the breakwater; the tower of the East pier of the port of

Cherbourg, the fort of Querqueville, Cape Agou, and the mole of Granville; ten revolving lights, reflecting or otherwise,—one at St. Vaast, two at Barfleur, three at Cherbourg, two at Dielette, and two at Portrail. All these lights are generally in good condition; and, besides the £800 appropriated in 1859 for the expenses of keepers, &c., a sum of £450 is allowed for maintaining the buildings. The oil consumed is provided at Paris.

---

**SUPERSTITIONS AND CUSTOMS—***Common among the Indians in the Valley of the Assiniboine and Sashatchewan. By Henry Y. Hind, M.A., Professor of Chemistry and Geology, Trinity College, Toronto.*

One result of the active pursuit of the fur trade for upwards of a century in the valley of the Saskatchewan, is seen in the blending of different tribes by intermarriage. The Crees of the Plains and the Ojibways and Swampys of the Woods, although speaking different languages, are often found hunting the buffalo in company and not unfrequently form family connections. The Ojibways of Lake Winnipeg may now be discovered, summer and winter, near the Grand Forks of the Saskatchewan, having emigrated four hundred miles West of Red River, where they have permanently established themselves. All the Ojibways now found West of the Lake of the Woods are invaders of the country. The real home of the Ojibway is the region about the South and West of Lake Superior. Their habits of life have changed with the character of the country the emigrants or invaders now occupy. They are no longer dependent upon the forest for their supply of food and clothing; but many of them, on the banks of the Assiniboine, Red River, and Lake Manitobah, possess horses and join the half-breeds in their annual spring and fall hunts. Notwithstanding this intercourse and blending of different tribes, most of the superstitions and customs peculiar to each are still maintained and practised.

It is often asked whether the thrilling descriptions of savage life, as given in Cooper's delightful romances, are imaginary or real; and, if real, whether they exist now among the tribes which have long been familiar with civilized man, such as the Plain Crees, the Sioux, the Swampys, and the Ojibways. It is enough to visit the secluded Ojibway graves, on the banks of the Red River, and behold there Sioux scalps decorated with beads, bits of cloth, coloured ribbons, and strips of leather suspended at the extremity of a long slender stick near the head of the grave, to feel satisfied that one barbarous custom still prevails. But to be an eye witness of a scalp dance or a skull dance is more than enough to press home the conviction that the fiendish passions, so faithfully described by Cooper, still find ex-

pression in violent gesture, loud vociferation, triumphant song, and barbarous feasting with undiminished strength and bitterness, even after a century's intercourse with civilized men.

In the following pages I shall endeavour to describe some incidents which will show how far old superstitions and customs prevail among the Indians occupying the country I visited last summer, between Red River and the South branch of the Saskatchewan.

Early last spring, the warlike bands of Ojibways, called the Lac la Pluie Indians, were thrown into a state of savage excitement by the arrival of messengers from their friends on the Red River, with tidings that two Sioux had been killed and scalped in the Plains. In testimony of this triumph, they brought with them two fingers severed from the hands of the unfortunate Sioux. The announcement of the intelligence that the scalps would be sent after their Red River brethren had celebrated war dances over them, was received with wild clamour and shouting. After the scalps had been carried from hand to hand and the victory that won them triumphed over with dancing, singing, and feasting, they would be returned to the warriors who took them, and finally suspended over the graves of relatives or friends mourning the loss of any of their kindred by the hands of the Sioux.

The wood Indians assemble in the spring to celebrate their medicine and other notable ceremonies. During the summer they separate into families or small bands, and hunt, fish, or go to the Plains in search of buffalo. At the approach of winter, they "take debt," or otherwise obtain supplies at the different posts of the Company, and retire to their winter quarters to trap the fur-bearing animals. The Plain or Prairie Indians follow the buffalo, and vary the monotony of their existence by forming war parties against their enemies, such as the Plain Crees against the Sioux and the Blackfeet, the Ojibways against the Sioux.

When on the South branch of the Saskatchewan last August, we found the Plain Crees hastening from the West to the East bank of the river, at the Elbow, with a strong war party of Blackfeet in pursuit. The chief of the Crees of the Sandy Hills, near the South branch, Short-stick by name, pointed out some of his band who had penetrated through the Blackfeet country to the Rocky Mountains two years ago, and returned with several scalps, grizzly bear claws, necklaces, pipes, and other trophies of success; he also related with much feeling how twenty-five young warriors had gone on a similar excursion the summer before last, but none had yet returned. Last July the Plain Crees met a portion of the Blackfeet tribe at the Eagle Hills, on the North branch of the Saskatchewan, to arrange terms of peace. All matters went on smoothly, and the tribes separated as friends. Some of the Crees, however, incapable of resisting the opportunity, stole some horses from the Blackfeet. They were pursued, and three of them taken. One was killed instantly, the others were led back in triumph to the camp of the Blackfeet. They were stripped, their hands were tied behind their backs, a hole bored through both wrists and a stick passed through them and so tightly

fastened that it could not be removed without assistance. The captives were then separated and dismissed singly to find their way to their friends. One only reached his tribe and was lying in a tent which we passed on the banks of the Qu'appelle, near the South branch.

The chief, Short-stick, when relating these adventures, held up the pipe he had in his hand and exclaimed, "This is what my Blackfoot friend gave me one day, the next he killed my young men; he is now my enemy again." I expressed a wish to purchase the pipe; the chief's reply was, "Take it," handing it to me with a gloomy frown, and silently extending his hand for the common "clay" which I was smoking at the time. The great chief of the Plain Crees is styled "The Fox;" he is well figured in a photograph. "The Fox" is held in high esteem by all the Plain Indians with whom he comes in contact, either in peace or war. He is dreaded by the Sioux, the Blackfeet, the Bloodies, the Fall Indians, the Assiniboines, and all the tribes who occasionally hunt on the Grand Coteau de Missouri and the South branch of the Saskatchewan.

The cruel barbarous treatment of prisoners so often described in narratives of Indian warfare, is common even now in the prairies South of the Qu'appelle or Calling River and the Assiniboine. Not a year passes without two or more of the Red River half-breeds being scalped by Sioux: sometimes, as was the case last year, quite close to the settlement of St. Joseph, on the boundary line, about thirty miles West of Red River. When a prisoner is taken, the Sioux sometimes adopt a terrible mode of death during the summer season. They have been known to strip a half-breed, tie him to a stake on the borders of a marsh in the prairie, and leave him exposed to the attacks of millions of mosquitoes, without being able to move any part of his body; and when the agony of fever and the torment of thirst come upon him, they leave him to die a dreadful lingering death, with water at his feet, and buzzards hovering and circling around him in loathsome expectation. By way of illustrating the character of the medicine or conjuring ceremonies, which may be witnessed during all seasons of the year, when several families are encamped together, I shall describe a scene of which I was an eye witness last summer near the Hudson Bay Company's post in the Touchwood Hills, between the South branch of the Saskatchewan and the Assiniboine. The conversation was carried-on in Cree, I believe faithfully interpreted to me by the officer then in charge of the post, who was present. The interpretation was pronounced exact by one of the Cree half-breeds attached to my party.

At the time of my arrival at this Post, a conjurer of some celebrity was endeavouring to cure an invalided woman by the exercise of his cunning. The sick woman was lying in a buffalo skin tent; the conjurer, painted and decorated, employed himself in beating a medicine drum within a few feet of her, and in singing at intervals the following words, first uttered slowly, with a pause between each word, then as in ordinary conversation; lastly, with energy and rapidity.

“Great—is—the—man—who—walks—  
In—the—middle—of—the—Earth,—  
He—is—the—only—true—Lord.”

The word “Lord,” is not employed in the sense of supreme master, but is rather intended to convey an idea of independence and individual power; and is better expressed in English, as the half-breeds informed me, by the word “gentleman.”

The conjurer occasionally came out of the tent; and whenever the supposed Manitou or Fairy, who was the alleged cause of the woman's illness, approached, a little bell, suspended from the poles supporting the tent, tinkled, and gave the alarm; the conjurer immediately seized his drum, commenced his song, and, by his incantations, succeeded in pacifying the Manitou. These proceedings continued for two nights: and, at the close of the second night, after a prolonged ringing of the little bell, violent shaking of the tent poles, loud beating of the drum, and chanting of the words before quoted, the conjurer announced that he had discovered the reasons of the Manitou's anger and the means to appease it.

You had a dream, said the conjurer, and when you arose in the morning you promised to make an offering to the Manitou, you have forgotten your pledge, and you are sick.

The woman demanded what she had dreamt and what she had promised, avowing her ignorance of both dream and promise. But the conjurer told her that when the buffalo were around her tent last winter, and no fear of starvation before her eyes, she had dreamed that the buffalo would always surround her, that famine and sorrow were always to be strangers to her, and in gratitude had vowed to make a sacrifice of her best robes. The woman, wearied no doubt with the conjurer's unceasing drum and song, probably, too, believing that a false confession was the lesser evil, as it might bring the promised relief, acknowledged that the conjurer was in the right. The penalty she was told to pay consisted of the sacrifice of throwing away of two robes, or double the amount of the promise she had made, after which her health was to be restored.

Scenes similar to the one just described may be witnessed whenever several families are camping together; but the sacrifices required to be made depend upon the ability of the deluded creatures to satisfy the demands of the conjurer.

“The Happy Hunting Grounds,” the Heaven of Indians, so often spoken of by writers of fiction, are an actual reality in the imaginations of Crees and Ojibways, as well as of other north-western tribes. A Plain Cree on the Qu'appelle gravely informed one of my men that he had been dead once and visited the spirit world. His narrative was to the following effect:—“I was sick and fell asleep. I awoke on the bank of a deep river, whose waters were flowing swiftly and black from a great mist on the South to a great mist on the North. Many other Indians sat on the banks of the river, gazing on its waters, and on the gloomy shore which lay wrapped in mist on the other side. Time after time the mist before us would roll away and



reveal the mouth of another great river pouring its flood into the one on whose bank I was sitting. The country to the South of this river was bright and glorious, to the North dark and gloomy. On the one side was the happy hunting grounds, on the other the hunting grounds of the bad Indians. Time after time my companions tried to cross the swift stream before us, in order to reach the happy hunting grounds; some arrived in safety, others reached the North bank, and disappeared in the mist which overhung the bad country. I tried at last, but the current was too strong for me, the recollection of bad deeds prevented me from stemming the current, and I was swept on to the North shore of the opposite river. I scrambled up the bank, and spent many moons in hunting in that dreary land; always on the point of starving, or of being hurt by enemies, or wet, and cold, and miserable. At length I came upon a river like the one I had crossed, with mists and a great stream opposite, breaking clouds revealing happy hunting grounds on one side, and a more gloomy and terrible country on the other side. Other Indians were there before me, looking at the river and trying to cross; many succeeded, a few were swept to the bad country, these were very wicked Indians. I tried to cross. I knew I had been a good Indian in this dreary hunting ground. I took courage, and swam strong against the stream. I reached the happy hunting grounds; all my sorrow disappeared as I climbed to the top of the bank and saw before me Indians numerous as grass leaves, buffalo on the distant plains thick as rain drops in summer, a cloudless sky above, and a warm, fresh, scented, happy breeze blowing in my face. I sank to sleep, and woke alone in my tent in these prairies again."

Whatever faith the Indian medicine men possess in the efficacy of their charms, it is certain that they entertain great respect for the white man's medicine. A laughable incident occurred at the Touchwood Hills. The conjuror of whom mention has just been made, entered the room at the Post where I was sitting with Mr. and Mrs. H., who were temporarily in charge. The Indian and a companion seated themselves upon one of my boxes which contained a small medicine chest. Mrs. H. asked me to give her some sticking plaster. I crossed the room to open the medicine chest, when Mrs. H. (a half-breed) said to her husband, in the Cree language, "Will his medicine do me any harm if I stop here while he opens them?" Mr. H. answered jestingly, "Yes, you had better go into the other room." I motioned the Indians to move, they rose, and I opened the chest; the moment they saw the bottles they hurried out of the room, hastened to the summit of a neighbouring hill, and divesting themselves of every article of clothing, shook their garments repeatedly, and, after hanging them on bushes in the sun, squatted on their haunches to await deodorizing influence of the breeze.

In the valley of the Qu'appelle River, we frequently found offerings to Manitou or Fairies suspended on branches of trees; they consisted of fragments of cloth, strings of beads, shreds of painted buffalo hide, bears' teeth and claws, and other trifles. Our half-breeds always re-

garded them with respect, and never molested or liked to see us molest these offerings to Manitou. This custom prevails everywhere in the valley of Lake Winnipeg, and it may truly be said that the medicine drum is heard far more frequently in some parishes of Selkirk Settlement than the sound of church bells.

A conjuror celebrated for the potency of his charms, will often exercise a very injurious influence over an entire band consisting of ten or twelve families, in deterring them from frequenting particular hunting or fishing grounds if they offend him. Out of numerous instances of this dangerous influence, I select the following. It occurred on the Dauphin River. When ascending that stream, we came upon a large camp of Ojibways, who were on their way to the Hudson Bay Company's Post at Fairford. Their usual wintering place was at the Pike's Head, an excellent fishing station, on Lake Winnipeg; but they had abandoned the intention of wintering there in consequence of a threat which had been conveyed to them from a noted conjuror of the Grand Rapids of the Saskatchewan, to the effect that if the band ventured to winter at the Pike's Head, "He would do something." This ambiguous threat was quite sufficient to deter them from visiting their old haunts, and would probably be instrumental in producing much suffering if not actual want to many of the band.

Sacrifices and offerings are of very frequent occurrence among the Indians of the Saskatchewan Valley. The customary offerings consist of two, three, and sometimes five dogs. At the mouth of the Qu'appelle River, an Indian in June last, sets his nets and caught a large fish of a kind different to any with which he was familiar. He immediately pronounced it to be a Manitou, and, carefully restoring it to the water again, he at once sacrificed five valuable dogs to appease the anger of the supposed fairy. On approaching Long Lake, an arm of the Qu'appelle River Valley, the Crees warned us not to visit the lake by night, as it was full of devils. They told me very extraordinary tales of the dimensions and powers of these devils, and appeared to live in awe and terror of them. Like most heathen and barbarous races, the Indians suffer much from their superstitious fears. When the weather is fine, and their tents are well supplied with provisions, they are an independent and joyous people. Full of frolic, and fond of relating anecdotes, they laugh immoderately at any trifling joke or absurdity, and seem thoroughly to enjoy existence. A ridiculous incident occurred in the tent belonging to the chief, Short-stick, in which I played a more prominent part than I should have selected had any choice been offered me. I heard of this incident again hundreds of miles from the spot where it occurred as we journeyed homewards from the Grand Forks.

It happened thus. I visited Short-stick in his tent. After a long and tedious talk, which lasted seven hours, relating to the object we had in view in visiting the country, three of Short-stick's wives were visible, with their children, forming altogether a party of eighteen or twenty. I rose from the buffalo robe, where I was seated by the side of Short-stick, to examine some arrows which one of his sons was

making, and when my curiosity was satisfied, I sat down on what I thought to be a bundle of buffalo robes. I was a little astonished to feel the robes move beneath me, and before I could rise and look into the cause, I found myself projected into the middle of the tent among the embers, by means of some violent spasmodic action from beneath the supposed pile of robes. Short-stick and his three wives, with the other inmates, shrieked with laughter, vociferating some words in Cree. Meanwhile, the buffalo robes were slowly thrown on one side, and to my astonishment, were revealed the huge proportions of Short-stick's fourth, youngest, and best wife. She shook a mass of hair from her head and joined in the laughter at my discomfiture. Other Indians hearing the noise came in, and Short-stick, with tears in his eyes, told his friends how "the white stranger had sat upon his best wife, thinking she was a pile of robes, and how she tossed him into the middle of the tent like a buffalo bull pitching a colt."

As I passed near the door of the tent belonging to Short-stick's eldest son, who accompanied me, a young squaw outside was leaning upon sticks, evidently in great trouble, and weeping bitterly; the moment she saw us she hobbled into the tent with a low cry of pain and closed the entrance. I asked the interpreter what this meant. After some conversation with her husband, he said that the woman was suffering from a beating he had given her for a violation of her faith during his absence in the spring on a war excursion. "I would have killed her," muttered the husband, "but I thought it a pity to kill two at once. She had her choice, whether she would have her hair, her nose, or her ear cut off, or whether she would have a beating; she chose what she has got, and I would have killed her had I not known I should regret having killed both." It is needless to add that the woman soon expected to become a mother.

In order to understand the character and nature of wild Indians, they must be seen in their tents when well supplied with provisions, and disposed to be cheerful and merry. In the prairies, on horseback; they are often quiet and watchful, always on the look out, and if twenty or thirty are in a band they generally manage to see a suspicious object in the distance at the same moment, so that a simultaneous note of exclamation is uttered by most or all of the party. In hunting the buffalo they are wild with excitement, but no scene or incident seems to have such a maddening effect upon them as when the buffalo are successfully driven into a pound. Until the herd is brought in by the skilled hunters, all is silence around the fence of the pound, each man, woman, and child holding, with pent up feelings, his robe so as to close every orifice through which the terrified animals might endeavour to effect their escape. The herd once in the pound the scene of diabolical butchery and excitement begins; men, women, and children climb on the fence and shoot their arrows or thrust their spears at the bewildered buffalo, with shouts, screams, and yells horrible to hear. But when the young men, and even women, jump into the arena amidst the dying and the dead, smear themselves with blood, thrust

their arms up to the shoulders into the reeking bodies of their victims, the savage barbarity of the wild prairie Indian shows itself in its true colours. Not even a scalp dance over many fallen foes affords such a terrible picture of degraded humanity as do a large band of prairie Indians, some hundreds in numbers, during and after the slaughter of buffalo in the pound.

The condition of the Indians now is very different to what it used to be half a century since. Not only have imported diseases greatly diminished their numbers but game of different kinds has become so scarce that during some seasons starvation is no fiction.

In sickness prairie Indians are much depressed, and often seek consolation in the monotonous drum of the medicine man and his heathenish incantations, an infliction which the grossest and most debased superstition alone would tolerate; submitted to with hope and confidence, however, by men who are anxious and timid during the roll of thunder, invoking the Great Bird by whose flapping wings they suppose it produced, or crouching from the blink of his all penetrating eye, which they allege is the lightning flash.

#### THE BAR OF THE QUILIMANE RIVER,—*When to Cross it.*

*November, 1860.*

Dear Sir,—I have just heard that the paymaster and four sailors of H.M.S. *Boscawen* were drowned on the bar of Quilimane River, when attempting to convey despatches to Dr. Livingstone. Having had some experience of this dangerous locality, which will no doubt be again visited by our ships' boats, perhaps you will allow me to repeat the substance of a few of the remarks made on the spot, which you inserted in the *Nautical Magazine* of January, 1857.

In these I observed that it is not an uncommon opinion that the best time for boats to cross the bar is *near half tide, as the breakers then mark out the channel*, but that my own experience had led me to a different conclusion. I believe that, other circumstances being alike, *the nearer high water the better*, as the breakers, or dangerous waves, *are then less frequent*, and the area over which passage is safe is wider,—that the last of the flood and the first of the ebb are generally the most favourable periods for entrance and exit,—and that when the tide is suitable early morning—before the sea breeze sets in, and when calms or light winds off the land prevail—may often be preferred. When intending to return to the ship at an early hour, it is advisable to sleep in the boat at Hippopotamus, or at the opposite (Tangalane) point, in order to be ready for a start at daylight. The boat-passage is almost always the best. With a moderately strong S.W. breeze it is, however, sometimes impracticable when the ship-passage may be taken.

The bar of Quilimane River has certainly earned the epithet "treacherous." At times the absence of a breeze, and a smooth undulating surface—especially after a calm of some duration—may at near low water invite confidence, which will not be diminished if nothing seen from aloft indicates a chance of danger. Nevertheless, under such circumstances, when miles away from the ship, a short towering, solitary, erratic wave, obeying an influence unfelt by the surrounding water, may suddenly rear its head and, rushing with force, fill and upset the boat before she has had time to fairly receive the mass. Such waves are most common near the entrance of the river, where the soundings are irregular,—narrow heaps or ridges of sand being probably heaped up by the effects of alternating and often antagonistic strong ebbs with freshes, and heavy winds from seaward.

I was informed at Quilimane that many lives had been lost on it: its dangers were probably no small recommendation of the place as the great Portuguese slave depôt of former times. A barge of H.M.S. *Cleopatra* was capsized on it. Shortly before my first visit an experienced native pilot and all his crew perished. Soon after my last trip a small Hamburg vessel was wrecked on it; and, as you observed with reference to my former communication, after my notes were penned the officer commanding the flag-ship's tender, a marine officer, and three blue-jackets were drowned. I may here mention that the officer had often crossed the bar, and had advised me, on my leaving the Cape for Quilimane in search of Dr. Livingstone, to take the bar at near low water, when the true channel would be plainly visible; and on my return, finding him about to sail on the same duty, I gave him the result of my own experience; but he unfortunately perished on the bar at *near low water*.

It would appear prudent to employ two boats in crossing this bar, or those of the other mouths of the Zambesi, as it is improbable that both would meet a disaster at the same moment. The *Cleopatra's* barge's crew were rescued by the pinnace, which was following close astern. The *Dart's* boat was without a consort, and drifted twenty miles before she grounded on the coast with three men, who alone had continued to hold on occasionally by her.

Perhaps valuable lives would be saved if a small lifeboat were kept at the head-quarters of the stations on which our ships' boats have at times to cross dangerous river bars.

I am, &c.,

M. S. NOLLOTH, *Captain, R.N.*

*To the Editor of the Nautical Magazine.*

P.S.—I should not have ventured to offer an opinion on so important a subject as the crossing of this dangerous bar, on the strength of my own casual visits, had it not been confirmed by an experienced pilot in reply to questions, and by all the circumstances which have come to my knowledge. I hope future visitors will give you the result of their experience.

A NEW METHOD OF FINDING THE LATITUDE BY DOUBLE ALTITUDES  
OF THE SUN BY MEANS OF LOGARITHMIC DIFFERENCES.

This method, first published by Lieutenant Pagel, of the French Imperial Navy, is shorter and easier than any other.

*Rule 1.*—With the lat. by acc. or assumed lat., as convenient, the polar distance, and the first altitude reduced to the second place of observation, compute the hour-angle.

2.—Write down at the side of the log. secant of the lat. the tabular difference *doubled*; at the side of the log. sine of the half sum minus altitude, the tab. diff., prefixing the sign + to these quantities, because the secant and sine are increasing, and prefix the sign — to the tabular diff. at the side of the log. cosine of the half sum, because this log. is decreasing; and take the sum of these three quantities and double it, which call *s*.

3.—Seek the half sum of the four logarithms among the sines or cosines, and take out the corresponding tabular diff., which call *d*. If both observations were taken on the same side of the meridian a.m., prefix the sign — to *d*; but if on the same side of meridian p.m., or if on different sides of meridian, prefix +; divide *s* by *d*, and you have an error (*a*) with its proper sign upon the hour of the place.

4.—With the 2nd alt., pol. dist., and lat. compute the 2nd hour-angle, and find the 2nd error (*b*) in the same manner.

5.—If one observation be a.m. and the other p.m., take the sum of the hour-angles; if both be a.m. or both p.m. take their difference, and the result is the *computed interval*, to which always prefix the sign —, and + to the interval measured by the watch, and take the difference of these intervals with the sign of the greater.

6.—Again, if the observations were taken on different sides of meridian, take the sum of the errors *a* and *b*; but if the obs. be on the same side of meridian, and of *prime vertical*, take their difference; (if on different sides of prime vertical, the proper sign of the amount of the errors is to be changed).

7.—Divide the sum or difference of the intervals by the sum or diff. of the errors *a* and *b*, and you have the correction in minutes, with its proper sign to be applied to the lat. by acc. or assumed latitude, to obtain the true latitude very nearly.

*Note.*—The navigator should understand the use of signs + and — according to the first four rules in Algebra, which are easily learnt.

*Remark.*—The one altitude ought not to be taken too near the meridian when observed on different sides of meridian, and the time from noon not less than an hour, or the observer may be deceived by false signs of *a* and *b*.

The following circumstances most favourable for finding the true latitude by this method are:—1. *When on different sides of meridian*, the verticals of observations should be as near to each other as possible: the altitudes should be nearly of the same height. 2. *When on the same side of meridian.*—The verticals of observations should

be as distant from each other as possible; one altitude the least most proper, and the other the greatest possible.

*Example.*—April 25th, 1848, lat.  $51^{\circ} 28' 50''$  N., long.  $0^{\circ} 8''$  W. (at the Nautical School, Greenwich), at 19h. 17m. 52.33s. by chron. true alt.  $\odot 22^{\circ} 47' 1''$ , and at 20h. 32m. 41.17s.  $\odot 34^{\circ} 1' 19''$ ,—required the true latitude. (*Riddle's Navigation*, 5th edit., p. 252.)

Let assumed latitude be  $52^{\circ}$  N.

1st $\odot$ .....	22° 47' 1"		(diff. to 100")
P.D. ....	76 25 16 cosec.	0.012313	
Lat. ....	52 0 0 sec.	0.210658	+ 270
			2
	151 12 17		+ 540
	75 36 8 cosin.	9.395592	..... - 820
	52 49 7 sin.	9.901309	+ 160 + 700
1st hr. ang. 4h. 41m. 0s. = log.		19.519872	- 120
			2
		9.759936	- 299) - 240
			(a) = + 0.8

2nd $\odot$ .....	34° 1' 19"		
P.D. ....	76 24 5	0.012348	
	52 0 0	0.210658	+ 540 (repeated.)
	162 25 24		
	81 12 42	9.184079	..... - 1364
	47 11 23	9.865484	+ 195 + 735
2nd hr. ang 3h. 25m. 9s. =		19.272549	629
			2
		9.636274	- 438) - 1258

(b) = + 2.8  
 (a) = + 0.8  
 Diff. + 2.0

1st hour angle .....	4h. 41m. 0s.
2nd hour angle .....	3 25 9
Computed interval -	1 15 51
True interval .... +	1 14 49

- 1 2 or - 62s., which divided by  
 + 2.0 = - 31' correction.  
 Assumed lat.  $52^{\circ}$  0' N.

True lat. ... 51 29 N.

For the principle of the method, and also for finding the longitude and other problems by the aid of the log. differences, the reader is referred to the book entitled *La Latitude par les Hauteurs hors du Méridien, etc., par Louis Pagel, Paris.*

EDW. H. HEBDEN, JUN.

*Scarborough, December, 1860.*

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XIV.—  
*The Fall of Pekin.—Narrative of Mr. Loch's Captivity.—Life-Boat Services.*

The Chairman, in commencing business, observed that considering the great importance of affairs in China and the unfavourable turn which they might have taken, and indeed which had been foretold of them, the Club would gladly add their share to the general rejoicing at the intelligence of peace brought by the last mail. The fall of Pekin was indeed something new to be added to history. To have overcome that government of empty ceremonies and evasive shufflings by British and French determination, and to have concluded a peace on a satisfactory foundation in so brief a space of time as a few short weeks, was most gratifying; and to this was added the comfort of knowing that our gallant troops would be well housed for the winter in a country where they could look after themselves.

It is stated that the indemnity for our allies is fixed at two millions and a half sterling; and, although that for us is not stated it is satisfactory to find that the Coolie system of emigration is to be legalized, and Christian worship authorized. The successes of the rebels in all probability has contributed to our so readily obtaining these concessions, to which that of free commerce is added without doubt; for, had we been so disposed, we might have established the Taeping-Wang in the imperial palace of Pekin, and the Ming dynasty would have had its death blow. We have no doubt to look for details of the treaty by the next mail, and satisfy ourselves at present that Lord Elgin will have made good use of the complete command which he had attained by the conclusion of favourable terms.

There remained no doubt, however, that some of our countrymen who had fallen into the hands of the Chinese had perished under the barbarous treatment they had received. Messrs. Parkes and Loch and some of the Sikh soldiers have been restored; but Messrs. Anderson, De Norman, Bowlby—*The Times* correspondent, and M. Dubut—the French Intendente, have been massacred. Indeed, it is stated that the number of victims that have fallen under Chinese barbarity amounts to nineteen. He would then propose that the Club should preserve among their papers the narrative of Mr. Loch during his captivity, as an interesting episode of the war, illustrative of Chinese manners and customs, and rendered still more so, as well as



authentic, from this gentleman having filled the office of Secretary to Lord Elgin.

The proposal was at once acceded to by the Club, and the narrative is as follows :—

*Camp before Peking, October 9th, 1860.*

My Lord,—Mr. Parkes will no doubt inform your lordship at greater length than I shall be able to do of the events that preceded our capture, and of the subsequent occurrences; but as for the first twelve days we were separated, I send your lordship this short report of what came under my own observation, however imperfect it may be from my want of knowledge of the language.

On the morning of the 17th September I accompanied Mr. Parkes, with your lordship's sanction to Tung-chow, to make arrangements for the moving of your excellency's camp to that place, when the day was decided on for the signature of the convention.

We arrived at Tung-chow about 10h. a.m., and nearly the whole of that day was occupied by discussions on various questions connected with the convention, between the imperial commissioners, Tsai, Prince of I, and Muh, President of the Board of War, and Mr. Parkes, endeavours being made on their part to draw Mr. Parkes into a decided expression of opinion on the question of your lordship's delivering the letter of credence to the Emperor. Towards six o'clock, however, in the afternoon Mr. Parkes thought he had succeeded in showing them that that was a question he was not empowered to discuss, having no instructions on the subject, and that, moreover, it was a question not included in the convention, but one left open for negotiation. It was not until this late hour that Mr. Parkes could get their serious attention to the various arrangements necessary for encamping our troops, and for opening markets for their supplies, and sending carts for the conveyance of your lordship's camp to Tung-chow; but they then appointed officers for these various duties, and everything seemed satisfactorily understood and agreed to.

Colonel Walker, who had also accompanied Mr. Parkes to Tung-chow for the purpose of examining the ground agreed on for the encampment of the troops, decided on starting early in the morning to make arrangements for their arrival on the ground; and therefore, at about 5h. 30m. a.m. on the 18th, Mr. Parkes, Colonel Walker, and Mr. Morrison, with an escort of five King's Dragoon Guards and four sowars, started for this purpose, leaving the remainder of the party, which consisted of Mr. de Normann, Mr. Bowlby, and Mr. Anderson, who commanded the whole escort, and fifteen sowars, in Tung-chow, to await our return, when we intended to look for a suitable residence for your lordship.

The yamun in which we were lodged was in the western suburb. The shortest way to gain the road to Matou was through the country, and not through Tung-chow, which road we had been brought in by the previous evening. We advanced at a quick trot, and as we ap-

proached Chang-kia-wang we observed many detached parties of matchlock men and cavalry hurrying to the front. As we passed through Chang-kia-wang the numbers increased, and became massed, as if being moved forward to take up certain positions. Observing a large body of men to our right, I rode across a field, and found about five hundred cavalry dismounted in a dry watercourse. Being joined by Mr. Parkes, we proceeded along their front until we came to a village, through which we passed, and suddenly found ourselves in the middle of a battery of twelve guns in position, and commanding the very ground on which it had been agreed the night before that our troops were to encamp. Although somewhat surprised at our sudden appearance amongst them, they merely told us to go on to the road, where we joined Colonel Walker and the escort.

We had now arrived on the ground decided on for our camp. A narrow stream of water runs close up to the road from the eastward, an embankment or bund running at some twenty yards distant from it. This bund was lined with matchlock men, extending to the left as far as we could see. We rode a short distance along this bund. In front of it, at about 100 yards distant, was a long line of cavalry skirmishers, extending the whole length of their position, which appeared a sort of semicircle. Mr. Parkes asked some of the men where their general was, and was told he was many li distant.

We held a consultation on the threatening appearance of affairs, and Mr. Parkes at once decided on returning to Tung-chow, and finding out from the Prince of I the meaning of the Chinese force occupying our position, while I was to pass through their force to give the general as early intimation as possible. Colonel Walker, with five King's Dragoon Guards and one Sowar, was to remain on the embankment until either joined by Mr. Parkes or he received orders from Sir Hope Grant to retire.

I met the army with Sir Hope Grant on the march within half a mile after passing through the Chinese line of skirmishers. I informed him of the position of the Chinese army, and of the position of our party, and the course Mr. Parkes had decided on following. Sir Hope Grant told me it would be necessary to occupy the ground as already decided on, and drive the Chinese back if they offered resistance; but that if a shot was fired, he would capture Tung-chow. As the enemy's cavalry was moving round to our right, it was necessary to act as soon as possible, and to withdraw Mr. Parkes and his party from Tung-chow. He therefore gave me leave to return to Mr. Parkes with this message, and gave me two sowars of Major Probyn's regiment to accompany me with a flag of truce: Captain Brabazon was also ordered to return with me, so that he might see the ground.

The Chinese made no difficulty about allowing us to pass through their lines. On arriving at the bund, not being able to see anything of Colonel Walker, we proceeded at a rapid rate straight to Tung-chow. On arriving at the yamun we found all the gentlemen of the party were absent in the town; but I gave orders to the escort to saddle their horses, and to be ready to start at a moment's notice,

and in a few minutes the gentlemen returned. Mr. de Normann and myself, accompanied by four men, then started through the city to look for Mr Parkes, who had gone to the Prince of I's residence. We had not gone half a mile when we met him. He said not a moment was to be lost in escaping. On our arrival at our yamun the whole party were mounted and ready. It consisted of Mr. Parkes, Captain Brabazon, Mr. de Normann, Mr. Bowlby, Mr. Anderson commanding, one King's Dragoon Guard and seventeen sowars, and myself,—twenty-four in all. We proceeded at a sharp canter.

After proceeding half way we took a wrong turn to the left; this, however, did not delay us five minutes, and we made straight for Chang-chia-wang, the streets of which place we found full of soldiers. As we cleared the town we heard the guns open, and saw the smoke of guns on both sides, at which time we were within half a mile of being clear of the Chinese line. As we went at a canter, a body of cavalry, ranged up on either side, began blowing their matches, and getting their matchlocks and bows and arrows ready. As this had rather the appearance of flight on our part, and as the cavalry might have opened a cross fire upon us at any moment, we halted to consult. The Chinese cavalry, about 300 in number, then drew up in front, and on either flank, supported by a large body of infantry. They said civilly enough that as fire had opened, we could not pass through their lines without an order from their general, who was close by.

We had to consider whether we should attempt to force our way through this body of men, and some 3,000 who were beyond them, and between us and our army, or act as this officer proposed, and go to the general, by which course we should not forfeit the protection of the flag of truce. Mr. Parkes said he would go to the general, and asked me to accompany him. Taking one sowar, to carry the flag of truce, we galloped off in the direction indicated. As we turned the corner of a field of millet, which hid us from our escort, we found ourselves in front of about 150 infantry, who rushed forward with their matchlocks pointed, and had it not been for a Chinese officer, who knocked them up, we should have been shot down.

These infantry were on the bank of the small stream I have before referred to; beyond which we saw several mandarins on horseback. We pushed through the infantry, and Mr. Parkes addressed one, who he was informed was Prince Sang-ko-lin-sin, and asked for a safe pass for our flag of truce, but he only received abuse in reply. After a few words, Mr. Parkes turned to me and said, "I think we are prisoners." At that time we were surrounded by men, who seized both us and our horses. It was hopeless to resist; we dismounted, our arms were laid hold of and twisted behind us. In this position we were taken across the stream, over a bridge formed by a boat, and shoved down on our knees in front of Sang-ko-lin-sin. I was knocked forward and my head rubbed in the dirt. Sang-ko-lin-sin spoke to Mr. Parkes with much vehemence. He accused Mr. Parkes of being

the cause of all the difficulties that had arisen, and of the action that was now taking place. He then ordered our being taken to the Prince of I, and sent an officer to tell our escort to return to Chang-kia-wan. We listened anxiously for any firing or signs of resistance from that quarter, but heard none.

We were removed to a tent close by, where another general was seated. He treated us more civilly, and allowed us to sit down until the arrival of a cart. While waiting, two French prisoners, belonging to their commissariat, were brought in from the front. The firing becoming much heavier, a message came for the general whom we were with, and a cart was sent for us at the same time, into which all five of us were put, and, surrounded by an escort of some twenty men, were hurried into Tung-chow. The jolting was great over the rough roads of the country, but that over the paved streets of Tung-chow was most painful to bear. The Prince of I having left the city, we followed him out on the Peking road.

Crowds of soldiers were hurrying into the city, and we saw large camps on each side of the road. After going about six li we came to a large bridge which crosses the canal. This we passed over; but apparently our escort had difficulty in finding where the Prince of I was, for we were turned back, and had to recross the canal, and were taken to a large camp a short distance from the bridge. There we were taken out of the cart, and taken before Jui-lin, one of the principal secretaries of state. We were made to kneel down, and an examination commenced; this went on for some time. The heat and dust had greatly exhausted us, and Mr. Parkes, to bring this tiresome and useless examination to a close, pretended faintness, and we were removed to a room of a small farm-house close by. Here we were allowed to lie down for a short time, but were soon made to get up by people coming to search us. They took from us all our letters, papers, watches, &c.

We were then removed to a small temple, and taken before some mandarins whom Mr. Parkes recognized as belonging to the Prince of I's suite. They made us kneel, and commenced a long and troublesome examination, which was suddenly interrupted, evidently by some panic, either by an advance of our troops or from some other cause. Our examiners hurriedly disappeared, and a number of soldiers rushed in with loud cries, who bound our hands tightly behind our backs. From their language and gestures Mr. Parkes anticipated we were about to be executed, for they shook their spears and swords at us in a threatening manner. We were taken thus bound into the court of the temple, when some change seemed to take place in their plans, for they hurried us back again and took us outside, when they put us into a common country cart, which they drove off at a quick pace: this, with our hands bound behind us, caused us agonies.

We soon got on to the Peking paved road, but had they not occasionally taken the cart on to the side road I do not think we could have lasted out the seven hours we were in it. From pain, dust, and heat our thirst became intense; once or twice they gave us water.

After a time they took out one of the French and Sikh prisoners and put them into another cart, some of their officials taking their place in ours. These men caused me great tortures by lifting up my arms, which seemed tearing them out of their sockets. The old Sikh sowar behaved with calm endurance. I told him not to fear, we were in God's hands. "Ah! Sahib!" he said, "I do not fear; I am sixty; if I do not die to-day I may to-morrow; and I am with you, I do not fear."

It was getting dark ere we reached the suburbs of Peking. They were not so long as we expected, for after about half a mile we reached the gate, which, from its great height, has an imposing appearance. The crowds of people could hardly be kept back who pressed forward to see us.

The street we entered on passing the gate was some fifty feet broad, but the houses on either side were small, and only of one story. Darkness coming on we could not see anything, even if we had had the strength to look about us.

We rolled through street after street, and the way seemed interminable. We passed through another gateway, and shortly afterwards turned into a large courtyard. Mr. Parkes saw on the lanterns Hsingpoo, or the Board of Punishments. We were kept in the court some quarter of an hour. Mr. Parkes was then pulled out, and taken before the examiners. After ten minutes' anxious suspense I saw him pass loaded with chains. I was then taken into a small room, dimly lighted. Chains and various other evidences of prisons and tortures were hung about the walls. The examiners sat behind a table, in front of which I was forced down upon my knees. A number of questions were put to me, which of course I did not understand; but a man who seized me by the hair and another by the ear and beard gave me a shake and a cuff each time I failed to answer.

After five minutes of this I made signs I wanted my hat that had been knocked off and was lying in front of me. At this the examiners abused me, and I was knocked forward on my face, a large iron collar was put round my neck, with a long heavy chain attached to it, and I was removed into an inner court-yard, where, by the dim light of a lantern, I saw Mr. Parkes seated on a bench. Few words passed between us. Two chains were here made fast to my legs, passing through the long chain which was attached to the collar round my neck. We were then made to get up, and the saddest moment of the day then came, for I saw Mr. Parkes being led away in one direction while they took me another. I could only say "God bless you, Parkes!" and we were separated.

They led me through long open passages into a court-yard, which had a long barn like building on one side, with grated windows, through which a strong light shone. The gaolers rapped at the door, when the most unearthly yell arose that I ever heard; the door was opened with a bang, and I found myself surrounded by about

forty half naked, savage, villanous looking fellows as I ever saw in my life. They were criminals of all descriptions, murderers, thieves, &c.; some twenty of them were chained like myself. One end of the room seemed kept apart for their use; at the other end were the prisoners who were not chained, and seemed of a better class. As soon as I had entered the door was closed behind me, and the gaolers pinioned my elbows, although my hands were still bound. By this time I had lost all use of my fingers; they felt bursting, and my hands were greatly swollen. After a little time they loosened the rope at my waist, but only to put on irons. They gave me a cup of tea, which was very grateful, for I was greatly exhausted. I was glad to see that they intended to place me among the better lot of unchained prisoners, for the others were covered with itch and vermin. They laid me down on a board like a guard-room bed, and chained me up by my neck chain to a beam over my head. I was able to lie at full length, and worn out utterly, I fell into a deep sleep.

The next morning my waking was very sad. A little after daylight the doors were thrown open, and we were unchained from the beams, and every one went into the court-yard. The yard was about sixteen yards square, and a large verandah was in front of the prison. In one corner of the yard was the cook-house; on the other three sides were small wards or prisons, for one or two favoured prisoners.

At about nine o'clock two mandarins came in to superintend the distribution of the food for the prisoners. The food the government supplies is only boiled millet, with occasionally a little salt vegetable; a large bowl twice a day is given to each prisoner. The millet is brought in in a large tub by two men, and served up hot. Only those in chains are on this food; the rest of the prisoners, among whom I was included, received some rice, green vegetables, and a little chopped meat and French beans, with either bread or biscuit; this we got twice daily. This food is found and paid for by one of the prisoners, it being a way by which they are allowed to work off a portion of their term of imprisonment. The man who supplied us was imprisoned for thieving, and the cost of feeding the prisoners could not have amounted to less than two taels a day.

The prisoners were very civil and kind; three were appointed to watch and guard me, and at night one always sat at the head of my bed. They helped me by carrying my chain, by getting me water to wash my face and hands, and by getting me a seat to myself if I wanted one.

I found out that of my three attendants two were murderers, and the third was imprisoned for biting his father's finger off. I was surprised to see the good and kindly feeling that existed between all the prisoners; they seemed to feel for each other, and I have often seen a man who had a little better food than his neighbour give him half. During the twelve days I was in prison with them, I only heard one quarrel.

On the first morning of my imprisonment the officials of the prison,

two white-button mandarins, made me go down on my knees, and asked me a number of questions which I did not understand. In the afternoon I was taken into the court-yard again, and made to kneel for a long time before a number of red-buttoned mandarins, who from their manner evidently abused me. I was then taken back and chained up.

I had succeeded in saving my prayer-book up to the time of being brought into prison, but it was then taken from me; by signs, however I got it returned to me the second day. What attracted the greatest curiosity amongst the prisoners and the mandarins who visited me, were my boots and this book. The second and third day I was also much visited, sometimes had out to kneel and be abused, other times the visits seemed private, after then I was seldom visited.

I made various efforts, through the official visiting mandarins, to obtain an interview with Mr. Parkes, and although they sometimes by signs led me to hope that such might be granted, it never was. I heard of Hang-ta-jin having been to see Mr. Parkes frequently; but I was utterly ignorant of the subject of his visits. The days passed wearily by. I calculated and re-calculated the time that would be required for the various movements; I found reasons for delays as the days passed and no change came to our situation; but I fed myself with the hope that we should all be released. I had many anxious thoughts as to what had happened to the rest of our party; our impression was that they had escaped. So the days passed until the morning of the 29th of September; there had been two great gaol deliveries during the period of my confinement, and on the 29th all excepting the men in chains were liberated.

About the middle of that day, while I was lying down, one of the men who watched me, putting his mouth close to my ear, whispered, "Pa-ta-jin and Hang-ta-jin," and made signs my iron collar was to be removed. About two hours afterwards I was taken into one of the side rooms, and there Hang came and ordered my chains to be taken off. I was then removed to another yard, and shortly afterwards joined by Mr. Parkes. That moment repaid me for much suffering.

I did not know whether this was our final release or not, and it was not until the evening that I learned all that had occurred from Mr. Parkes.

We were placed in separate carts, but this time in the proper carriage-cart, well cushioned. We were taken to the Rao-miao temple, which is close to the North gate. Here we found a good room prepared for us, and another for our attendants, who were some of our old gaolers. We had a good sized court-yard, in which we were allowed to walk. A remarkably fine guard of Manchu cavalry, consisting of twenty men, had us under their especial charge.

Hang accompanied us to the temple, but soon left, promising to return in the morning. I then learned from Mr. Parkes of the frequent visits Hang had paid him during his imprisonment, and I cannot be too grateful to Mr. Parkes for his noble and disinterested con-

duct towards me in his firmly refusing to accept of any Hang's offers of release unless he was accompanied by me.

In fact, during the whole of the first day, and during the latter portion of our imprisonment which we passed together, I cannot express myself in terms of too great admiration of his fearless and determined bearing throughout the trials and difficulties that surrounded us; and I am convinced that one great cause of the happy termination to these dangers, was the firm and consistent language he held to those mandarins, who were sent to attempt to gain some admission from him, either through his hopes or fears.

On the conclusion of this paper, the Chairman said—There is a subject, to which in reference to Prince Alfred's doings at the Cape he hoped the Club would do justice: this was, the establishment of a Sailors' Home at that place, along with a library,—in fact, such an institution as would contribute to the well being of our valuable seamen in that distant part of the world. Indeed the Club generally would rejoice with him to see that increased attention had been given to this subject at home, as well as to meet the evil of desertion from our navy by rearing boys for it at our sea ports, and letting them attain their maturer years in the service itself. Difficulties are complained of that should not be found; but such is the extraordinary character of some of our proceedings that obstacles are frequently met with instead of facilities in such objects. Much had been said of late about desertion from the navy, and he regretted to say that, concealed as it might be, desertion still existed and would exist until the inducements to remain in the service of her Majesty outweighed those for leaving it, and no one need be told that the way to do so was to increase the reward for services as those services increased,—in fact, an increase of pay with an increase of years in the service. The present scale gives an A.B. as much pay for the first year of service as for the last. But this had been pointed out long ago most ably in the *Nautical Magazine*, and to the former to which he had alluded he should take another opportunity of referring.

He was now desirous of adding that he had received an illustration from the Royal National Lifeboat Institution of the services of their excellent boats in proceeding off to a wreck, made from an exquisite picture painted by Mr. Samuel Walters, an eminent marine artist of Bootle, near Liverpool. This gentleman was induced to paint it from a generous motive to help forward the philanthropic objects of the institution by bringing before the public by a peculiar process of photography a correct and picturesque view of the valuable services of one of its boats. The vessel is considered to have struck on the outer ridge of rock called Filey Bridge, on the Yorkshire coast. The raging sea, the wild and angry sky, and the rocky coast, are depicted with a vigour and a truthfulness of delineation which serves to impress the fearful realities of such a scene vividly on the mind; while the appearance of the lifeboat manned by the gallant crew proceeding steadily in the face of the tempest on her errand of mercy, conveys



an idea of the ability of the lifeboat service, and its claims upon the benevolent sympathy of the public, which it would be in vain to attempt to convey by any mere verbal description. There is a matter-of-fact simplicity, a living eloquence in the materials thus brought together and arranged by the skill of the artist into so pathetic yet so unexaggerated a story that renders the appeal which it makes irresistible.

The tabulated list of the important services rendered by the lifeboats of the institution during the year which has just closed, has its own significance. It tells with unmistakable accuracy and with a fidelity that is too thankfully felt in many a sailor's home, that one hundred and eighty-three of our fellow creatures have been rescued during the past twelve months from what may be considered an almost certain death; for it should be borne in mind that the majority of these lifeboat services were of such a character that could not possibly be performed by any other human agency. Here is one such illustration out of many.

A few weeks ago it blew a heavy gale off Lyme Regis. About eight o'clock at night the alarm was given that a vessel was in distress in the offing. It was pitchy dark; indeed the intense darkness, the strong gale, and the heavy surf on shore, were enough, said the Mayor of the town, to appal any men from entering the lifeboat. After some short delay, however, the boat was manned by a gallant crew; her coxswain, Thomas Bradley, being early at his post. Tar barrels were lighted on shore, and the boat proceeded on her mission of mercy. So truly awful was the night, that nearly every one on shore believed she would never return again. After baffling the fury of the storm, and after an absence of about an hour and a half, the lifeboat did return, laden with the shipwrecked crew of three men belonging to the smack *Elizabeth Ann*, of Lyme Regis. The inhabitants of the town were perfectly amazed at the lifeboat's performances, and the no less daring behaviour of her skilful coxswain and crew.

This case alone shows the inestimable value of the National Lifeboat Institution; but how much more might be said of the services it had rendered throughout its long career of usefulness, to what may be called the private and hidden circles of our life.

In addition to the 183 persons saved from a watery grave by the life-boats of the institution during the past year, they also went off 40 times in reply to signals of distress from vessels, which afterwards had either got out of danger or had their crews rescued by other means. Life-boat crews also assembled in stormy weather on several occasions, both during the day and night, in order to be ready for any emergency that might arise. For these valuable services the total amount paid was £766. On occasions of service and quarterly exercise during the year, the life-boats were manned by upwards of 5,000 persons. All the life-boat services took place in stormy weather, and frequently in the dark hour of the night. Surely, then, such an institution, with 108 lifeboats under its charge, devoted to

such worthy and comprehensive purposes, need not appeal for pecuniary support in vain. Much has been done, but much yet remains to be done. Munificent donations from the wealthy few have poured in,—in some cases the establishment of a perfect station having been presented; but it is from the contributions of the many, and the endowments of the humane, that such an establishment must derive its vitality and future power to keep up its immense life-saving fleet. Everyday experience shows us that in this charitable land the public have only to feel assured of the object being worthy, and that the money subscribed will be judiciously applied, for thousands and thousands to roll in immediately. He was persuaded that the National Life-boat Institution has only to be more generally known to be placed upon a more permanent and extended footing. We must yet expect before the winter is over to hear the roar of many a raging storm, and to read a few days after of many a fearful wreck. Surely it would be a cheerful thought in the breast of any of us, as he listens to the one or peruses the other, that he has fulfilled one of the many duties assuredly required of us by having lent his mite to the Life-Boat Institution!

---

*Secretary's Memos.*

The treaty of Tientsin was ratified and the convention signed at Peking on the 24th October by Lord Elgin and Prince Hung.

The same formalities were gone through with Baron Gros on the following day.

The indemnity to be paid by the Chinese has been fixed at eight million taels in all.

The following is a summary of the convention:—

In Article 1 the Emperor regrets the misunderstanding at the Taku Forts last year.

Art. 2 stipulates that a British Minister shall reside at Peking.

Art. 3 arranges the payment of the indemnity by instalments.

Art. 4 opens the port of Tientsin to trade.

Art. 5 removes the interdict on emigration.

Art. 6 cedes Cowloon to the British crown.

Art. 7 provides for the immediate operation of the treaty of Tientsin.

Art. 8 orders the promulgation of the treaty throughout China.

Art. 9 stipulates the evacuation of Chusan by the British force.

The allied armies are to leave Peking on the 8th November.

The sum of £100,000 has been exacted for the families of the British officers who have been murdered.

[We regret being obliged to reserve some further interesting matter of the Club, with the list referred to, for our next.—ED.]

---

## PRICE ON THE LONGITUDE.

London, November 6th, 1860.

Sir,—Many useful problems in the nautical science have owed their publicity to your widely circulated serial, and should any new discovery be effected which would in any way facilitate the navigation of a ship across the wide sea, no one, I am convinced, would do more for its general adoption than yourself. But at the same time it is in your province to warn against breakers ahead in the shape of problems impractical at sea and yet easily believed in by the ignorant.

But some of your readers may say "Surely a problem unfit for sea use will never be attempted." Well let us see. For some time I have been often asked what I thought of a book called *Price on the Longitude*, which induced me to obtain a copy, that I might give it my impartial perusal.

The principal problem therein consists of finding the longitude by the meridian altitude, and knowing from my own experience the total impracticability of this method at sea, I would have dismissed the book without further thought; but when such a book somehow or other has reached its fifth edition, and its correctness certified by (I am glad to say) only five masters,—in words which have a curious similarity,—I think something ought to be said for the interest of navigation, and to root from the science such an ill weed as this.

In the first place, I find in *Robertson's Navigation*, 7th edit., vol. ii., p. 294, a method of finding the longitude by the sun's declination, which differs only from the method under consideration in the manner of finding the difference of declination at Greenwich and at the ship; after that the work in both is the same. And now hear what Robertson himself says of the method:—"Here a small error in the declination computed will make a very considerable error in the difference of longitude; and the method is *only inserted as a caution to beginners.*"

Next let us see the amount of error in the longitude produced by a small error in the computed difference of declination at Greenwich and at the ship. To find this difference of declination it is necessary to observe the meridian altitude,—see page 29 of Mr. Price's book. Now, how near to the truth can the most experienced navigator take the altitude of the sun. At chapter iii. *Raper's Navigation* are enumerated all the errors to which an observed altitude is liable, the uncertainty of the dip alone producing an error varying (to say the least) between 1' and 4" for every three feet error in the height of eye.

Referring again to the example in page 29 of Mr. Price's book, suppose an error of *only* 10" to be made in measuring the sun's altitude at noon, so that the "diff. of mer. alt." in that example instead of being 5' 32" to be 5' 22", let us see what change is produced in the longitude obtained. The longitude Mr. Price gives is 151° 14' E.; but if the example be worked out with 5' 22", the longitude will be

146° 40' 42" E. or 146° 41' E., —a difference of 4° 33' of longitude, due to an error of 10" in the observed altitude. Besides this, the latitude must be exact, or an error of 10" in it will produce a similar change in the longitude. Now, Sir, where is the navigator who can be sure of his latitude within 15" or 20" at the least? and where is he who can measure the sun's altitude to within 10" of the truth? And until such is found this problem must remain, with many others, theoretically true, but quite impractical at sea.

Apologising for encroaching on your space, and assuring you that my only object in writing is for the interest of the nautical science,  
I remain, &c.,

AN OLD GREENWICHER.

*To the Editor of the Nautical Magazine.*

[We take some blame to ourselves for not having picked up this book; although, in spite of a fifth edition having been reached by it (which is little to the credit of British merchant captains) the intelligent navigator will at once see the deception practised by asserting the longitude being found by the sun's meridional altitude through the declination. Our correspondent has done a service to navigators by his exposure of this absurdity, and we shall be always glad to hear from him.—ED.]

#### LUNARS.

*Ship Gloriana, East India Docks,  
19th December, 1860.*

Sir,—If you think a few words from a young man are likely to be of any use in the way of inducing others to pay more attention to "lunars," I hope you will find room for these in your interesting and valuable pages. I merely introduce the subject to show the great value lunars have been this time, and are sure to be on a long voyage, during which you do not sight land and have experienced bad weather.

We left England in November, 1859. Experienced heavy weather in the Bay of Biscay, during which I found our chronometers began to differ very much. The weather being unfavourable, I only got one single lunar in 20° S. (that I considered a very good one), and that put us 23' to the West of the one I considered the best chronometer by London errors and rate. I had several very good sets afterwards (I do not think it of any use to state the results of each set), and they still showed that our chronometers were differing very much from the London rates. I gave them a new original error and rate by the different sets of lunars; and on arriving at the Eastern Channel Light-vessel, at the Sand Heads, found that by lunar error and rates, 1759 (Dent), showed truth; 1478 (Brockbank and Atkins),

was 2' East; and 1690 (Dent), was 17' West of truth: and by London errors and rates,—1759 was 63' E.; 1478, 40' W.; and 1690, 1728 E. of truth.

The time-ball in Calcutta was last taken on 5th June. We experienced heavy weather in the Bay of Bengal, and on arriving in Calcutta, after putting back, the time-ball was never up. We were at the Sand Heads again on the 12th July, and by a good observation found that 1759 was 4½' E.; 1478, 10½' W.; and 1690, 14¼' E. of truth. During the time we were beating down the bay, 1478 and 1690 differed very much from 1759.

On 23rd of August (the day of the mean of a set of lunars) I took the original error they gave, and the rate from the observation at the Sand Heads, and kept them on with the old error and rate of the 5th of June.

We found, on sighting the Cape land, that the lunar error and rates were correct; and on getting the time-ball at St. Helena, 1759 put us 2' E. of truth. The same lunar error and rates and the St. Helena error and rate agreed to one-tenth of a second on 1st December, the morning of which we sighted the Caskets to the minute we expected.

I never took lunars before this voyage, but was so convinced of the great value of them during the time I sailed with Captain H. Toynbee, that I followed his advice, and took all the observations myself. And having this result to produce on the first trial, I think it shows the great value they must be to any one who will take the trouble to take them carefully and work them correctly.

Yours truly,

W. J. COLTON, *Second Officer.*

*To the Editor of the Nautical Magazine.*

[We own to far more confidence now than we used to have in lunars, even to the obtaining of a fresh rate for chronometers when the voyage is so long as to have worn out the shore rate, or, in other words, to have rendered a new one by some means or other absolutely necessary. Perhaps our distrust arose from bad tables and bad instruments in olden times, that would go far to secure bad results, after tedious calculations. But things are altered for the better, and we are glad to find that the excellent counsel as well as example of our old friend Captain Toynbee has evidently been attended with good results. The cause is a good one, and will secure itself friends in good hands. And as brevity is the soul of life, as it is of wit, we commend to the notice of our correspondent Shadwell's illustration of Raper's method of clearing the distance, of which he will find a notice in page 506 of our last year's volume.—ED.]

### Nautical Notices.

#### CANCAO,—*Cochin China*,—*Eastern Side of the Entrance to the Gulf of Siam.*

The shores of the gulf of Siam, notwithstanding they have undergone the examination of our careful surveyor, Mr. Richards, have yet to receive the addition of those details which are essential to inshore navigation that are neither compatible with that officer's time nor required of him by his orders. And no where in the gulf is this more evident than on the eastern side near its entrance,—the mouth of the River Cancao, for instance, being merely noted, as well as some inshore navigation of it, the same river of which we have no account being now believed to form a part of the "delta of the great Camboja River. One of our countrymen, commanding a ship, who has visited Cancao, a place unknown to the directions, has sent us an account of his proceedings and the convenient anchorage which he found, and which we have no doubt will be serviceable to his brother seamen

*Ship Acis, Singapore, November 6th, 1860.*

Sir,—I beg to forward you a report from Cancao, Cochin China, also the soundings of the newly discovered anchorage, that might be added to the Admiralty charts, and would be of benefit to mariners, and also insurance parties, as there is a considerable trade to Cancao, and likely to be more, as it is a rice and produce growing country.

I have, &c.,

THOMAS T. BROWN,  
*Master of the Acis.*

*To the Editor of the Nautical Magazine.*

*Singapore, October 27th, 1860.*

Sir,—Having returned to Singapore after a successful voyage from Cancao, Cochin China, I humbly offer you a few remarks upon that port and the neighbouring land for the information of those who may be interested.

Our supercargo had some difficulty in getting cargo, on account of fighting going on between the Cambogians and Cochin Chinese, and when cargo did come it was not desirable to take it in at the exposed anchorage described to me by the old traders from Singapore, and the latest charts, there being but three fathoms water, with a short jump of a sea, at every fresh breeze. Being disposed to find a safer place for the vessel if possible, I succeeded in discovering a well sheltered anchorage about six miles further to the westward, in a quarter less 5 fathoms water, where we lay secure during heavy westerly gales with but 45 fathoms chain and one anchor, there being not more sea than at Singapore Roads in a sea breeze. It is also more convenient for the cargo boats, as they can lay snugly sheltered under one of the islands in rainy weather or when a breeze comes on.

The knowledge of this anchorage is valuable to Cancao traders, for whose information I note the following transit bearings:—The North shore of the most northerly Pirate Island, distant a mile and a half, bearing West, cutting the South base of a round flat top mountain on Middle Island. The S.W. low point on Peaked Island bearing N.W.b.W. in one with the S.W. end of the highest part of the Table Mountain to the N.W. of Kamput. A picturesque hill on the main land with a green patch on its S.W. side, bearing N.N.E.  $\frac{1}{2}$  E. and Cancao head E.S.E., distant eight miles.

[These bearings agree tolerably with the chart, but this gives the distance of Cancao Head about six instead of eight miles.—Ed.]

A little care is required to gain this comfortable anchorage, as there is a false or blind channel running between the great sand spit and the main body of the Pirate Islands; to avoid which I will note the following sailing directions:—After passing between Pulo Damar and the Brothers, nearest to the former, and about three miles to the S.W. of West Island and three miles to the S.E. of the South Pirate, and in rounding in one mile East of the S.E. Pirate, from which island Cancao Head bears N.E.  $\frac{1}{2}$  E., distant eight miles, steer N.E. until half way to Cancao and the high hummocks of land adjoining thereto, then alter the course to N.N.E., passing to the East of the Sand Spit, carrying three fathoms and half three, keep on this course toward the main land until about two miles from it, and when shoaling to one quarter less three or half two, the channel that leads to the newly discovered anchorage has been crossed. This channel runs N.W.b.W.  $\frac{1}{2}$  W. and S.E.b.E.  $\frac{1}{2}$  E., about one mile wide, through which the tide runs to pass between the North Pirate and Peaked Island.

Beating up this channel with a westerly wind, a vessel must be guided by the lead, line carefully marked. Care must be taken also with a fair wind by snaking the channel, carrying from three to half four fathoms, shoaling on each bank to quarter less three or half two fathoms; the water shoaling gradually on the main shore, and suddenly on the North edge of the Sand Spit running from the North Pirate Island, in an E.S.E. direction for five or six miles, on which there is two fathoms least water.

[The chart (No. 2,725) above alluded to, published by the Admiralty, will be that which the navigator will find most serviceable to him when proceeding to Cancao, but is not sufficiently sounded to show the channel abovementioned, but will be found most useful and, in fact, indispensable.—Ed.]

This anchorage can also be gained by rounding West of the Pirate Island and between the North one and Peaked Island, through the channel that the junks take for Kamput. There is a well of excellent water in the bed of a stream about twenty fathoms from the shore, in a small bay on the North side of Peaked Island, where the pirate, mentioned lately in your journal, was anchored. It is well wooded with large timber, a variety of flowering shrubs and creepers growing

in native luxury on a rich grey soil; fire wood is also to be found in abundance.

I landed on the main land abreast of Peaked Island, hitherto considered unsafe, found the natives to be honest, simple minded and harmless, with nothing loose or improper in their manners, the children especially remarkable for gentleness and good behaviour. I walked several miles among the farming houses, each having a well cultivated garden of potatoes, taro, pumpkins, and various kinds of beans. Many of the houses are beautifully shaded by large trees, and adorned with vines and shrubbery. Plantain, betelnut, and cocoanut are very abundant, and the magnificent pomegranite, with its rich vermilion blossoms. Many of the females were employed reeling silk. Rice fields adjoin most of the houses, also pepper plantations to some extent, which are fenced in by saplings. Small herds of hump backed cattle and water buffalo feed about on the waste ground. I observed a good variety of wild fowl, some of the snipe and dove kinds, all very tame, a very large bird of the heron species, about four feet high, with large black wings, the body white and slate colour, I saw fishing in the paddy fields close to the houses, and also the pelican of the wilderness, reposing very near the habitation of man, undisturbed, pluming his feathers to the song of the children's joyful voices. Other large birds seemed quite at home sitting on the backs of the buffalo. Poultry, pork, and beef may be readily had at a moderate cost, but not in great quantities, as the people of this village only grow such for their own use.

I observed with much interest, while walking on this favoured land, that there were no thorns, briars, thistles, or nettles, and the peaceful, contented, and happy condition of the people corresponding to that of nature around them, brought to mind the time when the fulness of the Redeemer's kingdom shall be enjoyed, when his servants shall go out with joy and be led forth with peace, when the mountains and the hills shall break forth into singing before them, and all the trees of the field shall clap their hands. Here is an opening for missionary labours, for the evangelical administration of the Gospel, before the simple minds of the people get darkened and corrupted.

The village before mentioned and the settlements four miles further eastward towards Cancao, are under the Kamput Government, which is widely different from that of Cancao. This benighted city of Cancao is infested with military and police stations, especially to keep out foreigners. The laws are very exclusive, not permitting any communication with the city. Books of any kind, or pieces of paper written upon, are seized and looked upon as treasonable. Chinese alone are allowed to land and trade on shore; our supercargo received a reprimand for our vessel being anchored so near the entrance of the river, although we were four miles distant. The natives are very uncleanly in their habits: indeed our supercargo reports there is not a dhobey in the whole place.

The river above Cancao appears loaded with riches, the principal



articles for exportation being rice, grain, lard, pepper, bees-wax, silk, dried prawns, and fish. The industrious natives have much difficulty in getting to Cancao, because of the continued disturbances on disputed ground between the Cochin Chinese and the Cambogians.

The Cancao River is navigable by boats all the way to Saigon, in about a week's passage. It seems a pity that one of our men-of-war does not enter the river and anchor at Cancao, to let the silly Rajah see that his white faced brethren should not be held in such contempt. Valuable resources might be developed.

English captains and ships have not fair play, nor access to their own trading business; they are but little better than tools in the hands of Chinamen.

The entrance into Cancao River is on the eastern shore, a shoal of some extent runs eastward from the bluff West head. Three fathoms and half three most water outside the bank.

Yours faithfully,

THOS. T. BROWN,

*Master of the Acis.*

---

The foregoing is accompanied by the following further information, all of which has appeared in the *Straits Times* of Singapore.

We have been favoured by Captain Brown, of the brigantine *Acis*, who arrived from Cancao, Cochin China, on Saturday last, with the following particulars of a pirate seen by him on the 4th of September.

A suspicious looking junk anchored under Horghlahso, (Peaked Island on the chart,) opposite the watering place. The captain and crew of the cargo boats reported that she was a desperate robber. The natives of the village on the main land stated that the pirate had taken five Kamput trading boats, and after taking out the cargoes and crews, consisting of eight men each, set them adrift. The cargo of each boat consisted of from 180 to 200 bags of rice. On the 22nd ult. the pirate left her rendezvous at the same time that four wind bound junks, rice laden for Kamput, got under way. As soon as the junks observed the pirate, they anchored again, close together, under one of the islands. I have no doubt that Orang Choudy expected to capture one or more of these trading junks.

The pirate is a fine looking junk, low wooded with great breadth of beam, painted black outside, her figure work round the bows painted red. Altogether she was in tasteful order; rigged with three masts, the mizen being a barque's without the topmast, with canvas spanker and a heavy junk mat sail at the main, also at the fore with a canvas jib. We observed that she carried six guns on each side, and what appeared to be a swivel. With four hands in the boat I passed within three cables' length of her to and from the watering place. On approaching her she showed a *black* triangle flag with a narrow white border. They let us pass without a salute, probably not caring

to interfere with a European crew We also passed within range of her guns, to and from the village.

When the pirate left on the 22nd of September, it was blowing a fresh breeze from the West quarter. She is therefore probably now lurking under Pulo Damar, or Pulo Oby, or about the neighbouring coast, to waylay other trading vessels. It would not take the *Hooghly* more than three or four days to find her out. Our coasters ought to be protected; for it is not exactly ageceable for a small vessel, with six or eight men, all told, armed with three or four rusty muskets and a boat hook, to be overhauled by such a desperate fellow as this appears to be.

---

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of December, 1860, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

Scotland, West coast, Iona Sound, with views, Comdr. E. Bedford, R.N., 1860, (3s.)

Ireland, West coast, Tralee and Brandon Bays, with views, Comdr. R. B. Beechey, R.N., 1855, (5s.)

Ireland, N.W. coast, sheet 4, Horne Island to Rathlin O'Birne, Capt. G. Bedford, R.N., 1854, (2s. 6d.)

France, North coast, Ile de Bas and adjacent coast, Pilote Francais, 1837, (3s. 6d.)

France, North coast, Rade de la Hougue, Pilote Francais, 1836, (3s. 6d.)

France, West coast, Rade de Basque, Pilote Francais, 1824, (3s. 6d.)

Mediterranean, Syrian coast, Beirut, Comdr. Mansell, R.N., 1859, (3s.)

Mediterranean, Syrian coast, Saida, with view, Mr. H. Bond, Master, R.N., 1860, (1s.)

South America, West coast, Guayaquil River, Captain Kellett, R.N., C.B., 1847, (4s.)

North America, Gulf of Georgia, Fraser River, and Burrard Inlet, Capt. G. Richards, R.N., 1860, (3s. 6d.)

Australia, Southern portion General Chart, various authorities, corrected to 1860, (3s. 6d.)

Australia, South coast, Port Phillip entrance, Comdr. Ross, R.N., 1860, (3s.)

Australia, East coast, Coral Sea, 2 sheets, various authorities, to 1860, (each, 3s. 6d.)

Tide Tables, 1861, John Burdwood, Esq., Master, R.N., (1s. 6d.)

---

#### TO CORRESPONDENTS.

We have received Captain McDonald's important letter on Japan weather, &c.

MERCATOR.—Yes. Any communication for the Nautical Club address to Secretary, care of Mr. Potter, 31, Poultry.

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle

---

FEBRUARY, 1861.

---

WINDS AND CURRENTS ON THE COASTS OF JAPAN.

Sir,—As I frequently turn over the pages of the *Nautical* when in want of information on some particular subject connected with my profession, in the almost certainty of finding what I am in quest of, and feel most grateful to both Editor and Contributor when my researches are rewarded by the required information. Without further apology than a hope that they may afford the same degree of gratification to other readers of your invaluable periodical, I send you a few notes relative to the winds and currents around the coasts of Japan, in the shape of a digest of three trips from China to the Gulf of Yedo and back.

*January, 24th, 1860.*—Left Woosung bound to Kanagawa (or Yokuhama,—this being the residence of the merchants and the place whence all shipments are made, and now decided on as the foreign settlement: it is three miles by land from Kanagawa) with a good breeze at N.N.W., which carried us, on the 26th, into and through Van Diemen Straits. Until the 30th experienced strong blustering winds with variable force, from 6 to 9, and fine clear weather, when we anchored under Cape Kamisaki in the Gulf of Yedo. 31st.—Anchored at 2h. p.m. in Yokuhama Bay.

*February 16th.*—Wayed from Yokuhama for sea with a pleasant breeze at N.E.; bar. 30.70. P.M., off Plymouth Rocks, with wind light and baffling; bar. falling slowly. Midnight, light airs and calm; weather looking unsettled; bar. falling more decidedly. The

volcano on Vries Island, thirty-two miles distant, bellowing out flames at intervals,—a most unusual occurrence with it.

17th.—At 2h. a.m. the wind came from S.b.E., and continued at that point, with falling glasses, until 8h. a.m., when it blew a fresh gale; bar. 30.10. By this time the light sails are in and we expect bad weather. 10h. a.m., gale increasing, with heavy rain; bar. 29.80. Carrying on all possible sail to try and weather Rock Island; but finding we were falling to leeward, tacked to the eastward, shortening sail as the gale increases, and at 11h. a.m. under close-rolled maintopsail. Noon, bar. 29.70. Blowing from 10 to 11 force, with rain falling in a perfect sheet, rendering it impossible to see 100 yards from the ship. Desirous, but unable, to start the maintopsail. 4h. p.m., bar. 29.40, and blowing still harder, with a continued deluge of rain.

Our situation is now becoming precarious, and our only chance is that of being driven into the Gulf of Yedo. Knowing we are driving dead to leeward on an iron-bound coast, unable to make any sail and equally unable to see our way, should we be able to carry canvas, prepared for the worst by clearing the anchors for letting go, and having axes ready for cutting away the masts.

At 5h. p.m., bar. standing at 29.40, cleared a little to leeward, most providentially giving us a sight of the land about three miles on the lee beam. Knowing it must be the land on the eastern entrance of the gulf, wore ship with much difficulty, and in coming to on the port tack dived the jibboom away and split the fore-top-mast staysail. Immediately after wearing a tremendous squall burst over us, lasting for about five minutes; but it had the effect of moderating the wind for a short time, enabling us to make sail and clear the breakers off Cape Sousaki by half a mile. One quarter of an hour longer duration of the strength of the gale and the fate of ship and crew was sealed.

The gulf being now open, and knowing our position, bar. standing at 29.40, and no appearance of the gale abating, resolved to run up the gulf at all risks, rather than remain out on a lee shore with a current of five knots setting to leeward. On passing the Plymouth Rocks the wind moderated, and hauled more westerly under the influence of the land. Night pitch dark. Unable to see the land except by the heavy breakers on both sides of the gulf, caused by the tremendous southerly sea running into it. Wind continued light until 4h. a.m. (18th); when, having got soundings at seven fathoms, judging we were not far off Yokuhama, anchored, truly grateful for getting off so lightly. At daylight found that we had only ran four miles past Yokuhama Bay, and were on the edge of the North Bank.

During nineteen years of an active sea life in the eastern trade, I have never looked forward to destruction with the same certainty I did for a part of the 17th February. They had suffered by the gale very much in Yokuhama; several houses and warehouses were blown down. In seven hours we were driven thirty-eight miles N.E.b.E. by wind and current. The P. and O. steamer *Azof* encountered the

same gale about forty miles S.W. of Cape Idsu, and suffered some damage to boats and hulwarks. If this was a cyclone the track would be from S.b.W. to N.b.E.

There is a good harbour on the North side of Cape Sousaki (the existence of which I have only learned lately) which affords excellent shelter from any wind from North round by S.E. to W.N.W., but have not had an opportunity of trying it. It is well it should be known, as it is an invaluable refuge for an outward-bound ship caught as I was. It is called Sousaki Bay.

Fitted a new jibboom and started again on the 22nd February. A brig which had sailed twelve days previously put back with loss of sails, &c. Bar. 30.17 and a pleasant breeze at North.

23rd.—Bar. falling and wind hauling to the N.E. and freshening, with cloudy weather. Midnight, hard gales and heavy squalls, with rain. Wind hauling to the S.E., and at a.m. of the 24th to S.W., blowing a hard gale, hauling into N.W. at noon and moderating, having worked right round in the forty-eight hours.

25th.—Bar. 29.80. A hard gale from S.W., veering by West into North. Close reefs and a heavy smothering sea. 26th.—Moderate. Bar. 30.00. Wind working round by the eastward to South, West, and N.W. again. 27th.—Light winds, working right round again from N.W. to East.

28th.—Wind freshening at East; bar. 29.75. 8h. p.m., blowing a hard gale and continued heavy rain, rendering it impossible to see 200 yards from the ship. As we are by account within thirty miles of Van Diemen Straits, at 8h. 30m. p.m. hove to for daylight or clear weather. 28th—6h. a.m., continued hard gale at S.E. and heavy rain; bore away to make the land. 8h. a.m., wind shifted suddenly to N.W. and disclosed the land,—Cape D'Anville, *fifty miles* North of the entrance to the straits. Had we ran on we should by midnight have found ourselves in the bottom of Oo-sumi Bay, with a gale of E.S.E. wind. Noon, a hard gale at North, inclining easterly. 29th.—Moderate N.E. wind and continued rain.

March 1st and 2nd.—Strong blustering winds from E.S.E. by South to N.W. and continued rain,—indeed, the rain has been continuous all this passage. 3rd.—Made the Saddle Islands.

24th.—Bound to Kanagawa. 1h. p.m., pilot left off the light-vessel. Carried steady N.E. winds and fine weather until the 27th, a.m., passed Ingersoll Rocks, steering for the passage South of Yukomo Sima. 8h. p.m., very dark and current setting us bodily on to the island, when fortunately, at 10h. p.m., a breeze sprang up at N.E. which carried us clear of danger.

28th.—A hard gale from N.E. to East; bar. 29.28. 29th.—Hard gale from East to S.S.E.; bar. 30.10. 30th.—Same; bar. 29.98. 31st.—Moderate, with rain, thunder, &c. Wind hauling from S.S.E. to S.W. and W.S.W.

April 2nd.—Made Volcano Islands. Wind fresh from N.E., and had two days and nights hard beating; rain continuous. 4th, at 6h. 15m. a.m., after having made some seven or eight tacks during a

dark night in safety, one of them off the same spot an hour previously, got aground on the Saratoga Spit just as the helm was put down for stays, nine fathoms being the first shoal cast close to the spit. The lead gave no indication, but by the cross bearings we were more than half a mile clear when we grounded. Hove all aback and in course of time got her off, and anchored in Yokuhama Bay the same evening.

29th.—Left Yokuhama bound to Hong Kong. Wind N.N.E., with fine weather; bar. 30.28. 30th until 2nd May, fresh gales veering round by East to South, blowing hardest at S.S.E. 2nd until 7th, light S.W. winds and fine weather, with strong N.E. current. 7th.—P.M., took a good breeze at E.N.E. and passed between Harbour Island and Sandon Rocks, and carried a good easterly wind down the Formosa Channel and into Hong Kong on the 12th May.

June 25th.—Left Hong Kong, *via* Lyemooon, and had light easterly winds and calms, with the bar. 29.80, until midnight of the 26th, when a good S.W. wind sprang up which ran us to the Bashees; through which channel we passed at 2h. a.m. of the 29th.

30th.—Noon, bar. falling, with the appearance of bad weather, and wind hauling to the westward as far as W.N.W.: bar. 29.70; aner. 29.64; symp. 29.25. Prepared for bad weather and steered more southerly for a few hours. At 4h. p.m. the glasses commenced to rise and weather more settled, wind hauling back to S.W. I have no doubt that a cyclone of small size was passing to the northward of us. For two hours we had quite enough of wind for the whole topsails, running right before it, rain coming down in torrents. Carried strong winds from S.W. to S.S.E., and passed to the eastward of the Loo Choos. Bar. 29.90.

July 4th.—When within thirty miles of the islands at the entrance of Yedo Gulf the glasses commenced falling, and at 8h. a.m. bar. 29.80, with every indication of a change, I decided on hauling out to sea, having no desire to be caught by a typhoon in that position; down royal and topgallant yards. 10h. a.m., bar. 29.70; fresh gales at South and heavy rain. Noon, bar. 29.65; wind hauling more westerly, with a very ugly appearance all round, more particularly to the northward. 1h. p.m., bar. 29.63; aner. 29.50; symp. 29.30. 2h. p.m., wind shifted suddenly to N.E. with a fearful gust, and continued blowing a hard gale for some hours, with a rising bar. Ship under close-reefed main-topsail lying to, head to N.W., until 5h. a.m. (5th) when the gale commenced to moderate. Made sail, and up top-gallant-yards.

During this day passed several times over the position assigned to the Portsmouth Breakers, but could see no signs of them. At day-break I judged we could not be far off them, and sure enough in the grey dawn I saw, as I thought, brown rocks on the port bow; but as the light increased I could distinguish it to be brown coloured straw and washings off the land, covering the sea for a great space and running in lines with the wind. I am certain that if the Portsmouth Breakers or Rocks ever were in that spot they have got sub-

merged again, as they are not there now. This is also the opinion of all commanders in the trade, none having ever seen them. True, there are times about that position when you would imagine you were surrounded by breakers, and breakers sure enough they are, but caused by wind and current.

Had as usual to beat up the Gulf of Yedo, and anchored in Yokohama Bay on the 7th July. I am at a loss to account for the fall in the barometer on the 4th by any law of storms. The conditions of a cyclone were not fulfilled in this case. Had such been the case it must have been a very moderate one, the centre passing over us and travelling to the S.E. I am inclined to think that as the northerly wind continued for some days afterwards, it was a sort of neutral ground formed between the strong southerly monsoon and the land wind; and which, acquiring a progressive motion, might form into a typhoon of some force and magnitude after travelling for some distance, say 150 miles. However, as yet I have no data to prove this opinion to be the correct one.

24th.—Started for Hakodadi with a strong southerly monsoon, and had a good hard beat to get round Cape King, which we accomplished at midnight of the 25th. Until 27th moderate winds from all quarters and currents southerly. 27th—P.M., bar. falling and wind increasing from S.S.E. Midnight, blowing a hard gale, with heavy rain; bar. 29·60.

28th.—Four a.m., blowing a heavy gale. Bar. 29·40. Hove to under a close reefed main topsail. Noon, weather moderating and wind hauling easterly. The residents in Hakodadi remark that when the wind commences blowing from the eastward and hauls southerly, it is sure to blow hard; but if it works back by the eastward towards N.E., it will moderate, and good weather will follow. July 29th anchored in Hakodadi Bay.

During our stay in this place, from July 29th till August 15th, the winds were generally from the northern quarter at night, and from the southward during the day, increasing to a fresh breeze until 2h. p.m. We had two hard gales from S.W., barometer falling to 29·60 and 29·65, which continued for about sixteen hours each.

August 15th.—Wayed from Hakodadi with light northerly wind, which hauled to S.S.W. in the course of the day. Midnight, within a mile of Cape Tsinka, with a light air from S.S.W. got caught in an eddy, and so strong was it that the ship was whirled right round, as if on a pivot, three times in as many minutes, against both helm and sails. Light winds and strong easterly currents prevented us clearing the straits of Tsugar until the 17th. Until the 20th light S.E. and easterly winds and dense fog at times. Moderate winds from South and fine weather until the 24th, when a northerly breeze sprang up, which carried us through the Korea Straits. Currents northerly.

August 27th.—Experienced a heavy gale from W.N.W., with barometer down to 29·74. It blew with considerable violence for some hours; but I could detect nothing of a cyclonic tendency in it. 28th, weather moderate. Anticipated making the Saddles to lee-

ward, but so strong had been the current to the southward, that Video was the landfall.

This finishes my experience on the coast of Japan for the present. As it is merely an extract from my journal, I shall make no remarks. I enclose a plan of Sousaki Bay for your inspection. In conclusion I may add that on a coast and in a sea like that of Japan, Cunningham's patent reefing sails are invaluable. The winds are so fitful, and of such varied force, that even the best manned frigate in H.M. navy could not make and shorten sail so quickly or so frequently as a ship fitted with that patent. It saves many a mile in the passage, and many a yard of canvas.

I am, &c.,

WM. M'DONALD,

Commander Ship *Medina of London*.

*To the Editor of the Nautical Magazine.*

Turning over a recent number of the *Commercial Advertiser*, a Sandwich Island paper, the following appears in reference to the Japanese visit to the United States.

The following anecdote concerning the Japanese is related of Governor Kekuanaoa, the present governor of Oahu, and is furnished by Mr. Woods, the chaplain of the *Powhatan*. The anecdote is characteristic of the venerable governor, who is well known to be a staunch "Dashaway" in example as well as precept.

A correspondent of the *Journal of Commerce*, from the U.S. steamer *Powhatan*, furnishes the following:—A remark of the venerable father of Kamehameha IV., the present King of the Sandwich Islands, I commend to the serious consideration of our countrymen, official and others, who may entertain the Japanese or mingle in their company. I have never seen but one instance of intoxication among the Japanese; still they are fond of intoxicating liquors, and by the influence of example, and solicitation in respectable and honourable circles, can easily be seduced into the most ruinous habits. Their common and favourite drink is *saki*, a distillation of rice, which in strength is about equal to old Sherry wine. They easily, however, exchange it for champagne and other wines, and rum, whiskey and brandy. Not an instance of intoxication occurred on board the ship, while all saw the facility with which moderation could be made to terminate in intemperance.

At the presentation of the Japanese Ministers to King Kamehameha at Honolulu, I happened to be standing near the King's father, the venerable and hoary headed Kekuanaoa, who alone survives of the Sandwich Island party which went to England in the year 1826, on a somewhat similar errand. King Liholilo and his Queen, attended by their highest chieftains, like the present Japanese Embassy, resolved to leave their beautiful islands and to go abroad and see the world. Arriving in London, they were feted by the king, the court, and the nobles, and introduced into all the practices of the table which only Englishmen are able to achieve or live under. Soon they



became grossly intemperate, and died in London of their excesses. Their bodies were brought back, and now sleep in the Paradise Island which they so fatally left.

When the ceremony was concluded, and the Japanese Ministry had withdrawn, on whom Kekuanaoa had gazed with a serious and sad expression upon his face, he stepped up to Commodore Tatnall, and remarked that "he foresaw the fate of the Japanese Ambassadors; they would not live to see their charming island again; they would be initiated into drunkenness in the United States, as King Liholiho and his queen were in London, and, like them, leave their bodies there." I was touched by the humanity of the venerable man, as well as alarmed by his prophecy; and taking out my note-book committed it to paper. "Let him that readeth understand."

The Washington *Constitution* of a recent date publishes an official copy of the treaty, and of the regulations under which American trade is to be conducted in Japan, which were finally ratified in Washington on the 24th of May. The treaty provides that the ports of Simoda, Hakodadi, Kanagawa, Nagasaki, and Nee-e-gata were to be opened to Americans previous to January 1st, 1860; and that Hiogo should also be opened on the first day of January, 1863. At all these ports a certain limited region of the surrounding country in thrown open for the free migration of Americans, and a fair opportunity appears to be thus offered to them to cultivate the acquaintance of the Japanese, and to establish a traffic in all articles upon which a mutually profitable and advantageous trade can be conducted.

After 1862 Americans are to be allowed to reside in the city of Yeddo, and after the first day of January, 1863, in the city of Osaco. Free exercise of religion, and the right to erect suitable places of worship, are to be secured to Americans in Japan, with the understanding that the citizens of neither country are to offer any insult or injury to the temples or religious worship of the other.

The regulations under which the American trade is to be conducted, provide for the regular entry and clearance of vessels, and for the punishment of smuggling, &c., as well as for the strict prohibition of the importation of opium, the fees to be paid to Japanese custom-house officers, &c. The Japanese tariff is singular brief and comprehensive.

In addition to the ports of Simoda and Hakodadi, the following ports and towns shall be opened on the dates respectively appended to them, that is to say, Kanagawa on the 4th of July, 1859; Nagasaki on the 4th of July, 1859; Nee-e-gata on the 1st of January, 1860; Hiogo on the 1st of January, 1863.

If Nee-e-gata is found to be unsuitable as a harbour, another port on the West coast of Nippon shall be selected by the two Governments in lieu thereof. Six months after the opening of Kanagawa the port of Simoda shall be closed as a place of residence and trade for American citizens. In all the foregoing ports and towns, American citizens may permanently reside; they shall have the right to lease

ground and purchase the buildings thereon, and may erect dwellings and warehouses.

From the 1st of January, 1862, Americans shall be allowed to reside in the city of Yeddo; and from the 1st of January, 1863, in the city of Osaco, for the purpose of trade only. In each of these two cities a suitable place within which they may hire houses, and the distance they may go shall be arranged by the American diplomatic agent and the Government of Japan. Americans may freely buy from Japanese, and sell to them, any articles that either they have for sale, without the intervention of any Japanese officers in such purchase or sale, or in making or receiving payment for the same; and all classes of Japanese may purchase, sell, keep, or use any articles sold to them by the Americans.

*Table of Currents experienced by the ship Medina, of London, on the several dates and in the different positions annexed.*

Date.	Latitude.	Longitude.	Wind.	Current.
1860.	Obs.	Chron.		
January 27	31° 16' N.	132° 13' E.	Northerly.	East, 20 miles.
29	33 32	137 49	Ditto.	S.W. 1 35 miles.
February 17	Between C. Jasu & Sousaki.		South, gale.	N.E., 35 miles in 7 h.
23	33 21	136 11	N.E. to S.W.	N.N.E., 37 miles.
24	32 21	135 38	Westerly.	S.E. b.S., 25 miles.
25	32 0	135 6	S.W.	South, 33 miles.
26	31 31	133 46	East and W.N.W.	S.E., 23 miles.
27	31 2	132 36	W.N.W. to East.	East, 12 miles.
28	31 36	131 27	E.S.E. to N.W.	N.N.E., 50 miles.
March 31	32 24	134 37	Easterly.	N.N.E., 45 miles.
April 1	33 13	136 31	S.S.E. to W.S.W.	N.b.E. ½ E., 19 miles.
May 1	31 0	133 47	N.E. to South.	N.E., 25 miles.
2	31 14	132 20	S.S.W., light.	N.N.E., 42 miles.
3	30 35	132 39	S.W., light.	North, 50 miles.
4	30 22	132 40	Ditto.	South, 13 miles.
5	30 47	132 36	Ditto.	N.N.E., 70 miles.
6	29 55	133 0	S.S.W., light.	N.E., 40 miles.
8	28 25	126 46	Easterly.	W.N.W., 15 miles.
July 4	34 0	138 35	South to N.E.	E.N.E., 30 miles.
25	35 22	142 0	S.S.W., strong.	E.S.E., 38 m. in 16 h.
26	36 3	142 10	S.W. to N.W.	S.S.W., 28 miles.
27	38 34	142 37	N.E. to S.E.	North, 7 miles.
Sea of Japan.				
August 20	38 39	134 55	East to S.S.E.	N.E., 14 miles.
21	38 13	133 50	S.S.E. to South.	N.E., 26 miles.
22	37 43	132 52	South.	N.E., 15 miles.
23	37 8	131 24	S.S.E. to S.S.W.	N.N.E., 35 miles.
24	36 13	130 24	S.S.W. b.W. to N.	N.E., 16 miles.
25	33 52	129 0	North to N.E.	N.E., 16 miles.
26	32 14	125 52	N.E. to E.N.E.	None.
27	31 15	124 11	E.N.E. to NW. b.W.	South, 45 m., hard gale
28	Off Video	Saddles.	N.W.	South, 30 m., ditto.
29			W.N.W.	S.S.E., 35 miles.

AVARICE:—*A Turkish Tale of Real Life.*

The little town of Nicke is situated in that part of the Ottoman Empire which is occupied by the Bulgarians, who with the Servians and Bosnians form portions of the Slavonic people. Some Mussulman families have been established in the country since its conquest, and form its aristocracy. This country, which lies at the foot of the Balkans, is rich and fertile, and the greater part of the inhabitants are agriculturists or attend cattle, which thrive in great numbers on the fertile soil. Some of them, however, more ambitious than others, forsake this mode of life to seek their fortunes by other means.

The first object of these is mostly Constantinople, a place which, in their imagination, is the very emporium of the world's wonders,—for to the native of Asia Minor, as well as the peasant of Roumelia, Stamboul is the city of the thousand and one nights, an enchanted city, where riches and honours may be picked up almost in the streets, and no wonder, for their knowledge of it is only derived from tradition. Every year brings many of them to this city of wonders with the wildest of projects in their heads, only to be banished by the discovery that there, like everywhere else, they must earn their daily bread by sweat of brow. Then after some years they go back with their earnings and live at ease amidst their countrymen, relating to them stories of all that they have seen and all that they have learnt.

In a village not far from Nicke there lived a Bulgarian family, consisting of father and mother, son and daughter. The latter, Maritza, married at the age of sixteen, was then obliged to leave the paternal roof, too often the scene of quarrelsome dispute, arising from the grasping and vindictive conduct of the mother. The father being of a weak and passive disposition, had abandoned his authority to his wife and submitted always to her malevolent ways. The son, named Yenke, who had attained the age of manhood, also desired to emancipate himself from his unpleasant state of tutelage under such parents, to seek his fortune at Constantinople. And after obtaining their consent, having prepared for his departure he set out with some companions for that place.

Years passed on, and nothing was heard of Yenke, his father and mother, notwithstanding the want of kindness he had experienced from them, inquired for him of every one who came from Constantinople; but all in vain: no one knew him or what had become of him. The daughter, Maritza, who had much affection for her brother, was frequently in tears with the reflection that she should never see him more. At the usual time of the return of these travellers, she would station herself on the road in hopes of seeing one who had so much endeared himself to her. But in vain. Six years thus passed away and yet he came not.

One day as Maritza was busy in her little cottage with her children about her, the joyous bark of an old dog excited her attention. He had been the faithful companion of the house since she had left the

paternal roof. Her husband might have returned from his daily labour earlier than usual, and she pursued her occupation. A few minutes more and her children hurried round her frightened, and turning round she then saw a man at the door, young but tall, and dressed in the country costume, with a staff in his hand, and his clothes covered with dust. She advanced towards him, and was about to welcome him, when the stranger, catching her in his arms, embraced her, exclaiming, "I am your brother Yenko. I am so altered then that you do not know me?" The affectionate sister was so overcome with joy that she could say nothing, while she contemplated in his sunburnt features the youthful countenance of him from whom she had been so long separated.

This event produced a gala day in the cottage. The children soon lost their fears of the stranger, and commenced a great friendship with their uncle, not perhaps till after he had opened his bag and displayed all kinds of curiosities from Constantinople, as soon as he had learnt that his father and mother were alive and well, for what he had suffered under their roof had been lost sight of by absence. He rejoiced in the prospect of seeing them again, and concerted with his sister a plan for their meeting. He would pass the night at his sister's cottage, and be up betimes in the morning on his way to the village, enjoying the prospect of meeting his parents and the surprise it would occasion them. The following day would be Sunday, Maritza with her children was to follow him, bent on celebrating the joyful event, the return of him who was believed to be lost.

The plan of proceedings being thus settled, Yenko had enough to relate that passed away the day; the morrow came and Yenko set out on his journey,—with a light heart at finding himself once again in the country he knew so well and to which he had been so long a stranger, again to see the sinuous horizon of the mountains where in his boyhood he had tended his flock or where at the sound of his pipe the buffalo had followed him, it is not easy to say what gaieties were not occupying the mind of Yenko as he went along singing on his way those monotonous airs which are so harmonious in the ears of the Bulgarians. He thought of the joy of his old parents at what their neighbours would tell them, and especially to a certain little damsel whom he had left as a child, but who might also remember him. A thousand projects floated in his mind, and the handsome gold medjides which he had in his girdles could do wonders.

With a beating heart he reached the first houses of the village. The first persons whom he saw did not know him, but he could remember them and also their names. The dogs barked at him as he passed, for to them he was a stranger. Six years is a long absence. On reaching the door of his parents' cottage, it was closed, and on knocking it was opened by his mother, who received him cordially in the Slavonic fashion, and invited him in to rest without knowing him. The father looked at him and also treated him as a stranger, asked him where he came from and to where he was going. Yenko said he had been *en voyage* and returned to a village which he named;

but that fatigue of a long journey had induced him to seek the hospitalities of his country, and that he would relate his travels. At these words the countenance of the old woman brightened,—but her thoughts alas were of gold, and not of her long absent son.

In the evening Gautcho and his wife conducted their guest to a small room, where they had spread a mat on the floor, which they told him was to be his bed, and wished him good night. Yenko, tired with his journey, did not delay retiring, intending on the arrival of his sister in the morning to discover himself to his parents.

All this time the old woman, Kato Gautcho, was thoughtful and serious: who was this guest that chance had sent them? He had been making a lucrative expedition; his girdle was handsomely ornamented, and he did not conceal it. No one had seen him enter the cottage; she would be a fool, she thought, to let slip a good opportunity! But he is my guest, said the old woman to herself, with a feeling of pride which her evil passions had not overcome. But of what good will that be, she said; one blow, and nothing could be easier. But Gautcho must be talked to, for he will oppose it. Oh, I'll soon bring him round! And she continued a whole hour in deep meditation, her criminal desire being opposed by the fear of being discovered; as for her scruples about hospitality, they were soon overcome. At length the thirst for gold was victorious.

Her mind was made up, and cautiously she communicated her design to her husband, who at first resisted it, but the ascendancy of the woman was gradually established. Do what you like, he said, I wash my hands of it. Poor lad, he added, he sleeps so tranquilly! to-morrow, where will he be? Do you know, wife, that our son would be about his age? Hold your tongue, said she. Why should you talk of our son; he is dead and no one can say what has become of him! The conversation ceased, and Gautcho went to his bed; but he could not sleep: a strange uneasiness prevented him: and he got up and went into the air.

Left by herself, and being thus relieved from the presence of her husband, whose last words had made some impression on her, the resolution of Kato was reconfirmed. She went and took an axe from over the fireplace, concealed it, and silently directed her steps to the room where her intended victim lay asleep. She moved on tiptoe, a useles precaution, for he slept too soundly to be disturbed by her movements, as she found on contemplating him a few moments by the light of her lamp. Something like a cold shiver made her hand tremble, and she felt almost moved to tenderness; but her glance fell on the rich girdle which yet encircled the person of Yenko, and her greediness again excited for plunder at once overcame every other feeling. She lifted the fatal weapon, and so effectually were the blows repeated by her that her victim passed from sleep to death without uttering a cry!

Kato, with her blood-stained dress, followed up her work. She took the girdle from the yet warm corpse before her, and went and concealed it. What should she do with that, how should she avoid

suspicious and escape detection? Hurried on by her avarice to commit this frightful crime, the consequences of it she had not foreseen, and daylight found her scheming, when she hastened to change her clothes; she cautiously closed the door of the room where her victim lay, putting off for the following night the work of getting rid of the body! But she was unable to face her husband without trembling; he seemed to be ready to betray her, and the more her conscience troubled her the more necessary it became to assume the look of firmness and assurance.

In the course of the morning her attention was attracted by the merry noise of children at the door, when on opening it there were her daughter Maritza, her son-in-law, and their little ones before her, with joy beaming from every face. Well, said Maritza, did you know him? Know who? replied the old mother, turning pale at the question. Who, said Maritza; why Yenko, to be sure; my dear brother, your son! he is come back at last; he was at my house; yesterday he should have been here, and was speculating whether you would recognize him.

At these words of her daughter, Kato shrank back aghast and trembling, and the next moment uttered a piercing shriek. And the old man, rushing up to her, exclaimed, "Wretch! what have you done? Did I not tell you of your son?" Fear and consternation were now depicted on every face, the children began crying, but they could comprehend nothing more than that something dreadful had happened. Where is my brother? cried Maritza, in her anxiety, now increased by her fears. He is there, said her father, pointing to the closed door of the room where he lay! The door was quickly forced open, and the frightful spectacle was before them. There indeed lay Yenko, weltering in blood, murdered by his own mother!

The intelligence of the frightful deed was soon spread about the village. The neighbours, to whom Maritza had already related the return of her brother, surprised at not seeing the family of Gautcho, and that their door was closed, began to speculate opinions as to the cause. After an hour's suspense, which seemed an age to their curiosity, they determined on going to the Tchorbadjis or principals of the village and informing them of the circumstance; these persons, taking to their assistance a few zapties, hastened to the cottage of Gautcho, and not obtaining admittance, forced open the door, and soon discovered the sad cause of the mystery.

The whole family was taken into custody and conveyed to Nicke to await judicial proceedings. These would be presided over by the Grand Vizier, who would take this place in its turn in his salutary tour through Roumelia, where a large population to which he administers justice rejoices in his presence, and calls down blessings on the Sultan Abdul Medjid and his representative, who knows so well how to execute the wholesome orders of his master.

It was decided that all the particulars of this frightful deed should be submitted to his scrutiny and judgment. The Grand Vizier appointed a tribunal consisting of Christians and Mussulmans, and

among them the bishop, as the accused was of the Greek church. She was condemned to be hung. The bishop was the only one opposed to the sentence on the grounds that it was against the orthodox religion to hang or behead a woman, but adding, that she should rather be thrown alive into a boiling cauldron of pitch! The Grand Vizier, however, overruled this atrocity as the remnant of a barbarous age, and confirmed the sentence of the tribunal. And the wretched woman expiated her crime before a large concourse of her countrymen at Nicke in the month of August last.

### LUNAR EQUINOCTIALS.

January, 1861.

Sir,—I beg to be allowed to resume the subject of weather prognostics, unwilling that my silence in the *Nautical* should longer admit of misapprehension.

The question of foretelling weather has through centuries been so variously treated without having resulted in any positive addition to our knowledge (beyond the few valuable hints by Sir Humphrey Davy in his *Salmonia*), and as the limit of our knowledge has been, so recently as 1858, carefully defined by the publication by Mr. Belville, of the Royal Observatory, and still more recently in the able summary by Admiral FitzRoy of the weather "wisdom of the world"—and which the press of the country has spread far and widely,—I beg to request the great favour of sufficient space being allowed me in your respected magazine while I further explain what I believe to be a discovery bearing more promisingly on the interests of your nautical readers than perhaps anything which has for a long time appeared; and as no injury can be done to the shipping interests by warnings which are calculated to encourage wholesome precautions, I fearlessly submit the following as the results of my observations.

I am quite aware that it behoves us to be very vigilant in our researches, as error so often wears the semblance of truth; and the more especially as when we interrogate nature her responses can only be interpreted by the investigation of accumulated facts—which are indeed nature's only language.

The facts, then, with which, with your permission, I am about to deal are—That the moon in her orbit undergoes certain changes at well known periods; and That certain atmospheric phenomena occur also at stated periods.

The first is an accepted fact. The second I have to demonstrate; and if in so doing I prove from a cloud of testimonies that these periods are identical, I submit that I am justified in combining these two given facts into the relationship of *cause and effect*.

In asking for fair criticism, I would remind your readers that to

sailors the question I am humbly examining has long been one of life or death!

I disown any interested motives, beyond the reasonable hope of satisfaction in contributing (may I say?) another mite towards the treasury of science. If those who know more of these matters than myself should detect inconsistencies in either my deductions or language, I throw myself on their kind indulgence and forbearance.

The bitter disappointment felt at Sheerness in July last from the state of the weather on the 23rd (the day of the regatta) is of itself a fact indisputable. That (on account of my strong suspicions as to what would be the unfitness of that day for a public spectacle, and this because of the moon's position) I strongly protested to the stewards, several weeks before hand, against the selection of that day, is equally a truth.

The involuntary combination of these two circumstances, viz., my prediction and the actual weather, was, in the minds of many, a sufficient cause for favourable impression towards my so-called theory; and consequently so many inquiries were made as to my humble opinions of approaching weather (and several of these by naval officers of large experience), that on the 28th August I posted on my poop cabin door, for the general use of the steam reserve, a list of some twenty days between the 1st September and 31st December last, under the following conspicuous and explanatory heading, viz.:—“List of days on which the weather may reasonably be suspected as liable to change, most probably towards high winds or lower temperature, up to December 31st, 1860;”—signed by myself, and dated the 28th August, 1860. I also sent a copy of the list to the captain of the steam reserve, and a few to distant friends.

Now, so many competent judges have, at this port and elsewhere, during this period sat upon my case,—men who have had the daily evidences of their senses and observations to guide them in direct connection with my theory,—that their verdict possesses some weight; and such verdict, unless the results had been in strict accordance with prognostics, must inevitably have stopped me from further public appeal in your respected pages.

I therefore respectfully submit that this fair and open public challenge, coupled with what I had already stated in the last year's numbers of the *Nautical*, is sufficient to show that weather phenomena occur periodically; and because such periods coincide with the periods of certain conditions of the moon, I may reasonably combine such periods in the relationship of cause and effect.

The details of the weather on each day referred to would be too long for your pages. Therefore, not merely for the general satisfaction of your readers throughout the world, but in justification of that confidence in my accuracy which you, in your September number, so courteously and so encouragingly expressed, I beg to furnish you with a copy of my posted-up predictions, and also a copy of my abstract of their fulfilment up to 31st December last; in which it is gratifying to notice how remarkably the periods are proved to have been times of



unmistakable interruption and disturbance,—in very many instances, (indeed almost generally) extending over a period of two days, after which the wind and weather seemed to resume their previous condition.

I might let the seeds of hope thus sown germinate and in due time produce their fruits, but it is too great a question to be thus disposed of. I have to convince some against their will,—I am sorry for those who are thus guilty! the offence is not against me, but against mankind! my hope and triumph is that they err in ignorance, therefore I can forgive them,—and I consequently need all the materials which can lead to clear demonstration.

Allow me then, Sir, to turn to a totally different species of test. Hitherto you have been made acquainted with observations in which mine has been the eye to watch and the hand to register. I now beg to avail myself of the observations and remarks of others, made long before I announced in the *Nautical* any theory of weather changes. Perhaps the most severe testing that it has undergone was one suggested by my son (the Rev. S. H. Saxby) who, naturally jealous of my reputation, adopted the following method. He took various popular chronologies of recent events as variously recorded—in *Hannay's Almanack*, for example. He abstracted with care each mention of gales, bad weather, changes, &c., and then turned to the ephemeris for the year given and sought for the moon's declination, &c., at each such period. I beg to enclose a copy, and leave you to judge whether my theory be at fault. The enclosed is for the year 1858, recording events in 1856, and mentioning some thirty instances of bad or extreme weather.

The "whirlwind" which passed over Chiswick and other places on January 24th was evidently a cyclone (these I have yet to speak of), but all the rest happened precisely as my periods would indicate, some occurring a few hours before the time of lunar equinox or lunar stitial colure and some a few hours after (I have yet to explain the disturbing causes); but it is most remarkable that the amount of the periods of acceleration compensate the periods of retardation, leaving the mean average times of disturbance to be precisely those days which I mark in accordance with my theory.

Now, this date of 1856 was taken at random, but it refers not to any particular portion of the earth's surface, for it speaks alike of the Atlantic, the British Isles, America, the Straits of Magellan, the Duchy of Saxe Coburg, the Gulf of Mexico, Malta, the Philippine Isles, the Bay of Biscay, &c. So much, then, for a general summary.

Having already given details of observations made at Sheerness, followed by others for every habitable portion of the globe, let me, in adducing Captain M'Clintock's interesting narrative, take an illustration from the arctic circle. His work contains forty-six tangible records of weather, besides some four or five which refer to no date. I have abstracted these, and compared them with an ephemeris for each year (1857-59), as I did with *Hannay's Almanack*, and I beg also to en-

close abstracts and dates in the very words used by Captain M'Clintock.

Now, one would almost naturally have supposed that in a region so remote and so physically peculiar,—locked in nearly perpetual ice, subject to occasional thaws and congelations upon a mighty scale,—the state of the weather would be affected by laws different in some measure from those which govern the sunny zones of lower latitudes. Taking the general public impression as to the effect of electricity in those regions where the aurora gives its splendid evidences of electro-magnetic excitement, we should, from the extraordinary activity which such phenomena seem to denote, have reasonably expected a marked exemption from influences which regulate atmospheric disturbances in other climates.

But no! M'Clintock's narrative (only, by the bye, read by me a month since) confirms the simple truth that there is one general weather system available for all parts of the earth, acting of course with variable intensity at the same moment at different places. Any apparent exception to this ought, therefore, to be capable of some elucidation by me; although it should not be demanded that a question which has occupied so many abler heads than mine for so many years, without success, should be solved in all its bearings in a comparative day or two. On the Allies gaining a footing on the Peiho, why was a royal salute heard throughout the land, if not to encourage further progress? But I have to occupy my Pekin before being allowed to consider myself on solid grounds. It may be, however, that I am already on the North Gate.

But to resume. The navigator may argue that because the system I propose professes to indicate changes of some sort about once a week, his experience in passing through the belts of the Trades is repugnant to my views; because (as I can myself also testify) in entering the Trades, he can, in full confidence of settled weather, and according to the season, bend his oldest suit of sails, stopper his top-sail sheets to the yards, &c. To this I would answer that unless the indefatigable Maury be in great error this is a beautiful and cheering evidence of the consistency of my lunar theory; for if the changes of the moon in her declination have power to disturb the electric equilibrium of the two hemispheres, the equatorial regions would be the grand laboratory for the production of the effects of such disturbances.

But Maury demonstrates that there is a continual ascent of air (of course in whatever state of disturbance or repose it may be in other respects) from the great belt of equatorial calms, and that it is carried *above* the neighbouring strata of the N.E. and S.E. Trade winds;—that from the higher portions of the atmosphere these descend again, meeting the earth's surface at the calms of Cancer and Capricorn, sweeping the faces alike of the temperate and frigid zones, even to the regions of polar calms themselves. The regions of the Trades, therefore, at the earth's surface ought to be exempt from the direct influences, which, as Maury shows, pass high above; while such in-

fluences would be in active operation from the calms of Cancer and Capricorn along the earth's surface to the arctic calms at either pole,—and wide experience in observation seems to confirm these.

But to return to the forty-six abstracts from M'Clintock. You will perceive, Sir, in the enclosed that, with the exception of one record, which appears ambiguous as to date, only two gales occurred which seem not to belong to my system. Captain M'Clintock himself accounts for them as local when he speaks of the windy peculiarities of Bellot Strait. Two others are evidently records of revolving storms. The remainder are in indisputable accordance with my lunar theory. And it is again remarkable that while the periods between the times which I mark as suspicious are from five to seven days, the average of all the storms in M'Clintock's narrative falls within an hour or two per day of my precise periods of expected change,—the amounts of retardation (as explained in a former case) compensate the amounts of acceleration. Why, Sir, this is not mere coincidence! it is proof! and as such I beg to be allowed to consider it until these coincidences can be explained by any other man living by any other system.

It must, however, be remembered that my humble opinions were formed from observations patiently and laboriously followed up through years. These corroborations are not the less welcome because they came *after* my theory had been publicly announced for twelve months.

Now what, Sir, is my consistent course? I can give a list of some sixty periods of probable change of weather for the current year (two have passed already with abundant satisfaction to all about me). While we are deliberating as to the manner in which the public may derive the greatest benefit, permit me to offer a

List of days on which the weather may reasonably be suspected as *liable to change, most probably towards high winds* or lower temperature, up to March 1st, 1861:—

January 2nd\*; 8th or 9th; 15th or 16th; 23rd; 29th\*;  
February 4th or 5th; 12th; 19th; 25th or 26th\*.

The days marked with an asterisk are likely to be strongly influenced,—in what manner I cannot say. I only hope that for pity's sake no crowded emigrant or troop ship will put to sea at these periods.

In conclusion, I beg further to state that I can offer useful hints on future mode of registry of weather, and hope to do so.

I have, &c.,

S. M. SAXBY, R.N.,

*Principal Instructor of Officers of Naval  
Engineers, H.M. Steam Reserve.*

*To the Editor of the Nautical Magazine.*

[The following remarkable phenomenon has been pointed out in a Calcutta paper, in which it is described as occurring on the 6th of December last,—one of Mr. Saxby's marked days.—ED.]

*Calcutta, December 8th.*

The weather now is delightfully cool, and, though it is called the winter, the season has quite a summer aspect. If it were like this all the year round it would be a splendid climate. The atmosphere is usually clear and dry; but the day before yesterday, after a foggy night, we had a most singular spectacle at sunrise, which seemed to indicate a wintry moisture. The fog had settled in solid layers, like snow ridges, over the wide plain called the Maidaun,—the lungs, or Hyde Park, of the City of Palaces. The layers were generally about from ten to fourteen feet in height,—here and there nearly twice that height; between these layers the ground was perfectly distinct and the air clear, and the sky above quite resplendent. But the people walking through the centre of the thicker layers were quite hidden, while in some two or three of the thinner layers figures were dimly visible, like theatrical ghosts behind gauze curtains. A temporary erection of mats, bamboo, and thatch, called “De Veré’s Amphitheatre,” where feats of horsemanship are exhibited twice a week, had a most singular appearance, for only the dark thatched roof was visible, and it seemed supported, not on bamboos and mats, but on the snow-like mist by which it was surrounded in the lower part. The entire pediment, also, of Lord Hardinge’s monument, on the triangular plot of ground called the Cocked Hat, was completely lost sight of, and the gallant soldier seemed to be riding on the surface of the snow. Only the tops of trees were visible, and looked as if they were floating on snow-white water. There is a collection of tents on the plain, some of which glimmered through the thinner layers of the mist, and others just showed their pointed tops.

To complete the scene, the sun rose in the form of a deep red ball of marvellous magnitude. In a long life I never saw the sun in so expanded a state before. It was a globe of fire without flame—seeming to give neither light nor heat. It was as if it were painted on the sky. Suddenly a line of redcoats issued from a thick fog, and as they emerged into the light followed by the white-coated band of the Fusileers, the latter struck up a most cheerful strain of martial music, changing altogether the tone of the scene. At the same time a smart breeze sprang up, quickly swept away the pageant of mist, and bared the whole green plain to the light, while the golden sun turned into silver and dwindled into its ordinary dimensions.

---

THE RECENT VOYAGE OF H.M.S. “BULLDOG,” CAPTAIN SIR F. L. M’CLINTOCK, FOR DEEP SEA SOUNDINGS,—*Færoe Islands, Iceland, Greenland, and Labrador. Report to the Hydrographer of the Admiralty, 11th November, 1860.*

Leaving Stornoway on 1st July, we proceeded without loss of time to the Færoe Islands, stopping only twice to sound; when, about

midway and where the chart led us to expect about 680 fathoms water, we obtained bottom in 254 fathoms.

I landed at Thorshavn for the purpose of communicating with the governor and of obtaining a pilot, but did not make any examination of the little bays near it. They appeared to afford ample shelter and security for any cable landed there; but the strong tide outside them, between Stromöe and Naalsöe, might prove objectionable,—we found it running fully three knots an hour on 4th July (two days after the full moon).

In Westmanshavn Fiord it ran much stronger. Off the port of Westmanshavn it appeared to run six knots, and although the harbour is most excellent, it would not (for this reason) be advisable to bring a cable there. In fact, these strong tides occasion the only difficulty or danger in approaching Westmanshavn.

The topography of the Færöe Islands was very correctly laid down in 1806 by Captain Born, who was, I believe, an officer of the Royal Danish Engineers, but the seaman will find that the positions of off-lying islets and rocks are not always marked with the same accuracy. The rock off Mylen Head, at N.W. outlet of Westmanshavn Fiord, is placed close in to the land, instead of being three-fourths of a mile off shore. I was informed that the channel between Stromöe and Osteröe is contracted to fifty or eighty yards in one part, and is comparatively shallow; hence there cannot be much tide through it, and upon this account I would seek a landing-place for the Iceland cable near to the N.W. outlet of this channel, at Haldervig or Eide.

Leaving Westmanshavn on 6th July, we sounded across towards Ingolf Holde, during tolerably fine weather, and found the depth generally less than 300 fathoms: in one part we passed from 350 fathoms to 680 fathoms and then to 368 fathoms, within a distance of thirty-five miles. The soundings near to Ingolf Holde we found to be irregular and shallower than the charts indicate, but foul weather prevented our determining this point with critical accuracy.

There are, therefore, no difficulties upon the sea route between Færöe and Iceland for the proposed cable.

We reached Reikiavik (the chief town of Iceland) on 11th July. The expected collier had not arrived, so we sailed again on 14th. I was informed that no drift ice ever enters the great bays of Faxe and Brede (in the former of which Reikiavik is situated), and yet that no other portions of the shores of Iceland are wholly exempt from it; neither do these bays ever freeze over. It seems probable that the Gulf Stream strikes most directly upon this part of the island. A cable could be landed in Faxe Bay with ease and security, and probably to the South and West of Reikiavik. I was also informed that a telegraphic wire could not be carried overland along the South coast, on account of the many wide rivers, which bring down ice in the spring season. Neither could it be conveyed at a moderate distance inland, as glaciers abound; but beyond these glaciers and mountains, and near to the North shore, it could be effected.

Five days of calm weather enabled us to complete the soundings

across to within twenty-five miles of Cape Vallöe, on East coast of Greenland, nearer approach being barred by closely packed ice.

The soundings generally were very regular, the greatest depth (1,572 fathoms) being found in mid-channel; but on a near approach to the Greenland shore a very sudden change was experienced. Here we passed from a depth of 806 fathoms to 228 fathoms, in a distance of three miles and a quarter.

Keeping close in to the ice (which formed a margin, about twenty-five miles wide, to the coast), we sounded to the southward nearly as far as Prince Christian Sound, when a gale of wind compelled us to stand off shore. From this date (19th July) until 18th August we were unable to proceed with our soundings; gales of wind and vast quantities of ice prevented us from doing so near Cape Farewell. Ice barred all approach to Frederickshaab, in lat.  $62^{\circ}$  N., where a collier was directed to meet us; and after repeated fruitless attempts to get into a more southern port, we entered Goodhaab, in lat.  $64^{\circ}$  N., on 7th August, towing in our collier, which we had met with off Frederickshaab a few days previously.

Gales of wind had been experienced on the 22nd, 23rd, 24th, 25th, 26th, 27th, and 29th July, also on 5th August. With great difficulty we threaded our way into port through the ice, where we found six vessels unable to get out; and within twelve hours after our arrival the ice again packed in so closely that an active man could have walked on shore over it. I was informed here that so much ice very rarely visits the coast. Goodhaab Fiord never freezes over, but this, perhaps, is mainly owing to the strength of the tide. It is usually quite free from ice between December and June or July, when the "great pack" (or "Spitzbergen ice," as it is sometimes called), drifts up from Cape Farewell, and more or less obstructs navigation for about one month; but some years are so favourable that none is seen, as in 1857. The present year it came in very late, not arriving until 18th or 20th July. The Danish provision ship came and went without obstruction in May.

Having taken on board the coals and rated chronometers, we sailed on 13th August. Mr. Reed, Master and Assistant-Surveyor, aided by some of the officers, had made such survey of the harbour and its approaches as the ice and our limited stay permitted.

We found Frederickshaab and the whole coast to the southward still blockaded by ice, and were obliged to commence, on 18th August, our line of soundings between Cape Farewell and Hamilton Inlet, in 1,175 fathoms, and forty-five miles off shore. Very indifferent weather now prevailed, retarding and rendering our sounding a matter of difficulty; but on 24th August we anchored in Indian Harbour, Hamilton Inlet, having completed a very fair line of soundings from Greenland.

The changes of depth were found to be gradual, and the greatest depth 2,032 fathoms.

From 24th until 31st August was spent in an examination of the inlet, which is considerably narrower, has less depth of water at its

mouth, and penetrates further into the interior than we had been led to suppose. The distance from Indian Harbour, at its mouth, to North-West River, at its head, is 118 miles. All this inlet was rapidly explored, the main channel for about half its entire length sounded, and the whole laid down by Mr. Reed with sufficient accuracy for ordinary purposes; but these soundings are not nearly sufficient for the requirements of the proposed cable, as we found the depth to be very irregular, and seldom sufficient to secure a cable at the bottom from icebergs. It may, perhaps, be true that the large icebergs seen off the mouth of the inlet are at all times kept out by the flow of water from it, so as never to ground; but with my present knowledge of its depths I would not recommend a cable to be brought there. A complete survey is requisite, and may prove that the shoal water and reefs of rocks, which appear so intricate to us at present, can be avoided.

It is reported that large icebergs rarely drift into the mouth of the inlet, and only during easterly gales of long continuance, and that no icebergs ever come inside the Hern Islands.

I was told that the deepest channel lay to the North of George Island, and between it and the Hern Islands. This is also the widest channel, measuring not less than five miles.

Between the 1st and 17th September the *Bulldog* went to Sydney, completed coals, rated chronometers, and returned to Hamilton Inlet.

Some lines of soundings were carried to seaward, to the E.S.E., N.E., and North, and prove the existence of a great bank off Hamilton Inlet, extending southward to Newfoundland, and eastward about 110 miles; but about sixty miles to the North it terminates abruptly, where, in a distance of seven miles, we passed from 148 fathoms to 950 fathoms; over this bank we found the depths to vary between 100 and 200 fathoms.

At Indian Harbour I was informed by Captain Norman, a summer resident from Newfoundland, that the deepest water upon the coast was off Cape Webuck (or Harrison) at the North side of Byron Bay. My soundings tend to confirm this statement; but want of time and bad weather prevented me from examining a small bay and a river\* immediately to the South of Cape Webuck, about which I obtained some information, and which I was the more anxious to explore, as I considered the small depth of water in the mouth of Hamilton Inlet unsatisfactory. I was, however, informed that the ice is not kept out from Byron Bay by the discharge from large rivers as it is from Hamilton Inlet. To the North of Cape Webuck the coast is said to be extremely rocky and comparatively shoal.

I left Indian Harbour on 17th September, much disappointed at not having heard of the *Fox*; and being desirous of ascertaining where the cables were to be landed in Greenland, in order to carry deep-sea soundings into those positions, I determined to visit Julian-shaab.

\* Said to be a very considerable one.

Additional soundings and specimens of the bottom were obtained when recrossing to Greenland, and Julianshaab was reached on 29th September.

No information could be obtained there respecting the *Fox*. The season was very remarkable for the great quantity of ice which encumbered the shores, and had hitherto prevented vessels from approaching Julianshaab; in fact, so much ice had not been known for nearly thirty years. Upon inquiry I was informed that the large Fiord of Tessermiut, immediately to the South of Nennortalik, was the most likely place to find security for a cable, that icebergs never came into it, and that there would be found ample depth of water from it out to sea; also that near to Nennortalik secure anchorage, in moderate depth, would be found in a large bay, and also anchorage up in the fiord.

The metamorphic rock of South Greenland is frequently traversed by broad trap dykes of far less durable character. These dykes are occasionally seen in the faces of cliffs, and so eroded as to form deep cuts or chasms leading down into the sea.

It has been suggested to select one of these natural fissures in some cliff which the icebergs do not approach, and where the depth is much too great for ordinary pack-ice to ground; and either to fend off this floating ice by means of chains secured across, or to build up the fissure with stone and cement, and so afford the cable within it undoubted security.

I have frequently seen these rotten trap-dykes, varying in width from a few feet to several yards, traversing almost perpendicularly the faces of lofty cliffs. I consider them well adapted to afford the requisite security for the shore end of a cable.

A plan of the little harbour of Julianshaab was made by Mr. Reed during our short stay; and on the 3rd October I put to sea, intending to sound into Tessermiut Fiord, should the ice permit. But it was with difficulty that we got out, for a S.E. wind had brought up much more ice from Cape Farewell, and prevented our approaching Tessermiut Fiord or any part of the adjacent coast within forty miles; and in pressing through this loose ice we sustained considerable damage to our cutwater and paddlewheels. It was, moreover, evident that an early and severe winter had set in, snow fell almost daily, and the nights were already twelve hours long, so that ice-navigation was at an end.

For the purpose of beginning the line of soundings to Rockall, I approached the East coast of Greenland once more. On the 8th October we met with so little ice near the entrance of Prince Christian Sound that we commenced sounding within four miles of some islets lying close to the shore. But that night a storm of unusual violence arose, which blew steadily from N.E. for three days. On the 9th, from 7h. a.m. until 1h. p.m., no hurricane could have blown harder, and for thirty hours we were compelled to lie-to under bare poles, as canvas could not have withstood its force for a moment.

We gradually drifted southward of Cape Farewell and clear of the



land, and the engines were kept going with a view to avoid icebergs; but most fortunately none were seen whilst the storm was at its height, as the engines seemed to have hardly any effect upon the ship. We suffered perhaps less than might have been expected from such a violent storm; but we lost the jibboom, carried away the bowsprit and tiller, had one quarter-boat washed away, the other quarter-boat and stern-boat were badly stove, the sponson floorings were all washed up, although constructed of 9-inch beams, portions of the bulwarks and paddleboxes were also washed away.

We arrived at Reikiavik on 19th October, having sounded along the line between Greenland and Rockall as far East as longitude 26° W. But these soundings were necessarily wide apart, as the stormy weather afforded but few opportunities; yet they have peculiar importance, since where we expected to find 2,000 fathoms we sounded in 748 fathoms; and from a depth of 1,260 fathoms several starfish (*Ophiocoma*) were brought up alive, having clasped their slender arms round that part of the line which lay on the bottom.

At Reikiavik we embarked (by means of our paddlebox-boats) 181 tons of coals, which had been stored for us on shore. The *Fox* had sailed on 30th August, and a letter from Captain Young informed me of his intention to go first to Julianshaab, in order to obtain an interpreter for the East coast of Greenland.

After sailing from Reikiavik, on 28th October, we experienced a constant succession of foul winds, and at times such stormy weather as to suspend our sounding for days together. On 8th November we carried our line of soundings on to the Rockall Bank; and on the 9th obtained bottom with 1,310 fathoms, about mid-channel between it and the Vidal Bank.

The wind still continuing directly adverse, and our coals being almost expended, I was compelled to make sail, and I have gladly availed myself of the leeward position of this port (Killybegs, County Donegal), which was the only one we could fetch.

As the weather we experienced subsequent to the equinox has been remarkably stormy, and has proportionably hindered or retarded our soundings and surveying operations, I may mention that during the succeeding six weeks we experienced strong gales of wind on the 21st, 22nd, 24th, 27th, and 28th of September; 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 15th, 16th, 19th, 21st, 22nd, 29th, 30th, and 31st October.

Throughout our cruise we have experienced little else than disappointment from the instrument (a modified Brookes) supplied for the purpose of obtaining specimens of the sea bottom. Its valve would not always close, and the quantity it is capable of taking up is very limited.

At a very early stage I had a conical cup made, such as Commander Dayman used, and which answered well in soft bottom and moderate depths, where a detaching weight was not necessary. Subsequently, the zeal and ingenuity of Mr. Roughton, Chief Engineer, and Mr. Steil, Assistant Engineer, and Dr. Wallich, Naturalist, supplied simple

and efficacious means of bringing up bottom in larger quantity; and not only the superficial layer of impalpable mud, but material from beneath it, generally differing in colour and tenacity, and stones of more than an inch in diameter.

I am chiefly indebted to Mr. Steil, whose double-scoop machine was the first to achieve this great success. Others have since been made or projected, but too late in the voyage either to aid us materially, or to prove fully their respective merits; nor have we the means on board of making them in such a manner as to afford them fair play. But enough has been accomplished to show that by their means as much of the ocean bed, even from the greatest depths, may be taken up as a man upon the sea shore could scoop up with both hands.

During the rough weather, of which we have latterly had so much, the tapered whale-lines were indispensable. The cod-line of Messrs. Newall has answered admirably: on one occasion it brought up the iron sinker of 118lbs. weight from a depth of 1,913 fathoms. I would suggest that the form of this sinker (which is somewhat pear-shaped, with the small end downwards) be altered to that of the detaching weight, which is nearly cylindrical, the large end being downwards, as our experience proves that this weight, although considerably lighter, descends more rapidly.

Since our return to England, Mr. Steil's sounding apparatus for bringing up a fair quantity of the bottom has been made in Portsmouth Dockyard, and deposited there as an exact model. Also an improvement upon it, named (in compliment to the inventors and to the officers of the ship generally) the "Bulldog Sounding Machine."

---

THE STRAIT OF BANKA COMPLETELY DESCRIBED.—By Mr. W. Stanton, R.N., Commanding H.M.S. "Saracen."

*Ship Charlotte Jane, Singapore,  
November 21st, 1860.*

Dear Sir.—Being persuaded that you are at all times ready to give publicity to any information calculated to benefit the shipping interest of a great nation such as England, would you allow me, through your columns, to bring to the notice of commanders of ships when navigating the strait of Banka, the advantages to be derived by adopting the new channel recently surveyed by Mr. W. Stanton, R.N., commanding H.M.S. *Saracen*.

Prior to my leaving England, I obtained the new chart of the Stanton Channel, a glance at which was sufficient to convince me of its superiority over that of the Lucepara Passage, and being furnished with ample directions in the *Nautical Magazine* for February, 1860, I resolved on reaching that far to give it a trial.

On drawing towards the Straits there were a number of vessels in

sight, all steering for the Lucepara Passage. I adopted the new route and stood over for the Stanton Channel. At six that evening anchored at the entrance. The next morning the wind was dead against us, but the tide being favourable, I wayed and turned to windward. In the course of the afternoon a favourable breeze sprung up, which enabled us to stem the ebb, and by midnight I was abreast of Lalary Point; had a good run through the Straits, and no occasion to let go an anchor after getting underway, although at the time I was there it was the change of the monsoon, when frequent calms often render the passage a very tedious affair. The great breadth of this new channel gives vessels ample room to turn to windward, and Mr. Stanton's remarks with reference to the tides I found correct. Being becalmed for several hours, I had an opportunity of observing the direction in which I was drifting, and found the ship to be setting fair through the channel. I am of opinion that ultimately it will be the high road in and out of the Straits, as no stranger nor even those who only make a voyage annually, would, I think, take the intricate passage of Lucepara when an excellent channel, nearly three miles wide, is before them.

I may add that two vessels left Anjer with me; we parted company off the Two Brothers in the Java Sea. I reached here thirteen days before one and fourteen days before the other. I may also state that having many of my crew sick, it was important for me to reach my destination as speedily as possible, there being but few hands to work the ship.

In offering these brief remarks, I cannot but express how indebted I am (and think seamen in general will be) to Mr. Stanton, R.N., and the officers and crew under his command, in completing the survey of this excellent channel, so long left unheeded.

I am, &c.,

E. G. P. MARCH.

*Commander of the ship Charlotte Jane.*

*To the Editor of the Nautical Magazine.*

The foregoing is a gratifying proof of the beneficial assistance of the *Nautical* in so soon turning the valuable labours of our surveying officers to good account. We have always been of opinion that the high roads through straits and narrow channels should be clearly defined and well explored. Such a service has here been well performed in one of the most frequented thoroughfares for ships in the Eastern Seas on their way to Singapore or China, and we now add to our correspondent's letter the remaining portion of Mr. Stanton's well conveyed description of the strait of Banka, along with the former to which he has alluded, thus saving the necessity of referring to two numbers to those of our readers who may be destined for that navigation.

*The Banka Shore—Southern Entrance of the Strait.*—Vessels from South for Banka Strait by the Stanton Channel will recognize Mount St. Paul by its flattened summit, with nipples on it of nearly

the same elevation, and Gadong and Toboe Ali lama by their high peaks. The first has a gradual acclivity on its South-eastern shoulder to a peak 990 feet in height, with two others nearly as high, the western one terminating in a lower spur in the direction of Gadong Hill.

When West of Puni Island, the eastern peak of St. Paul is hidden, and the western one then appears the highest, and forms, with the N.W. brow, a saddle hill. Gadong is a pyramidal peaked hill, 593 feet high. Toboe Ali lama Peak is less elevated, but similar in shape to Gadong, 512 feet high; but they all appear as islands when above fifteen miles distant.

In clear weather Mount Padang will also be visible. The highest peak of it (2,217 feet) is quoin shaped.

Approaching Banka the two small Dapur\* Islands will be seen connected at low water by rocks; the highest (120 feet) has a coral sandy beach. Between it and Baginda Point, with a small round hill over it, the land, except a few hillocks, is low, and (as it is throughout Banka Strait) entirely wooded and bordered with extensive mud banks.

A channel, half a mile wide, separates Dapur Islands from their point; from which to Nangka† Point the mud flat close to the shore shows several white rocks.

Nangka Point is distinguished by a round hillock, 264 feet high, the land receding from Toboe Ali Bay, with its low shore showing sandy beaches inside the mud flat, which there reaches two miles off shore.

Toboe Ali Fort, with its red roofed barrack, near which is Sabang village of 600 Malays and Chinese, stands on a mound 40 feet high, at the left point of entrance of a small river that dries out three cables' length from its mouth. Water and wood may be had but nothing else; the former up the river, or at a small stream half a mile to the eastward of it, from *half flood to half ebb*. A Dutch Administrator and a Captain with a few soldiers are at the fort.

There is anchorage off Toboe Ali Fort in 4 fathoms, mud, with Toboe Ali lama Peak S.E.b.E.  $\frac{1}{2}$  E., and Gadong Peak on with the fort N.E.  $\frac{1}{2}$  N. Small vessels may anchor inside this berth, as the soundings are regular: but southerly and south-westerly winds throw in a heavy swell and landing is then difficult. Toboe Ali Point is marked by white rocks, and a conspicuous tree on its summit, which is 213 feet high, and visible 14 miles off.

From this point the land forms a deep bay to Gosong Point, where a small stream falls into the sea. Then from Gosong to Laboh‡ Point the land is higher, as much as 250 feet, with rocky points and sandy beaches, sometimes rocky close to the shore.

\* Dapur, Cooking place. Prahus in passing generally land to catch turtle, as it is the only place in Banka Strait where they are seen.

† Nangka, the jack fruit (*artocarpus integrifolia*).

‡ More probably Labuh—an Anchorage.

Puni Island, midway between these, is 47 feet high, its base composed of granite rocks.

Laboh Point from the S.E. has a shelving appearance, with off-lying white rocks, which when seen from the westward appear like a village, contrasting as they do with the green point. Prahus frequently anchor there.

The Parmassang Range will be seen rising gradually to a flat top, with two lower peaks. The Banka and Panjang Hills may be known by their wedge shape, and Wooded Hill by its isolated position.

The shore between Laboh and Dahun Points is low and covered with mangroves; with a range of hillocks parallel to it, 230 feet high. In this extent are several small rivers; and two miles N.W.  $\frac{1}{2}$  W. of Laboh Point, near the shore, is a remarkable square tree, 167 feet high, conspicuous from being higher than the rest, and in clear weather is seen twelve miles off, like a ship under sail.

At Dahun Point the land becomes higher, with sandy beaches and rocky points; at four and a half miles to the N.N.E.  $\frac{1}{2}$  E. of the point, is Wooded Hill, (round,) 315 feet high, conspicuous from the trees on it, and no other hills near it. The rocks West of Dahun Point, excepting Pulo Dahun, are covered at high water. The latter is thirty feet in height, and remarkable from its solitary tree, whence its name Dahun, in Malay meaning leaf or bough.

Panjang or Long Hill rises from the shore between Dahun and Banko Points, its highest or eastern end 316 feet above the sea, with a stream of fresh water close to its North side. The coast between it and Pulo Besar is low with mangroves, and several ledges of rocks off it.

Pulo Besar, three cables long and 63 feet high, is nearly joined to Banka Point by rocks. The land West of this point forms a bay; the point is as high as Pulo Besar, and at a mile and a half North rises Banka Hill, which from S.E. is similar in shape to Panjang Hill, but is highest at its western extreme. From the N.W. it shows a flat top, with three clumps of trees on it, and is 256 feet high.

Lalarie or Lang-kong Point is 68 feet high, having a bold appearance from the trees on it.

Casuarina Point, so called from the trees on it, is about midway between Lalarie and Brame Points. The coast between is low, with sandy beaches at high water; the hills, three or four miles inland, are 300 or 400 feet high.

Brame Point, from the Parmassang Range, has a peak of 505 feet over it, seen conspicuously from the northward and southward.

Tambaga or Copper Rocks, so called from their reddish colour, are three small rocks, extending about a cable East and West. The western rock (highest) is four feet above high water, with Second Point bearing W.  $\frac{1}{4}$  N. five miles and three quarters from it, and Brame Point N.b.E. three miles. Shoal water, about half a mile outside, reaches nearly half a mile northward and two miles and a half to the southward of it, forming on its eastern side a channel three quarters of a mile wide.

Water may be had from a stream about half a mile northward of the Tambaga Rocks, from half flood to half ebb, after which a boat cannot approach it.

There is less water on the Mintok Bank than given in the Dutch chart, there being only two fathoms at low water near the S.E. extreme. A temporary triangular wooden beacon has recently been placed on the Hodji and on the Brom Brom Rocks.

A red buoy bearing a staff, with the letters F.H. on a vane, is moored in 13 fathoms water, three cables and a half to the S.E. of the Frederik Hendrik Shoal, and may be seen about three miles from it. Bata-karang Point bears W.b.S., Monopin Hill E.b.S., and Kalian Point S.E.b.E.  $\frac{1}{2}$  E. from it; but as the strong tides frequently displace it, vessels are cautioned not to depend on it, and not to approach nearer than 14 fathoms to the western side of the shoal.

*The Sumatra Shore.*—The land of Sumatra is low in Banka Strait, and, excepting the points, presents no remarkable features. The points must be passed carefully, as the bank off them is steep; the lead is no guide, and the land should not be approached within a mile and a half, or in a less depth than 10 fathoms.

Between the points, except on a spit projecting from the main bank, six miles and a half to the northward of Second Point, and also between Fourth and Bata-karang Points, the soundings gradually shoal to 5 fathoms close to the dry mud bank of the shore.

The spit North of Second Point extends a mile and a half from the mud flat of the shore, and then S.E. for two miles, with a depth from  $2\frac{1}{2}$  to 3 fathoms, mud, on it, and from 4 to 5 fathoms between it and the flat; from its North extreme Second Point bears S.S.E. eight miles, and Parmassang Peak E.b.S. twelve miles and a half; Second Point should not come East of S.b.E.  $\frac{1}{2}$  E. in passing it, until Parmassang Peak bears E.S.E.

After passing Fourth Point it should not be brought East of S.E.  $\frac{1}{2}$  S., as the bank is steep, with 9 and 10 fathoms close to the mud, and when Monopin bears N.b.E.  $\frac{1}{2}$  E., a more northern course may be taken.

*Banks and Channels.*—The Stanton Channel, between Lucipara and Banka, nearly three miles wide in its narrowest part, and with a depth varying from 7 to 20 fathoms, will be found to possess many advantages over that of Lucipara, being a mile wider, easy to approach by well defined hills on Banka, and adapted for the largest ships at any time of tide; advantages which Lucipara Channel does not possess. The island of Lucipara also is only a mile long, and no marks can be given to avoid rocks to the southward and eastward of it.

The Stanton Channel being deeper than that of Lucipara, admits of the sandy banks being recognized by the water on them. The tide also runs more regularly in its course through it, enabling vessels in calms to drift through, which the Lucipara\* Channel does not admit.

The wind in the N.W. monsoon comes off the Banka shore, and

\* Lucipara, said to be corrupted from Pulo Sippah, Betel-quid Isle.

land breezes generally blow at night. A strong N.E. land wind has been experienced in the Stanton Channel in the S.E. monsoon, when in the Lucipara Channel the wind was blowing directly through from S.W.

The depth between the Sumatra coast and the Lucipara shoals varies but little; and it is stated that in January, February, and March, when the N.W. monsoon is at its full strength, the southern current runs from fourteen to eighteen hours at 2 to  $2\frac{1}{2}$  knots, which an indifferent sailer could scarcely stem. It is also said, that in the latter part of the S.E. monsoon S.W. winds are frequently strong, with much rain; being against vessels bound southward through the Lucipara, but fair in the Stanton Channel.

The Stanton Channel lies along the S.W. shore of Banka, nineteen miles long, and nearly three miles wide at its narrowest part, with a depth, mid-channel, increasing gradually from 7 fathoms at its S.E. to 20 fathoms near its N.W. entrance. Its approaches from the southward are marked by Mount St. Paul, and the conical hills of Gadong and Taboe Ali lama,\* and in clear weather by the more distant Padang range, 2,217 feet high; and the water being deep within half a mile of the Dapur Islands, strangers may boldly close with the land. Prominent points and hills on the Banka coast will enable a vessel at any time to ascertain her position.

The channel is bounded by narrow sandy banks extending in a N.W.b.W. and S.E.b.E. direction, with mud and sand between. The two marking the western boundary of the channel are named Smitz and Melvill Banks, after the late Lieutenants Smitz and Melvill of the Dutch Royal Navy, well known to seamen by their work in the Java Sea.

Smitz Bank is a narrow ridge formed of four smaller banks, and is fifteen miles long, with 3 feet at six miles, 9 feet three miles from the N.W. end, and two patches of 3 and  $2\frac{1}{2}$  fathoms to the S.E. of them.

Panjang Hill bearing N.E., leads N.E. of Smitz Bank, between it and the Nemesis Bank, in 6 fathoms at low water. Gadong Peak on with Toboe Ali Point N.E.  $\frac{1}{2}$  E., or Lucipara S.W., clears the S.E. end in 4 fathoms; and Lalarie Point N.W.b.W., or not approaching the bank in a less depth than 10 fathoms, clears the N.E. side.

Melvill Bank, five miles long, and nearly half a mile broad, is a quarter of a mile East of the S.E. part of Smitz Bank, with 7 and 8 fathoms between. The shoalest part of this bank is near its N.W. extreme, about two miles long, with 2 to 3 fathoms on it. At the North end, in 5 fathoms, Laboh Point is N.E.b.E.; and the bank is cleared to S.E. in 7 fathoms by this point bearing N.b.E.  $\frac{1}{2}$  E.; and to the eastward in 8 fathoms by not opening Parmassang Peak West of Banka Hill further than N.W.  $\frac{3}{4}$  N.

Between these banks and Lucipara there are others lying in the same direction, separated by narrow deep channels; but so narrow that no marks can be given to clear the banks: they are useless.

\* Lama, Old, Former.

The bank forming the eastern limit of the Stanton Channel is 13 miles long, and nearly a mile across at three miles S.W.b.S. of Laboh Point, the broadest and shoalest part. It consists of three smaller nearly connected banks, with 2 to 3 fathoms on the north-western and south-eastern, and only  $4\frac{1}{2}$  feet on the middle one. The N.W. extreme is separated from a spit projecting from the muddy shore at two miles S.S.E. of Pulo Dahun, by a narrow channel of 6 fathoms.

Gadong Peak on with Toboe Ali Fort, bearing N.E.  $\frac{1}{2}$  N., clears the S.E. part of the bank in  $4\frac{1}{2}$  fathoms to the southward; Dapur Island S.E.b.E.  $\frac{3}{4}$  E. to the West; and the Hummock kept open to the westward of Pulo Besar N.W.  $\frac{3}{4}$  N. clears the West side of the N.W. extreme of these banks.

There is a small sand bank one mile to the West of the S.E. extreme of the Eastern Bank, but having not less than  $4\frac{1}{2}$  fathoms at low water it is not dangerous.

Eastward of the Eastern Bank along the coast of Banka there is an inner channel nearly a mile wide, with 4 to 6 fathoms water in it, but being full of shoals is only fit for small craft. Dapur Island, bearing S.E.b.E., leads nearly mid-channel through it.

There are also two openings into the main channel through the Eastern Bank of 5 and 4 fathoms; the former with Pulo Dahun N.N.E.; the latter and southern one with Pulo Puni and Gosong Point in one, E.  $\frac{1}{2}$  N.

The Nemesis Bank, almost mid-channel between Puni and False First Points, is a sandy ridge of about nine miles long, N.W.b.W. and S.E.b.E., with 3 to 10 fathoms on it. The shoalest parts are two patches of 3 fathoms, about two cables long, on one of which the French frigate *Nemesis* grounded. They lie E.S.E. and W.N.W. from each other, half a mile apart, and from the western patch Lalarie Point is N.N.W.  $\frac{3}{4}$  W., four miles and three quarters, and False First Point S.S.W.  $\frac{3}{4}$  W., four miles and a quarter.

Casuarina Point kept open of Lalarie Point N.b.W.  $\frac{3}{4}$  W. leads West of these shoal patches, in 14 fathoms water. The Hummock N.b.E.  $\frac{1}{4}$  E., or False First Point S.W.  $\frac{1}{2}$  S., leads eastward; whilst Lalarie Point N.W.  $\frac{1}{2}$  N. clears them to the northward. There is another patch of 5 fathoms two miles from the S.E. extreme of the bank, with False First Point W.  $\frac{1}{4}$  S., and First Point S.b.W.  $\frac{1}{4}$  W., distant three miles and a half.

*Winds and Tides.*—In the S.E. monsoon it is H.W. at F. & C., at Toboe Ali Point, on the Banka shore, at 8h. 30m. p.m. The ordinary rise at springs is  $10\frac{3}{4}$  feet, but sometimes 12 feet. The highest tide is generally two days after full and change, and the rate at springs  $2\frac{1}{2}$  knots. The flood stream sets N.W. for about twelve hours, and the ebb the same period in the opposite direction, but both are sometimes influenced by the strength of the monsoon. A strong breeze from S.E. lengthen the flood stream to fourteen hours.

At Laboh Point it is H.W. at F. & C. at 11h. p.m., the rise 10 feet at ordinary springs.



After rounding Lalarie Point in the S.E. monsoon the flood runs N.N.W., and the ebb S.S.E. along the Banka shore.

The time of high water at Laboh Point being  $2\frac{1}{2}$  hours later than at Toboe Ali Point, in the southern part of the Stanton Channel, for a few days after full and change, (as there is generally twelve hours flow and ebb,) the tides will be found to run in one direction all night, and in the opposite direction all day, at a rate of  $2\frac{1}{2}$  or 3 knots. As the current sets directly through, the flood N.W.b.W. and the ebb S.E.b.E., vessels in light airs may safely drop through.

In the N.W. monsoon it is H.W. at F. & C. at the Nangka Islands at 7h. a.m., rise about  $9\frac{1}{2}$  feet. At Kalian Point, near Mintok, it is H.W. at 8h. 17m. a.m., rise  $12\frac{1}{2}$  feet. Eddies and small races will be found near the Nangka Islands, caused by the wave of flood from the China Sea meeting that from the southward.

Between Bata-karang and Fourth Points the freshes from the river after heavy rain accelerate the current in Banka Strait, as it sets over to Kalian Point, until nearly mid-channel. Vessels sometimes take advantage of this to complete water, as it is frequently quite fresh on the surface. In the N.W. monsoon a S.E. current will always be found, following the trendings of the bank along the Sumatra coast, whilst on the Banko shore the tidal stream is more regular.

*Navigation of the Strait.—Directions for Stanton Channel from the Southward.*—Vessels entering Banka Strait by the Stanton Channel from South, on recognizing Mount St. Paul and Toboe Ali lama Peak, should approach the latter on a northern bearing, and when about three miles South of the Dapur Islands should steer N.W.b.W. to abreast Banka Point; then run along the Banka shore, passing Lalarie Point at about a mile and a third's distance on to Second Point. When Pulo Dahun bears North be very careful to avoid the spit extending S.E. from the shore mud flat, between that island and Banka Point. The Mamelon or Hummock, N.W.  $\frac{1}{2}$  N., well open West of Pulo Besar, clears this spit and the whole mud bank along the Banka shore; thence to the Tambaga Rocks the bank may be avoided by not shoaling the water to less than 10 fathoms.

Vessels working through the Stanton Channel may approach the Dapur Islands on the South to half a mile. Between them and Toboe Ali the mud flat of the shore may be approached until Pulo Dapur bears S.E.b.E.  $\frac{1}{2}$  E.; but when Gadong Peak is N.E.  $\frac{1}{2}$  N.; or on with Toboe Ali Fort, Pulo Dapur must not come southward of S.E.b.E.  $\frac{1}{2}$  E. to clear the S.W. part of the Eastern Bank.

By not opening Parmassang Peak further West of Banka Hill than N.W.  $\frac{1}{2}$  N., the Melvill Bank will be cleared, and when Laboh Point is N.E.  $\frac{1}{2}$  N., by keeping in more than 10 fathoms will clear all the banks on both sides. Lalarie Point N.W.b.W. clears the N.E. part of Smitz Bank.

The shoals of the Nemesis Bank should not be approached to less than 10 fathoms until Casuarina Point opens of Lalarie Point; and in rounding the latter be careful not to shoal the water under 10 fathoms, as the bank is here steep. Avoid the Tambaga Rocks by the same

rule, and, until a more complete examination of the Banka shore is made, now work up from Second Point along the Sumatra shore.

Adopting Stanton Channel from the West, when abreast of Lalarie Point a mile and a half off, E.S.E. leads nearly mid-channel between the Nemesis Bank and that of the Banka shore; but when Panjang Hill bears N.E., keep more southerly, so as to pass mid-channel. When Dahun Point bears North, or the Hummock N.W.  $\frac{3}{4}$  N., open of Pulo Besar also leads direct through.

Vessels working through Stanton Channel from West in the S.E. monsoon, must take the precautions already mentioned, avoiding the shoalest part of the Nemesis Bank; they will be passed when the Mamelon bears N.b.E.  $\frac{1}{4}$  E. If a flood tide be running strong, anchor in 8 or 9 fathoms, sand, on the Nemesis Bank, the water on both sides being deep,) and wait the change of tide or the chance of the land breeze, which comes either at night or early in the morning from the Banka shore. When Panjang Hill bears N.E., Lalarie Point must not be brought North of N.W.b.W. to avoid Smitz Bank, and the precaution of not approaching the banks under 10 fathoms until Laboh Point bears N.E.  $\frac{1}{2}$  N., will enable any vessel to work through.

Anchorage may be found anywhere in the Stanton Channel, but ships bringing up with their kedje or stream anchors must always be prepared to let go a bower, as dangerous squalls come on with heavy rain, thunder, and lightning, especially at the change of the monsoon, and generally last for about an hour.

*Lucipara Channel.*—The coast line bordering the Lucipara Channel is formed of mangrove jungle, and was found to extend considerably more eastward than shown in the Dutch chart. This extension has evidently taken place since their former survey in 1818, and it may be attributed to the sediment from the numerous small rivers in that vicinity affording more soil for the growth of the prolific mangrove. The contour of the dry mud was obtained and sounded close to at the springs, and will be a guide to show any further extension.

The Dutch naval officers have evidently been long acquainted with this fact, and they state that the whole coast of Sumatra facing Banka Strait in the bights, and wherever mangrove is found growing, is annually progressing outwards. This remark applies to the bays, and more especially to the outlets of rivers, but not to Eerst, Tweede, and the other principal points where a different kind of tree will be found, and the rapid current sweeping round these abrupt points prevents any further extension taking place.

Parmassang Peak in line with Eerst Point, bearing N.b.W.  $\frac{1}{2}$  W., instead of leading nearly mid-channel between Lucipara Island and Lucipara Point, (according to former charts,) will now take a vessel not more than a third of a mile from the 3-fathom edge of the bank off that point. In running through from the southward this mark should be left when Lucipara Island bears about E.S.E., and by keeping the Mamelon Hummock on a N.  $\frac{3}{4}$  W. bearing, it will lead through; but as the banks bounding the eastern side of the channel have also increased, and now form almost one continuous ridge from Lucipara

Island to the Merapie Shoal; and subsequently finding that the narrow part of the channel is from the above cause contracted to a breadth of only a mile and a quarter, Mr. Stanton has no hesitation in stating as his opinion that the Lucipara Channel within a few years will be unnavigable for vessels of large draught.

During the survey of this channel the *Saracen* was much retarded by strong tides, setting to the northward all day, which frequently compelled her to proceed during the night to the southward to regain her ground. No fresh water was found on Lucipara Island.

*Buoy.*—A white conical buoy surmounted by a ball was lying in 3 fathoms, at three and a half cables to the N.W. of the N.W. end of the southernmost bank on the eastern side of the Lucipara Channel. From it Eerste Point bore N.N.W. eight and a third miles, and Lucipara Island S.E.  $\frac{1}{2}$  E. nine miles. No dependence, however, can be placed on its remaining long in one position, owing to the strong tide and many floating trees. The buoy was recently picked up off Mintok, and in the calm weather at the change of the monsoon it will be replaced in its former position.

*Sand Ridges off South End of Banka.*—At the entrance of Banka Strait, in the S.E. monsoon, the ebb tide during the night at springs will be found setting to the S.E.; consequently many vessels, although steering a course for the strait, get set between Pulo Dapur and Tanjong Baginda. This part of the South end of Banka being almost a blank (on the Dutch chart), I decided to survey it, and also to extend my examination in searching for the coral reef, reported as lying fifteen miles from the South end of Banka.

Tanjong Baginda, Mount St. Paul, Lucipara Islands, and the other prominent points offering good objects for fixing our position, we were enabled to extend our soundings twenty miles off the land. When anchored near the reported position of the coral reef, several vessels passed South of us, from one to six miles distant; therefore it was useless to continue the search any further in that direction, as it would have taken the *Saracen* directly in the track of vessels bound for Gaspar Strait, where it is improbable that a reef of this extent should exist, and no other vessels have reported it.

The soundings were found to be very irregular, long sand ridges, with deep water over a muddy bottom between. None of these banks have less than 5 fathoms on them, with the exception of one lying S.E. a mile and a third from Pulo Dapur, where there are several patches of  $3\frac{1}{2}$  fathoms over a sandy ground. At seven miles E.b.S. of these patches, and separated by deeper water, is a bank of  $4\frac{1}{2}$  fathoms, coral and sand, extending in an easterly direction for three miles; it appears to be a continuation of the Dapur Bank, and from its shoalest part Tanjong Baginda bears N.E.b.N. six miles.

At full and change great overfalls were repeatedly noticed, caused by the meeting of the ebb stream from Banka and Gaspar Strait over an uneven bottom. This has also been noticed by other navigators,\*

\* See Horsburgh, vol. ii., page 182. 1855.

and ships were cautioned not to approach the South end of Banka nearer than four and a half leagues. This survey will now give mariners confidence to approach the land to two miles, and enable them at night to know their position by the soundings. As no soundings appear to have been taken by the vessel that discovered the coral reef, and as its position is placed directly in the track of ships bound to Banka and Gaspar Strait, and might occasion great delay to them by unnecessarily having to alter course, I beg to suggest that the reef should be erased from our charts, one of the overfalls already mentioned being probably mistaken for a reef.

The weather was very fine during the survey, and the contrast of a fine working breeze and the clear blue sky, after the muddy water and hot land wind experienced in the strait, produced such a beneficial effect that several of the crew, who were sick, got speedily restored to health. Returning to Banka Strait, wood and water were completed at Toboe Ali, and former observations of the tides were confirmed.

Continuing the survey along the Banka coast of Banka Strait, we sounded inside the 3-fathom line of last year, and fixed the edge of the dry mud bank. There is no appearance of this coast extending like the opposite side, except near the rivers where there is a daily deposit going on.

From the Timbago Rocks, the coast was surveyed forming the deep bay of Sungei Slan to the Nangka Islands, and the dry mud was sounded close to. No water could be procured at these islands, a circumstance which often happens during the S.E. or dry monsoon. From hence proceeded towards Mintok, filling up many vacant places with soundings, completed water, observed the spring tides, and finally nearly finished the survey of the Sumatra coast between Vierde Point and the Sungei Assing.

*Weather.*—The weather during the latter part of July was very unfavourable for boat work, frequently having several days continuous rain and heavy squalls. During the past month light airs and calms were experienced, no rain and a close oppressive atmosphere making the temperature, even for Banka Strait, unusually warm. This has produced great sickness ashore. At Mintok the Dutch have one third of their military force in hospital; but at the other military station, Toboe Ali, situated on the weather side in the S.E. monsoon, there is no sickness. In the other monsoon the northern end of Banka Strait is the healthier. During this cruise the *Saracen* was anchored as far as possible from the mud at night, and the health of the crew was greatly benefitted by filtering the water.

At the commencement of this survey many of the vessels of the China squadron were met with, and supplied with charts and any other information respecting the navigation required; they have all passed through safe, English and French, without a single vessel touching the ground. On the contrary, several fine vessels have recently been lost in Gaspar Strait.

The result of our experience this year proves that a great mistake has been hitherto made by ships working along the Sumatra coast,

where, in the full strength of the monsoon, they have not only a strong wind, but generally an adverse current, to contend with. On the Banka shore, on the contrary, vessels may carry a fair tide all the way through, by starting from either extremity at low water, and frequently find a land wind at night. The land also, after passing Tanjung Tadah, may be safely approached by the lead to the Timbaga Rocks. The *Saracen* has often when sounding worked to windward under fore and aft sails, when clipper ships were compelled to remain at anchor many days on the opposite coast. There is nothing to prevent an indifferent sailing vessel going through against the monsoon in two or three days, whereas by the old route they are often detained several weeks.

*Proposed Lights.*—Two years is the time stated to finish the light tower building on Kalian low sandy point, at the northern end of Banka Strait. It will show a *fixed white* light of the second order, elevated 160 feet above high water, and visible sixteen miles in clear weather. A small harbour light will also be exhibited from the end of Mintok pier, which is also building.

The Dutch intended having another light on Lucipara Island. The resident of Banka and senior Dutch naval officer having requested me to give my opinion on the subject, I have suggested that a lightvessel should be moored about four miles and a half South of Pulo Dahun in the center of the Stanton Channel, and a small light shown from Toboe Ali Fort. The former would guide through from either end of the channel, and a bearing of the fort light lead clear of the banks.

---

#### THE SUMMER PALACE OF THE CHINESE EMPERORS.

The following extract from Lord Elgin's recent despatches and the remarks following it, will always command so much interest, that we consider it most desirable to preserve them.

The destruction of the Yuen-Ming-Yuen Palace, coupled with the exaction, as a step preliminary to negotiations, and in name of compensation to the sufferers, of such a sum of money as could be raised on the spot by the government, seemed to me to be the only combination which fulfilled all these conditions. I had also at one time resolved to require that a monument should be erected at the expense of the Chinese government, stating the circumstances of the arrest and murder of the British subjects illegally captured, who had died from the effects of their ill-treatment in prison, and the penalty which had been inflicted for the deed; but this proposal I finally abandoned for reasons which I have explained elsewhere.

As the destruction of Yuen-Ming-Yuen is, however, an act to which exception may, with great apparent reason, be taken, it is my duty

before closing this despatch to say a few words respecting the only modes of inflicting a specific punishment for the crime in question, which, limited as were my means of action for the reasons above stated, I could have adopted as substitutes for that measure.

I might, perhaps, have demanded a large sum of money, not as compensation for the sufferers, but as a penalty inflicted on the Chinese government. But, independently of the objection in principle to making a high crime of this nature a mere money question, I hold on this point the opinion which is, I believe, entertained by all persons, without exception, who have investigated the subject, that, in the present disorganised state of the Chinese government, to obtain large pecuniary indemnities from it is simply impossible, and that all that can be done practically in the matter is to appropriate such a portion of the customs revenue as will still leave it a sufficient interest in that revenue to induce it to allow the natives to continue to trade with foreigners. It is calculated that it will be necessary to take 40 per cent. of the gross customs revenue of China for about four years in order to procure payment of the indemnities already claimed by Baron Gros and me, under instructions from your lordship and the French government.

Embarrassing questions respecting the occupation of Chinese territory are involved in this arrangement, and I do not think that it would be advisable to bind the Chinese government by engagements which would cause the term of liquidation of these indemnities to be indefinitely extended.

Or I might have required that the persons guilty of cruelty to our countrymen, or of the violation of the flag of truce, should be surrendered. But if I had made this demand in general terms, some miserable subordinates would probably have been given up, whom it would have been difficult to pardon and impossible to punish. And if I had specified Sin-ko-linsin, of whose guilt in violating a flag of truce evidence sufficient to ensure his condemnation by a court-martial could be furnished, I should have made a demand which, it may be confidently affirmed, the Chinese government would not have conceded, and mine could not have enforced. I must add that, throwing the responsibility for the acts of the government in this way on individuals, resembles too closely the Chinese mode of conducting war to approve itself altogether to my judgment. Having therefore, to the best of my judgment, examined the question in all its bearings, I came to the conclusion that the destruction of Yuen-Ming-Yuen was the least objectionable of the several courses open to me, I could have reconciled it to my sense of duty to suffer the crime which had been committed to pass practically unavenged. I had reason, moreover, to believe that it was an act which was calculated to produce a greater effect in China, and on the Emperor, than persons who look on from a distance may suppose.

It was the Emperor's favourite residence, and its destruction could not fail to be a blow to his pride as well as to his feelings. To this place, as appears from the depositions of the Sikh troopers, copies of

which were enclosed in my despatch to your lordship of October 13th, he brought our hapless countrymen, in order that they might undergo their severest tortures within its precincts. Here have been found the horses and accoutrements of the troopers seized, the decorations torn from the breast of a gallant French officer, and the other effects belonging to the prisoners. As almost all the valuables had already been taken from the palace, the army would go there not to pillage, but to mark, by a solemn act of retribution, the horror and indignation with which we were inspired by the perpetration of a great crime. The punishment was one which would fall, not on the people, who may be comparatively innocent, but exclusively on the Emperor, whose direct personal responsibility for the crime committed is established not only by the treatment of the prisoners at Yuen-Ming-Yuen, but also by the edict enclosed in my despatch of the 22nd of October, in which he offers a pecuniary reward for the heads of the foreigners, adding that he is ready to expend all his treasure in these wages of assassination.

The imperial paved roadway from Peking to the Summer Palace issues at the Se-che gate on the West side, and continues with a few windings in the direction of a group of villages of different names, conglomerately called Hai-teen. The stone-way carries you through this group of ugly houses; you emerge on to a broad road with this pavement through its centre; stone garden walls stand on each side of you to the right and left. They enclose the grounds of nobles and imperial connections. You advance, *suiwant le pavé*, across a stone bridge, take a sweep to the left, and the road brings you between two large pieces of water in front of the grand entrance to the Palace of Yuen-Ming-Yuen. It was here under the trees the French encamped.

You advance through the portals, and enter upon a large paved court-yard; in front of you stands the Grand Reception Hall, a large Chinese building, well adorned exteriorly with paint and gilding, and netted under the fretted eaves to keep the birds off; you enter its central door, and find yourself on a smooth marble floor in front of the Emperor's ebony throne. The carving on this throne is quite a work of art. The floor of the throne was carpeted with a light-red cloth, and three low series of steps led up to it, of which the central series was widest, being intended for Kow-Towing on before the Emperor. The left side of the room was covered with one extensive picture, representing the grounds of the Summer Palace. Side tables were covered with books and articles of *vertu*.

On the right of the building were houses after houses well furnished with silks, curious and luxurious of all kinds, most of them having gardens in front. Then were the houses of the retainers. Behind the grand hall was Rockery, and in the rear of that again a large pond, so that a pebbled path, leading over a bridge and taking a semicircular sweep of half the water, had to be traversed before you visited the next hall. The distance was about 500 yards.

This hall was smaller, and not got up with such care; yellow sedan chairs and one mountain chair stood close to the throne. On the right and left there were small rooms adjoining with images of Buddha.

Behind stood another reception-hall, and in rear of that again a third, and on the left the Emperor's private rooms, beautifully got up, with tables strewn with all manner of precious articles, many of which were English or French. The rearmost room was the Emperor's bedroom, communicating with the room in front by a door covered with a blind. A large niche in the wall, curtained over and covered with silk mattresses, served for the bed, and a sloping platform enabled his Majesty to mount into it. A small silk handkerchief was under the royal pillow, and pipes and other Chinese luxuries were standing on tables hard by. The Empress's two rooms were on the extreme left, and, these past, you came again on pebbled paths, carrying you past lakes, into grottoes, through summer-houses, under magnificent trees, until you quite lost yourself in bewilderment.

The Round and Brilliant Garden is the signification of the Chinese name applied to these grounds, but they are more like an extensive park walled round and abounding in all that is most lovely of the Chinese picturesque. Its construction and the accumulation of the precious property it contained must have been the work of centuries.

The Wan-show-yuen or Birthday Garden is situated about a mile west of the Summer Palace. The Emperor's paved road passes close under its wall, and traversing through the village of Tsing-lung-cheaon, winds to the left and leads to another garden called the Ching-ming-yuen (Golden and Brilliant Garden), the walls of which enclose two hills, the one surmounted by a six-storied monument, the Ya-tsing-t'a, and the other by a steepled lamasery in ruins. Some two miles further on, on the side of the west hills, beyond the various villages of the eight banners which speckle the plain, you see the fourth and not the least beautiful of the Emperor's gardens, the Heaug-shan or Fragrant Hills.

It was these gardens and lovely spots that the first division started to destroy on the 18th October. The barbarous treatment shown by the Mandarins to the unfortunate victims that they had trapped at Tung-chow demanded some retaliation on our part, and as a portent of what they might expect unless they succumbed, it was determined to burn and destroy the Emperor's pleasure grounds. The party started at half-past eight, and not many hours had elapsed before the rising columns of smoke betokened the commencement of the work of destruction.

The view of the country below from the hill top in the Wan-show-yuen was most perfect; you looked down on a series of handsome temples, a large lake with a temple standing in its bosom, with a marble bridge of arches stretching from it to the shore; the open country South, with its groups of villages and trees, a tier of hills on the right, and Pekin away in the distance.

The 19th October was the great day of destruction; black masses



of smoke rose continually from the gardens, giving the appearance of a fearful thunderstorm impending. Unfortunately, the houses of the surrounding villages were not spared in the general destruction, and thousands of unhappy subjects had to suffer for the sins of their rulers. The General gave orders to spare the monument as a work of art; all other public buildings in the neighbourhood were destroyed. The Tartars in the different banner villages appeared greatly alarmed, thinking their turn might come next. They turned out in great numbers with warm tea and cake to regale the soldiers on their return from the hill gardens. Before sunset of the second day every place had been fired, and the soldiers were marched back to camp at the Sih-shing gate.

We passed the summer palace on our way back; flames and smouldering ruins debarred our passage every way. We passed the entrance-gate, and watched with pleasure the daring flame curling into grotesque festoons and wreaths, as it twined in its last embrace the grand portal of the palace, while the black column of smoke that moved straightwards to heaven from the already roof-fallen reception-hall, formed a fine deep background to this living picture of active red flame that hissed and crackled as if glorying in the destruction it spread around. "Revenge is sweet." We muttered to ourselves, "Sic transit gloria mundi."

---

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XV.—

*The Times and Season—Life-boat Services—Wrecks: Camilla and Perseverance—Aston's Disc Wheel—The Atlantic and Pacific Cables: French and American.*

The ways of the world, observed the Chairman, since our last meeting, like the weather, in its progress have presented vicissitudes and sudden changes; and it is well for our countrymen that the elasticity of our institutions are such as to affect them but little in comparison with some other countries. He would avoid being political in his remarks, as infringing on their rules, but this he might say with sincerity that he verily believed that the great events which we had achieved abroad, not only in China but in New Zealand, would be beneficial to both of those countries as well as to ourselves. The great barrier of Chinese exclusiveness had been finally broken down. Our Ambassador at Peking and a Chinese Ambassador in London would be events (now in progress of completion) as marvellous as they would be beneficial to both countries, and especially so to the yet benighted Chinese. If to the people of the United States is justly due, as it really is, the opening of Japan, Great Britain, with France, may also justly boast the opening of China to the commerce of the world. New Zealand must also profit from events there; but

he looked with deep sorrow at the condition of parties in the States of North America, which he yet hoped would receive an amicable adjustment.

However, not to travel further out of his course, he had alluded to the weather, which had been more severe in this country than for nearly half a century, and as a natural consequence such a state of things had told most severely on our shipping. He regretted to say that the usual effects of gales on our shores were some terrible wrecks and their attendant loss of life; and no precaution yet adopted seemed to avert that calamity, one that was very well known, but against which provision seemed to be impossible. When these gales were attended with the severe cold which we had experienced how much greater must be the sufferings of our seamen. He was glad to see that our excellent Life-Boat Institutions were so well supported as they appeared to be; and how much they deserved that support would be shown by the following summary of life-boat services during the year 1860:—

1860, Jan. 6.—Fraserburgh Harbour, squally, schooner *Fortitude*, of Cork, Fraserburgh life-boat, put off to assist, but services not required, 6*l.* 10*s.*

19.—Spittal Rocks, heavy sea, barque *Alice Gill*, Banff, Newbiggin, put off to assist, but services not required, 14*l.* 18*s.*

20.—Greenore Point, strong from S.S.W., barque *F. W. Fanning*, Bangor, U.S., Carnsore, put off to assist, but services not required, 4*l.* 8*s.* 3*d.*

22.—Barnett Wharf, heavy gale, W.N.W., schooner *Ann Mitchell*, Montrose, Fleetwood, one man saved, 27*l.* 2*s.* 6*d.*

22.—Off Padstow, terrific gale, ship *James Alexander*, Liverpool, Padstow, crew assembled, 11*l.* 12*s.*

23.—Shell Bank, heavy gale, W.N.W., schooner *Jane Roper*, Ulverstone, Fleetwood, six men saved, 5*l.*

23.—Black Buoy, rough, W.N.W., Austrian brigantine *Macedonia*, Llandwyn, put off and rendered assistance, 8*l.*

24.—Sizewell Bank, strong gale, S.S.E., brig *Pallas*, Shields, Thorpeness, three men saved, 6*l.* 6*s.*

24.—Sarn Badrig, stormy and heavy sea, barque *Sobraon*, Liverpool, Barmouth, put off to assist, but services not required, 12*l.* 3*s.* 6*d.*

24.—Off Portmadoc, S.W. and N.E., unknown, Portmadoc, put off to assist, but services not required, 14*l.*

30.—Arklow Bank, heavy gale and high sea, ship *Ann Mitchell*, Glasgow, Arklow, nine men saved, 8*l.* Wicklow, put off to assist, but services not required, 18*l.* 18*s.* 6*d.*

Feb. 12.—Blackwater Bank, blowing fresh, Austrian vessel *Jellica*, Cahore, put off to assist, but services not required, 14*l.* 6*d.*

17.—Yarmouth Beach, heavy gale, N.E., smack *John Bull*, Yarmouth, Yarmouth (surf), five men saved, 34*l.*

19.—Off Fleetwood, heavy gale, schooner *Catherine*, Newry, Fleetwood, four men saved, 4*l.* 14*s.*

19.—Ayr Harbour, heavy squalls, barque *Niagara*, Shields, Ayr, eleven men saved, 22*l.* 9*s.* 6*d.*

20.—Teignmouth Bar, gale of wind, a barge, Teignmouth, Teignmouth, two men saved, and vessel brought to port, 6*l.* 1*s.* 6*d.*

27.—Penrhyn Point, strong gale, barque *Robert Mills*, New York, Holyhead, put off, but services declined by the vessel's captain, 13*l.*

27.—Penmon Point, gale, N.W.b.W., flat *Dart*, Bangor, Penmon, remained by vessel until weather moderated, 7*l*.

27.—Off Padstow, gale N.W., *English Rose*, Shoreham, Padstow, crew assembled, 2*l*.

28.—Winterton, hurricane, brig *George and James*, London, Winterton, eight men saved, 10*l*. 3*s*.

28.—Scroby Sands, terrific gale, brig *Zephyr*, Whitby, Yarmouth, six men saved, 43*l*.

28.—Irvine Bar, hurricane, N.W., barque *Empire City*, Mobile, U.S. Afr, crew assembled, 2*l*. 10*s*. 6*d*.

March 8.—Off Cullercoats, N.N.E. to N.E., heavy sea, fishing coble *Honour*, Cullercoats, Cullercoats, brought coble and three men safely into port.

12.—Babbicombe, stormy and cloudy, ship *Caroline*, Charlestown, U.S., Teignmouth, put off and rendered assistance, 7*l*.

16.—Palling, heavy sea, schooner *Eliza*, North Shields, Palling, seven men saved, 17*l*. 2*s*.

April 1.—Sarn Badrig, heavy sea, blowing hard, barque *Oberon*, Liverpool, Barmouth, put off and assisted to save vessel and cargo, 6*l*. 10*s*. Portmadoc, fifteen men saved, 17*l*.

9.—Horse Bank, heavy gale, W.N.W., brigantine *Nancy*, Teignmouth, Lytham, nine men saved, 6*l*. 10*s*.

24.—Teignmouth Harbour, strong, very dark, smack *Wonder*, Teignmouth, Teignmouth, two men saved, 11*l*. 8*s*.

May 1.—Blackwater Bank, N.E., ship *Vanguard*, New York, Cahore, put off and rendered assistance, 7*l*. 4*s*. 6*d*.

2.—Lossiemouth, rough, N.N.E., pilot-boat, Lossiemouth, put off to assist, but services not required, 5*l*. 2*s*.

11.—Arklow Bank, S.E., dense fog, screw steam ship *Calcutta*, Liverpool, Arklow, put off and remained by vessel all night, 14*l*. 5*s*.

28.—Scroby Sands, N.W. hurricane, unknown, Yarmouth, put off to assist, but services not required, 14*l*. 12*s*.

28.—Off Filey, terrific storm, yawl *Charles Wesley*, Filey, Filey, put off and brought yawl safely to land, paid by owner.

28.—Corton Sands, W.N.W., storm, brig *Scotia*, Sunderland, Lowestoft, six men saved; sloop *Three Brothers*, Goole, Lowestoft, five men saved, 12*l*. 10*s*.

28.—Off Lowestoft, W.N.W., schooner *Thomas*, Blakeney, Lowestoft, put off, but vessel towed into harbour by steam-tug, 12*l*. 10*s*.

28.—Off Lowestoft, W.N.W., brig *Robert and Mary*, Blyth, Pakefield, put off; crew saved by the Kessingland life-boat, 12*l*. 10*s*.

28.—Off Lowestoft, W.N.W., sloop *Mason*, Goole, Pakefield, put off, but services not required, 12*l*. 10*s*.

28.—Winterton, hurricane, W.N.W., *Æolus*, North Shields, Winterton, crew assembled, 4*l*. 16*s*.

June 2.—Prestatyn, heavy gale, E.N.E., flats *Catherine* and *York*, Liverpool, Rhyl (tubular), put off with the view of rendering assistance, 12*l*. 9*s*. 6*d*.

2.—Off Newhaven, heavy gale, S.S.W., unknown, Newhaven, crew assembled day and night, 4*l*. 13*s*. 9*d*.

3.—Off Newhaven, heavy gale, S.S.W., two schooners, Newhaven, put off, and crew assisted vessels into harbour, paid by owners.

8.—Camber, heavy gale, S.S.W., barge *Georgina*, Milton, Camber, put off with the view of rendering assistance, 6*l*.

8.—Off Whitburn, E.N.E., rough, sloop *Charlotte*, Woodbridge, Whitburn, five persons saved, 7*l*. 7*s*.

12.—Off Alnmouth, S.E. gale, heavy sea, brig *Ann*, Blyth, Alnmouth, eight men saved, 5*l*. 2*s*.

Aug. 19.—Abbotsbury, heavy gale, W.S.W., schooner *Ceres*, Lyme Regis, Lyme Regis, put off and assisted vessel safely into port, 13*l*.

26.—Horse Bank, strong gale, S.W., sloop *Hope*, Dublin, Lytham, put off; crew saved by Southport life-boat, 6*l*. Southport, three men saved, 7*l*. 10*s*.

Sept. 19.—Hopes Bank, East, very foggy, smack *John James*, Isle of Man, Dundalk, put off and rendered assistance to vessel, 5*l*. 7*s*.

Oct. 3.—Outer Barber Sand, gale, N.W., heavy sea, schooner *William and Anne*, Shoreham, Yarmouth, put off; crew saved by Scratby life-boat, 11*l*. 15*s*.

3.—Fraserburgh, hurricane, W.N.W., schooner *Ariel*, Brevig, Fraserburgh, put off, but services not required, 10*l*. 16*s*.

3.—St. Andrew, fearful hurricane, N.W., five fishing boats, St. Andrew, put off and assisted to save boats and crews.

5.—Portmadoc, heavy gale, W.b.S., schooner *Henry Turner*, Pwllheli, Portmadoc, put off, but services not required, 7*l*.

9.—South Tail Bank, stormy North and by West, schooner *Druid*, Aberystwith, Appledore, five men saved, 5*l*. 4*s*.

15.—Silloth, strong gale, S.W., sloop *Active* and schooner *Isabella*, Carlisle, Silloth, put off, but services not required, 4*l*. 12*s*.

18.—St. John Point, gale, S.W., ship *Martha Whitmore*, Richmond, U.S., Tyrella, crew assembled, 4*l*. 12*s*.

20.—Barnett Wharf, heavy gale, W.N.W., barque *Vermont*, Halifax, N.S., Fleetwood, sixteen men saved, 10*l*. 3*s*. 6*d*.

22.—Girdler Sand, fair, barque *Nemesis*, London, Margate, put off and assisted vessel off the sand, 12*l*. 15*s*.

26.—North Bank, very stormy, S.W., schooner *William Keith*, Carnarvon, Barmouth, put off and brought master's wife and child ashore, 12*l*.

Nov. 10.—Filey, heavy gale, E.S.E., brig *Flying Fish*, Whitby, Filey, five men saved, 9*l*. 9*s*.

10.—Palling, strong breeze, E.S.E., brigantine *Artaxerxes*, Exeter, Palling, put off, but services not required, 15*l*. 15*s*.

11.—Teignmouth Bar, strong E.S.E., heavy sea, fishing-boats, Topsham, Teignmouth, put off and remained by fishing-boats, 5*l*. 10*s*.

13.—Goodwin Sands, S.S.E., schooner *Harmony*, Shields, Walmer, put off, but services not required, 7*l*.

14.—Lyme Regis, very heavy gale, S.W., smack *Elizabeth Ann*, Lyme Regis, Lyme Regis, three men saved with great difficulty, 22*l*. 10*s*. 10*d*.

14.—Newhaven, gale S.S.W., very high sea, a steam dredge deepening the harbour, Newhaven, assisted to bring dredge with nine men into harbour, paid by owners.

18.—Scroby Sands, gale and heavy sea, N.N.W., unknown, Yarmouth, put off, but services not required, 11*l*.

18.—North Sand, gale, N.N.W., schooner *Admiral Hood*, Rochester, Yarmouth (surf), six men saved, 16*l*. 10*s*.

23.—Coquet Roads, heavy sea, strong East, schooner *Susan and Isabella*, Dundee, Hauxley, five men saved, 10*l*. 18*s*.

23.—Line Mouth, heavy sea, strong East, schooner *Rose*, Lynn, Newbiggin, three men saved, 14*l*. 4*s*. 6*d*.

26.—Barber Sand, strong E.N.E., brig *Content*, Hartlepool, Yarmouth, put off, but services not required, 11*l*.

Dec. 2.—North Care Sand, strong wind, S.E., brig *Prodroma*, Stockton, Middlesborough, eleven men saved, 14*l*. Seaton Carew, put off, but services not required, 15*l*. 12*s*.

4.—Scroby Sand, strong gale, S.E., lugger *Betsy*, Yarmouth, Yarmouth, put off, but services not required, 11*l*.

11.—Doomed Bar Sand, heavy sea, schooner *Primrose*, Bude Haven, Padstow, put off, but services not required, 8*l*. 10*s*.

The Chairman continued—He regretted to observe that two of our ships of war had been recently added to the list of losses,—that of the *Camilla*, on the coast of Japan, and the *Perseverance*, among the Cape Verd Islands. The only account he had met with of the former had appeared in the prints of the day, and stated that she had been lost, with all hands, in a typhoon. The *Perseverance* was lost under the influence of a current common among the Cape Verds,—one, indeed, which had occasioned the loss of East Indiamen and several of our merchant shipping. The *Perseverance* was set on the N.W. side of Mayo, close to Bonavista, celebrated for the Hartwell Reef, the Bonetta, and several other rocks, a full account of which had been preserved in the *Nautical Magazine*, and from thence quoted in the *Directories*. But turning to other matters, the Club would now be happy to receive anything which his friends wished to bring forward.

Albert said he had to allude to what appeared to be an extraordinary mechanical invention to be applied to steamers, called Aston's Disc Wheel. Simple as it was, being a mere circular disc, the effects were most extraordinary in propelling a vessel. Before the navigation of the Thames was closed by ice, experiments were made on a trip from Blackwall to Erith, which were thus described:—

The paddle-wheel and the screw have hitherto been the means employed for utilising steam power in navigation, but Mr. J. J. Aston, of the Middle Temple, is said to have patented in December, 1858, an invention for propelling steam-ships by a very different contrivance. *A priori*, the arrangement of Mr. Aston is the very last that would suggest itself, and the inventor himself candidly admits that both practical and scientific men ridiculed his idea when first propounded. But there is no disputing a fact, however opinions may differ as to its explanation. Now, the fact is that the steam-tug *Saucy Jack*—by no means a favourable boat for the experiment—was propelled down the river at a rate of six knots an hour by means of a disc wheel, and with a far less expenditure of coal than if either paddles or screw had been used. Everyone knows that the first objection to the locomotive was that it would not “bite” the rail, but experiment soon proved the objection worthless. It is still more difficult to conceive what hold a thin metal or wooden plate, not striking the water horizontally or obliquely, but cutting into it edgewise, like a knife, can have of the water. The diameter of the disc used in the experiment was fourteen feet, with about two feet in the water. The thickness of the plate was only three-eighths of an inch, and it is asserted that the thinner the plate the greater the power. The engines of the tug were 30-inch, with a stroke of 42. The greatest number of revolutions made was 47. In the trip down the river the pressure in the boilers was 6lbs., and coming up 4lbs., the speed attained being about six knots. With the paddles the tug used to make about eight knots, but the expenditure of fuel was about forty per cent. in favour of the disc.

The conditions under which the trial was made were undoubtedly

unfavourable to the experiment. She was not so readily started or so speedily stopped as ordinary steamboats, but, perhaps these disadvantages may disappear under more favourable circumstances. The disc may be constructed of metal or wood, or of both in combination, and several discs may be used on the same shaft, at convenient distances apart.

The advantages of the disc, as enumerated by the inventor, are the following:—1. It is less likely to be disabled in a storm or battle, and is therefore a safer propeller. 2. There are no paddles or blades to agitate the water, and the boat is free from vibration. 3. All the action of the propeller is in the direction in which the boat travels, and the motive power being more perfectly utilised, a much greater rate of speed may be attained than has hitherto been deemed practicable. 4. Its action is perpetual, and not intermittent. 5. There is no back water, or loss of power on that account. 6. It is much less affected by wind and tide. 7. It is the only propeller well suited for canals and shallow rivers, and wherever a boat can float there can this propeller be used. 8. It may be used for small boats and other craft. 9. It may be worked with lower power, and at great saving of fuel. 10. It is of more simple construction, less costly, less liable to injury, and causes less wear and tear of the boat.

The experiment was perfectly successful, and by a subsequent one it appeared that she was no less so as a tug than when going free. A further trial states that she towed down at one time from the West India Docks to Grays, in two hours and three-quarters, three Dutch sloops, one of eighty tons, drawing five feet of water, another of sixty-five tons, drawing five feet, and the other of sixty-seven tons, drawing four and a half feet. She made about the same number of revolutions as when running free, but was found to use up considerably more steam, as she worked at 9lbs. of steam on her boiler, using it all; whereas, when not towing, she did not require 6lbs. of steam. On another occasion she towed up at the same time from Erith to the City Canal, two galliots, one of seventy-five tons, drawing ten feet of water, and the other of sixty-five tons, drawing eight and a half feet of water. She worked at 7lbs. of steam.

Much surprise and gratification was expressed by the Club at the extraordinary result of this experiment, and the conversation was concluded by a desire for a further account of the *Saucy Jack* and her doings.

The subject of electric communication with the United States was then brought forward, and the voyage of the *Bulldog*, under the command of Sir Leopold M'Clintock, discussed, as to the possibility of laying down a cable on the route over which he had sounded, and which was declared by him to be quite possible. At the present moment, observed the Chairman, of what immense importance would be such a means of communication. They were no partizans of particular lines, and he was sure that the Club agreed with him in desiring the great fact by any route to be accomplished. Doubtless the diffi-

culties were great, but he was one who did not consider them to be insuperable, and he yet felt certain that this great desideratum would be accomplished. He had heard something of a French company doing it last year.

Yes, continued Rodmond, taking up the thread of conversation, they proposed, at their own risk and peril, without aid from any government, to establish a submarine line between France and the United States; demanding, however, in case of success, that the French government should guarantee them an annual income of £40,000, and the exclusive privilege of telegraphing between France and the United States during a period of fifty years; and binding themselves to lay additional cables in case one should prove insufficient for the telegraphic business between the two countries.

But, added the Chairman, they have not laid one yet.

No, returned Rodmond. Let us hope that this kind of rivalry may meet with more success among our neighbours than the gossip about invasion projects, and let us strain every means that hold out the chance of success to get the little magic cord into its ocean bed by hook or by crook.

I see, continued Albert, whatever we may be thinking of, there is a fair prospect of a continuous line of telegraph being completed from the western boundary of the Pacific within the time prescribed by the terms of the bill passed at the last session of Congress. The work is to be carried through by the Western Union Telegraph Company, which proposes to build and equip the line according to the contract, and within twenty months. As yet nothing has appeared in reference to this measure, nor are our prospects of getting lines to Australia or New Zealand much advanced lately.

---

#### *Secretary's Memos.*

We publish to day our usual monthly summary of wrecks, from which it appears that during the month of December, the number of wrecks reported in our columns was 186.

January .... 229	May ..... 124	September ... 103
February ... 154	June ..... 146	October ..... 276
March ..... 166	July ..... 60	November ... 206
April..... 133	August ..... 96	December ... 186

making a total during the past year of 1,811.—*Shipping Gazette.*

From the accounts received at the Admiralty by the last China mail, there seems to be little doubt that H.M.S. *Camilla* must have foundered at sea. It appears that she left Hakodadi on the 1st of September, for Kanagawa, the port of Yeddo, and that between that day and the 9th of September, the day on which the heavy gale passed over Yeddo, light southerly winds prevailed, so that she had not probably made much progress to the South when lost. H.M.

steam-vessel *Berenice*, of the Indian navy, proceeded along the coast from Kanagawa to Hakodadi and back, between the 24th of September and 11th of October, but failed in procuring any intelligence of the *Camilla* from the numerous fishing-boats, or in discovering any portion of the wreck. A report had reached Vice-Admiral Hope that the unfortunate vessel was seen from a Prussian vessel of war to strike on a rock in a fresh breeze and go down. This report would be traced to its source; but the admiral is firmly convinced that she foundered at sea in the typhoon which prevailed on the Japanese coast on the 9th of September.

### Nautical Notices.

#### PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from vol. xxix., p. 611.)

Name.	Place.	Position.	F. or R.	Ht. in Feet.	Dist seen in Mils.	Remarks, &c. (Bearings Magnetic.)
35. Cape St. George	Australia, East coast	35° 9' 8" S., 150° 4' 1" E.	R.	224	19	Est. 1st Oct., '60. (a.)
36. Civita Vecchia	Italy, West coast, Mediterranean	45° 5' 4" N., 11° 47' 1" E.	R.	190	16	(b.)
37. Corran Point	Scotland, W. coast	.....	F.	36	10	Est. 20th Nov., '60. (c.)
38. Adour River	On southern pier	43° 31' 8" N., 1° 31' 4" W.	F.	38	6	Est. 15th Nov., '60.
38. Pladda Island	Scotland W. coast	.....	F.	42	11	Est. 20th Nov., '60. On West side of Isle Luing.
39. Cape St. Elias	Gulf Cagliari Sardinia	30° 11' N., 9° 9' 8" E.	Ffl.	239	14	Est. 4th Nov., '60. A red flash every two minutes.
40. Cape Kusten-Jeh	Black Sea	44° 10' N., 28° 39' 2" E.	F.	68	9	Est. 1st Nov., '60.
41. Favignana Island	Sicily, West coast	37° 55' 8" N., 12° 16' 1" E.	R.	141	20	Est. 24th Dec., '60. Interval once a minute. On Sottile or Mamoni Point.
42. Buffalo River	South side of entrance	.....	F.	45	11	Est. 25th Aug., '60. Tower red and white bands.
43. Mewstone Buoy	Entrance of Plymouth Sound	.....	..	..	..	(d.)
1. Port Said	Egypt	31° 16' N., 32° 19' 5" E.	F.	66	9	S.E. 29 miles of Damietta mouth of the Nile.

F. Fixed. Ffl. Fixed and Flashing. R. Revolving. I. Intermittent. Est. Established.

(a) 35.—The notice says that the light shows consecutively a *red, green, and white* light at intervals of *thirty seconds*. It is visible seaward when bearing between S.S.W.½ W. and North. It is seen as far as N.b.E.¼ E. over a sloping hill situated South of the lighthouse; but then a vessel must be a considerable distance to the southward of it. In entering Jervis Bay the light will be eclipsed by Bowen Island, forming the South point of entrance, when bearing S.½ W.; and it will only be visible from a portion of the bay, between the bearings of S.S.E.¼ E. and S.E. The white light will be seen in clear



weather at a distance of about nineteen miles, and the green and red lights at fourteen miles.

*Directions.*—Vessels approaching Cape St. George from the southward, should always endeavour to make this light, to avoid being embayed in Wreck Bay, the deep indentation westward of the cape. The light will first open over the sloping hill to the southward of it, bearing N.b.E.½ E. The cape, which is a low, dangerous, rocky point, must be approached cautiously. When within the distance of about eight miles the light should not be brought to the northward of N.b.W.; for if the vessel should be near the land, to the south-westward of this bearing, the light will be partially, if not wholly obscured, but by standing to the eastward it will gradually open out, and when bearing N.N.W.½ W. it may be passed with safety at a distance of from one to two miles.

In approaching from the northward the light will open of Crocodile Head, bearing S.S.W.½ W., and by keeping it in sight a vessel will pass the head in safety at a distance of from one to two miles.

(b.) 36.—It is visible seaward between the bearings of N.b.W.½ W. and S.b.E.½ E. at a distance of about sixteen miles. The eclipses are total beyond the distance of ten miles, but within that range a faint light will always be seen.

*Re-Establishment of Lights.*—The Maritime Inspector of Venice has given notice that on the 17th October, 1860, the illumination of all the lighthouses on the Venetian Coast would be re-established.

(c.) 37.—The light will show *red* to the eastward and southward, between the bearings of N.E.b.E. and S.W.b.W.½ W. nearly, and *white* in every other direction where it can be seen from Loch Eil and Loch Linnhe.

*Fixed Light on Phladda Islet.*—Also a light will be exhibited from the lighthouse erected on Phladda Islet, about a mile from the West side of Luing Island, and 2½ miles S.W. from Easdale Island, Argyleshire.

The light will show *red* when seen from the northward, or in the direction of the Bogha Nuadh Rock, when bearing between S.b.W.½ W. and S.S.W.½ W.; it will show *white* landward when bearing between S.S.W.½ W. and N.N.E.½ E.; and it will be *masked* seaward between the bearings of N.N.E.½ E. and S.b.W.½ W. The mariner, however, must bear in mind that in approaching it from the southward, a faint light will be seen easterly of N.N.E.½ E.

(d.) 43.—The buoy lies in 7½ fathoms at low water, with the peaks of the Great and Little Mewstones in line bearing E.N.E., and the S.W. end of Picklecombe Fort, in Mount Edgcombe Park, touching the North side of the breakwater lighthouse, N.b.W.½ W.

The inner chequered buoy near the East end of the breakwater has been removed.

---

#### CHARLESTON LIGHT AND BEACONS.

The following has been received from the British Consul at Charleston.

3rd January, 1861.

My lord,—I have the honour to acquaint you that the *de facto* government of the state of South Carolina has caused the [light of the]

lighthouse on Morris Island, at the mouth of the harbour of Charleston, to be extinguished, the beacon on the same island, and the two beacons on Sullivan Island on the opposite side of the port to be destroyed; the lightship on the Rattlesnake Shoal to be withdrawn, and the buoys which marked out the entrance of the harbour to be removed. No notice has been given either to the foreign consuls or to mariners of this act, either before or after its perpetration.

I have, &c.,

R. BUNCH, *Consul.*

*To the Secretary of the Admiralty.*

---

THE CORAL SEA AND GREAT BARRIER REEFS,—*Showing the Inner and Outer Routes to Torres Straits.*

These two charts are numbered 2,763 and 2,764 of the Admiralty Catalogue, and are the very charts so long wanted by our Australian commanders. They are just on the point of publication, indeed will be out before this notice of them, and combine the works of some of our most celebrated scientific naval officers from the days of Cook to the present time. In these two sheets we may recognize the energies of Cook, Flinders, King, Blackwood, and Stanley, all passed away to their final rest, having bequeathed among a mass of other materials, those which have served with the concluding adjustments of Yule and Denham, in the careful hands of Evans, to produce these valuable charts. The navigation from the parallel of Sandy Cape to Torres Straits is here before the seaman, and he need no longer consult the Sydney authorities in such matters, like Captain Kennedy, as to the route he should take. He may risk the Raines Islet Route if he pleases, which Captain Toynbee has truly designated one of "extraordinary risk;" or he may take the troublesome yet safe Inner Route of Captain King, or if he prefers the Outer Route, he may take the yet safer one, the Great N.E. Route, and which any one may foresee will become the route no less for celerity than for safety, since where the passage lies between islands, secure anchorage can always be found. But our readers well know this, and they will rejoice to be in possession of the charts before us, which with the sheets numbered 2,375 and 2,422 in the Admiralty Catalogue, will enable them to navigate Torres Strait with ease and safety, or, as Captain Toynbee has said, with no more than ordinary risk, such as the English Channel would always present. We commend these charts to their notice, and in doing so we are not only justified by the convenient arrangement of the matter they contain, but also the scrupulous attention to accuracy on the part of their industrious compiler, Mr. Evans, Master, R.N., whose experience in the charts of New Zealand had well qualified him for the task.

---

## THIRD TRIP OF "MORNING STAR" TO MICRONESIA.

[In our volume for 1859 we have preserved a former voyage of this vessel to Micronesia, and yet hope for attention to the string of queries attached to it.]

We sailed from Honolulu August 16th, and proceeded on our way direct for the Kingsmill Group. The day after sailing we had the wind from the Scuth, afterwards the regular Trades until the 24th; in lat.  $8^{\circ} 0' N.$ , long.  $175^{\circ} 30' W.$ , fell in with squally weather, light winds and an easterly current of thirty miles per day. This continued with occasional calms and winds variable, but mostly eastward, until the 28th. When we were in lat.  $3^{\circ} 14' N.$ , long.  $179^{\circ} 32' W.$ , we took the breeze fresh from E.S.E., with fine weather. Crossed the meridian the same evening, and arrived at Apaia September 1st.

We saw and closed with the land, Mariki (or Matthew) Isle, the evening previous, but found in the morning we could only reach the leeward point of Apaia, so I ran to leeward of the island, intending to beat up to the channel, as I did with great ease last year in the night. We worked until sunset, and came to anchor in 7 fathoms water under the N.W. point of the island, about fifteen miles to leeward of Mr. Bingham's station. Next morning got under way with a fresh breeze, made two boards off shore, but could not gain one inch, and came again to anchor. In the afternoon, took our anchor again, the breeze having freshened, made a board off shore, and on standing in fell to leeward of our anchorage two miles. We could always reach this anchorage by keeping under the lee of the island, thereby avoiding the current.

The anchorage is an excellent one for ships of any size desiring to stop for a short time. The bottom is smooth coral; any depth may be selected; the last time we anchored in  $4\frac{1}{2}$  fathoms; of course with any but the Trade wind it would be unsafe.

Finding we could not work up against this full  $3\frac{1}{2}$ -knot current, I stood away to the North. Passing Pitt Island had very light, variable winds, but after reaching lat.  $3^{\circ} N.$  were clear of the westerly set. Worked eastward, and finally entered the lagoon of Apaia on Saturday, September 10th, just one week from the time we left the N.W. point to proceed North.

On Tuesday, 13th, we left early for Ebon.\* Having the wind from the South, we passed out at the western channel, which is not near so good or safe as the other. We had a very pleasant run, and reached Ebon, of the Ralick Chain, on the 15th. We had the weather squally and unfavourable for entering the lagoon until the 20th,

\* We are glad to see the native names preserved by our American friends. It is time the redundancy of unnecessary English names, as Baring, Pitt, Elizabeth, etc., etc., with the conjunction *or*, or *alias*, that disfigure our charts were dropped.

when the wind changed to the South and wafted us through the narrow and crooked channel into that beautiful and placid sheet of water.

Our stay here was short. We found all the chiefs absent on a voyage to the North. I think Mr. Doane said the fleet of canoes amounted to forty, each containing twenty persons, many of them visitors from the North.

We left for Ualan\* Island on the 23rd, arriving the 28th, and left for Pouinipet† on Saturday, October 1st. Had a very pleasant passage, and arrived on the 4th, falling in with on the way, forty miles East of M'Askyl's Island, ship *Hope*, of N.B., from Japan. She had not taken a whale in the last fifteen months; was bound East and southward.

We visited Ronokitte Harbour, and found the dread and scourge of the place, the murderer who shot down a man not long since, had been himself killed by a comrade, whom he meant to have killed, and had actually charged his gun for that purpose; the which his neighbour finding out, ran away, and armed himself with a large knife. On being followed and asked how he dare run away, he attacked the wretch and killed him on the spot. He is the same, I think, who Mr. Sturges, in a communication, speaks of as a man from New England.

Leaving Ronokitte on the 12th, we arrived at the weather harbour the same afternoon, having been favoured with a fine westerly breeze. Here we remained until Saturday, October 22nd, engaged in taking on board the effects of Dr. Gulick, sailing on that day for Ualan Island, and arrived on the 26th. Took in some additional cargo, Kanoa and family, two shipwrecked seamen of the ship *Lexington*, and left for Ebon on the 28th.

Arrived at Ebon November 3rd. Left for Apaiang on the 4th, and arrived there after a rough and unpleasant passage of eleven days, touching at Jaluit on the 5th, where all the Ralick chiefs are kept in durance, probably until spring, on account of the unusual roughness of the weather. They are all anxious to return to Ebon, but dare not put to sea in such weather. We remained at Apaiang, discharging cargo, repairing sails, rigging, &c., until December 1st, when we sailed again for Ebon.

Going from Apaiang to Ebon is just like leaving a beautiful and brilliantly illuminated saloon and going into a dark, dismal cellar; even the rats are not wanting, being scattered by dozens before one's feet while walking among the short grass. Generally, on approaching the island, black and heavy squalls appear, and are almost constant, especially at the season when the N.E. Trade is setting in; and as the lagoon cannot be entered at this season, we are obliged to land and take cargo while under way, and in the face of these heavy

\* Also called Strong Island.

† This island is also called Ascension and Bonabi.

squalls; in one of which we have, at this last visit, lost a jib, and also carried away the main gaff, to say nothing of the extra wear and tear of things in general. Some of these squalls would almost put to shame even Cape Horn itself. Ebon is, doubtless, the gem of the chain in fruitfulness; yet a survey of the whole might lead to a more suitable spot for a mission station.

Odia\* Island, a short distance North of Ebon, also Legiep, not far distant have excellent harbours are much larger than Ebon, and, according to Kotzebue, the last named is peopled by a race physically superior to the others, and also has the very essential advantage of having two channels leading into its lagoon sufficiently large to admit a ship of the line. Moreover, these channels, he says, are so formed that no difficulty can be encountered in sailing in or out with the Trade wind.

The position of Legiep is lat.  $10^{\circ} 4' N.$ , long.  $169^{\circ} 2' E.$ , being, I think, away from the influences which render the islands further South the unpleasant spots they are; which must all be attributed to the track or course of the strong current which is very often found to exist in this part of the Pacific, and running eastward, between the parallels of  $3^{\circ}$  and  $7^{\circ} N.$ , and at times I have found it as far North as  $8^{\circ}$ . This current, within *about* these limits, I think is found to extend from the extreme western portion of the Pacific to the coast of Peru. Without doubt, it is the same current that is found in the Indian Ocean, setting up through the Java Sea, and then divided by the Island of Celebes,—one branch passing through the Strait of Macassar, another through the Molucca Passage, while a third branch passes to the South of New Guinea and the Louisiade, into the Southern Pacific.

The strongest current I have found at sea was while cruising about the Louisiade—if I except that off the Lagullas Bank, Cape of Good Hope. Cruising off Woodlark Island in October, 1856, with no current perceptible, I proceeded directly to Cape Denis, and was set westward in one night thirty miles, the ship working eastward under easy sail. At times there is no current to be found there; at others it is found running with much strength eastward. This current to the eastward, which I found last year (during all our cruising in the *Morning Star*) to prevail between Ascension and North of the Kingsmill Group, has almost utterly failed this year. The easterly winds are much more constant than last year. In our last passage from Ebon to Apaiaug, working eastward between the parallels of  $5^{\circ} 30' N.$  and  $3^{\circ} 30' N.$ , had not a particle of current until reaching long.  $173^{\circ} 30' E.$ , in lat.  $5^{\circ} N.$ , we found we had entered a set of thirty miles eastward per day, which we lost on reaching lat.  $3^{\circ} 20' N.$  While standing South for Apaiaug, on this last visit to the Kingsmill, I found,

\* Called also Elmore, and Legiep has the double name Count Haiden. The first is 100 and the second 250 miles from Ebon, with Namou between them. What of this?

instead of the strong westerly current, a slight set to the South, say ten miles per day.

We sailed from Ebon for Honolulu December 7th, wind and current favouring. We passed Oda Island, of the Ralick, and crossing the channel which separates the two chains, saw also Lagiep, of the Radack. Here we emerged to a pleasanter state of weather, and had a steady Trade from N.E. until the 16th. In lat.  $19^{\circ}$  N., long.  $167^{\circ}$  E., had calm for a short time; then took a breeze from S.W. to W.S.W., which finally worked round to North and N.E., with very bad weather. January 1st.—Wind E.S.E., weather fine, passed between Laysan Island and Maro Reef. Saw neither, as we were in mid-passage; they can be seen from only a short distance. The wind soon changed to S.S.E., and remained until the 9th, lat.  $29^{\circ} 31'$  N., long.  $158^{\circ} 30'$  W., when we took the N.E. Trades, and had them very strong until our arrival. Jan. 5th, in lat.  $28^{\circ}$  N., long.  $162^{\circ}$  W., was hove to for a few hours, blowing in heavy squalls from the N.W. and N.E., split the foresail from the foot to the reef-band, but received no further damage.

To sum up respecting the currents. Last year we found them generally in our track at Micronesia running N.E. and E.N.E. twenty-five to thirty miles per day; through the season, the winds mostly light, variable, and westerly. This year, very little westerly wind, current weak, mostly north-westerly, until December 1st, when the Trade came on strong, and the current began running thirty miles a day *eastward*. This current we carried to  $8^{\circ}$  N.

JOHN W. BROWN.

---

#### CAMPBELL REEF,—*Torres Strait.*

In our number for November last we gave the position of Campbell Reef, reported by the commander of the ship *Storm Cloud*, and the same having been again reported by the commander of the ship *King Lear*, affords the opportunity of adding a few words of caution to our navigators who may be running in imagined safety over blank spaces in the chart, *where no examination has been made with the lead*.

As these two ships were in company, and the *Storm Cloud* was ahead, owing to her being rather the better sailer, there is no occasion to repeat the account of the Campbell Reef given by the commander of the *King Lear*. But we may state that the commander of the *King Lear* observes, in his report, after passing the Ninepin Rock that "the course up to Channel Prince of Wales (by the chart sheet 1, Admiralty) seems clear from all reefs, &c., and an uniform depth of 8, 9, fathoms," and he is surprised to hear the look out report broken water on the starboard bow, "as nothing of the sort is shown on chart."

Now this very remark of the chart showing nothing, ought to have warned the commander of the *King Lear* that he should not go there,

for if it had been examined with the lead the soundings would have shown it, and the reef which he observed would have been discovered, and as well as the soundings would have appeared on the chart. But there is a blank space on the chart nearly five miles East and West, and nearly ten miles North and South, between Double Island and Mount Earnest Island, in the very middle of which is the reef in question. There was no "uniform depth," as stated, in the part, and as nothing was shown on the chart, it would be quite evident on the least reflection that the surveying officers had left it unexamined, and it should therefore have been avoided instead of being run through, as reported, at the rate of 11 knots an hour; a most dangerous rate to be running at in a navigation so little known as that in question, and much more so over a part *quite unknown*.

Again we caution our seamen on this subject to keep in the examined parts where the lead has shown by the soundings marked on the chart that there is at least a prospect of safety: but to avoid if possible those blank spaces where the lead has not been,—for if even between the soundings really laid down a solitary rock now and then is brought to light by a ship striking on it, how much greater are the chances of there being many where the lead has not been, and which on examination may prove to have not only such a danger as the Campbell Reef, but which, from many others, may prove to be so dangerous as not to be used! We therefore recommend caution to our seamen in such navigation while in soundings, and to avoid such extensive blank spaces as this in question. And if they cannot be avoided and are taken at risk, we enjoin them to adopt the best means for safety in their power, snug sail easily managed, a moderate rate of about four knots, and the lead going. Such precautions will always save character and might save a ship.

---

#### GLENDINING SHOAL,—*Indian Ocean*.

The following, which is entirely new, forms an interesting addition to the chart of the Indian Ocean.

*Notice to Mariners*.—Captain Glendining, of the barque *Queen Mab*, of Liverpool, reports that on his passage from Singapore to Table Bay, 20th of October last, in lat.  $9^{\circ} 54'$  S., and long.  $97^{\circ} 50'$  E., he came upon a most dangerous shoal, not marked in any of the charts, and lying in the direct track of ships from the strait of Sunda on their homeward voyage. He states that at nine p.m. he observed the water all around the ship much discoloured, in appearance milky white: that he immediately had a cast of the hand lead, and got 7 fathoms; but the next cast at about seven or eight minutes' interval, got no bottom with the hand lead. Not feeling quite certain, hove the ship to, and sounded with the deep sea lead in 55 fathoms, hard

ground. The Editor of the *Shipping Gazette* considerably adds that the *Queen Mab* arrived in the Downs on the 25th inst.

It seems by no means improbable that this shoal has been gradually rising to the surface until at length it has come within the reach of observation. Some deep casts for soundings here might bring to light a bank of soundings probably connected with Cocos Island, from which it is about 150 miles distant, and at all events verify the position of the 7 fathoms cast.—ED.

---

### CHARLESTON HARBOUR.

*Notice to Mariners.—Charleston, 12th January.*—The State Authorities have caused several vessels to be sunk at the entrance of the ship channel in order to prevent, it is supposed, the ingress of armed vessels belonging to the Federal government of the United States; consequently for the present ships will be unable to go to sea by this outlet. The Swash or Middle and the Moffitt or Beach Channels still remain open, by which ships of not exceeding 14 to 16 feet draft of water, can still go to sea.—*Shipping Gazette.*

---

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of January, 1861, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

Mediterranean Archipelago, Mityleni Island and views, Capt. Spratt, R.N., C.B., corrected to 1860, (4s.)

America, East coast, sheet 1, Long Island Sound, United States survey, 1855, (3s.)

America, West coast, San Francisco Harbour and views, Lieut. James Alden, U.S.N., 1856. (3s. 6d.)

America, West coast, Juan de Fuca Strait, Victoria Harbour, corrected by Capt. Richards, R.N., 1860, (2s. 6d.)

South America, sheet 18, Capt. Kellett, R.N., C.B., corrected to 1860, (2s. 6d.)

China, Han River, Capt. Collinson, R.N., C.B. (2s.)

South Australia, Corio or Geelong Harbour, Comdr. Ross, R.N. 1859, (2s.)

African Lights, corrected to January, 1861, by Comdr. Dunsterville, R.N., (6d.)

British North American Lights, corrected to February, 1861, by Comdr. Dunsterville, R.N., (6d.)

East India, Australia, and New Zealand Lights, corrected to February, 1861, by Comdr. Dunsterville, R.N., (1s.)

*Admiralty, 22nd January, 1861.*

---



### New Books.

**THE PHYSICAL GEOGRAPHY OF THE SEA AND ITS METEOROLOGY,—**  
*being a Reconstruction and Enlargement of the Eighth Edition.* By  
**M. F. Maury, LL.D., U.S.N.** London, Sampson Low.

The sea, the wonderful sea—emblem of eternity—spread over valleys which separate continents of our planet, seems like a mantle of silver tissue formed by Almighty power at once as an essential component part of it, and an ornamental contrast with the land, to facilitate the intercourse of nations and to repress those turbulent destructive powers at work beneath it, has of late years received more than ordinary attention from ever busy inquisitive man. Whither indeed, and to what quarter, have not the inquiries of the race of Adam been directed, and now that the people of these several continents are in active interchange of earth's blessings, on many accounts the sea demanded that inquiry, some of the results of which in a condensed form are before us from the pen of a naval officer, who has devoted himself to it and to it alone.

It has been justly observed that of each of the subjects of inquiry presented by the sea, volumes might be formed, whether of its component parts, its inhabitants and their instinctive habits, its tides and currents, hurrying masses of water from one part to another, its eddies, its forests of plants, and its masses of weed, its winds and hurricanes, its calms and waterspouts, all and each of these supply inexhaustible subjects for research,—nay, if even a drop of water from the surface will supply so wonderful a collection of Nature's handywork as was displayed by Captain Toynbee in our last year's volume, what a boundless maze of inquiry does the sea supply for research on all these branches of natural history.

The book before us being the work of a sailor, is naturally addressed to the wants of the seaman. Treating on the subjects abovementioned there is not a page of it that does not intimately concern him either directly on the path he is to pursue across the sea, or indirectly in his professional occupations. Not only highly useful it must be, but there is an abundance of matter so deeply interesting that cannot fail while it engages his attention to improve his mind and lead him while revelling in the wonderful works of his Creator to improve the inner and therefore the outer man. We counsel him to study it well. Here is the opening paragraph; at present we have no room for more. Maury says, "Our planet is invested with two great oceans; one visible, the other invisible; one is under foot, the other overhead; one entirely envelopes it, the other covers about two thirds of its surface. All the water of the one weighs about 400 times as much as all the air of the other." And we will briefly add, all the wonderful mysteries which both these oceans combine, will be no longer mysteries, but clear effects of causes, to the seaman, when he makes himself as he should be well acquainted with them.

**TRANSACTIONS OF THE INSTITUTE OF NAVAL ARCHITECTS.—Vol. I.—**  
*Edited by E. J. Reed, M.I.N.A., Secretary of the Institution.*

England without her Institute of Naval Architects to foster and encourage the science to which she owes her exalted position in the scale of nations, and the pursuit of which is the delight of her sons, was an anomaly that could not long remain unobserved. A fountain-head of naval architecture was wanted, a source to which the development of nautical improvement and progress might be directed, and from whence facts might be obtained. And it is re-

markable that no sooner is the effort made to supply the deficiency, than an influential and scientific body of men answer the call, form themselves into a tangible society, lay down the laws by which they will regulate their proceedings, take up in earnest some of the branches of that science in support of which they are unanimous, and here before us is the first volume of the records of their proceedings.

In this advanced age of science, young though it be in the application of iron to ship-building, the advantage of experience might well be anticipated in securing the stability of the Institute, which has thus been so rapidly formed. A ship, like a floating city, combines other branches of science besides that of the naval architect who designs the model and constructs the fabric. There is the engineer, who has to attend to the steam department and all its apparatus, and the various artisans of her equipments, who must all naturally feel an interest in the proceedings of an Institute of Naval Architects, and we accordingly find a list of Associates in its ranks combining along with the science in view, men of high station in their country's councils, men of letters as well as rank, and men experienced in the arts and sciences needed in all the requirements of a ship. This is as it should be. Science knows nothing of any other level than that produced by gravitating influence, and can only be forwarded by unanimity of action and cordiality of purpose. These are the principles of stability, and the Institute in adopting them has begun well.

This volume opens with the inaugural Address of Sir John Pakington, the President of the Institute, remarkable for clear and wise views on the importance of the subject, followed by the Earl of Hardwick, Dr. Woolley on the present state of the mathematical theory of naval architecture, Mr. Barnes on the height of the centre of gravity, Mr. Maudslay with a proposed form of ship with a diagonal midship section, Messrs. Grantlam and Fairbairn on the strength of iron ships, the Astronomer Royal on the connection between the mode of building iron ships and the ultimate correction of their compasses, a paper on tonnage measurement by Mr. Samuel Read, Mr. Moorsom on the new tonnage law of 1854, and a paper on inventions for the improvement of naval architecture, and Mr. Lennox on chain cables.

We have here enumerated the best part of the papers of this volume, papers which show abundant promise of the future, all highly interesting to the followers of the sciences to which they belong, and some no less so as being of an historical nature. They will form, we have no doubt, an attractive focus, that will enlarge very soon the numbers of the Institute, and will combine the tact of application, the judgment, experience, and science in its application to one of the most interesting, the most difficult, and the most useful of the arts, that of Naval Architecture.

#### TO CORRESPONDENTS.

The sketch plan of Susaki Bay, sent us by Captain M'Donald, whose useful remarks on the weather of Japan open our present number, we hope to present him with on the Admiralty chart, on which it is being inserted.

The complimentary letter from the Mauritius will be duly preserved as a specimen of polite literature! Would that it were as creditable to its authors as the foregoing. But not all its prolix asseverations can shake the testimony of Sir John Marshall, or prove that the Nussur Sultan Rock really is where it is stated to be,—viz., “twelve miles S.W. from Rodriguez shore!”

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle

---

MARCH, 1861.

---

ISLE REUNION,—*Late Bourbon,—Indian Ocean.*

The Isle of Bourbon or Reunion is in the Indian Ocean, about 400 miles N.E. of Madagascar, and belongs to France. The lighthouse of St. Denis is in lat.  $20^{\circ} 51' 32''$  S., long.  $55^{\circ} 30' 14''$  E. The island is about forty miles long, N.W. and S.E., and about thirty-seven broad, with a circuit of about one hundred miles. It was discovered by the Portuguese navigator Mascarenhas in 1545, found by him uninhabited, and for some time bore his name. In 1642 it was taken possession of by the French from their unfortunate settlement at Madagascar, an account of which settlement appears in our volume for 1859. At the beginning of the French revolution the name was changed into that of Reunion, according to our Gazetteers, and during the empire into that of Buonaparte and Napoleon. Being captured by the British in 1810, it was restored to France in 1815, when it resumed the name of Bourbon.

In 1846 a chart of it was constructed from the surveys of M. Cloué d'Arras, assisted by several engineers, from which another was published in December last by the Admiralty Hydrographer,—a most valuable acquisition to the navigator who may have to visit the island. From this, which is on a liberal scale, with plans of the anchorages off the several principal towns, we make the following extract of the names of the several mountain peaks and their heights:—

NO. 3.—VOL. XXX.

Q

Pic de la Mare d'Azule, 1,994 feet; Piton d'Ango, 3,287; Piton de Takamaka, 3,050; Volcano, 8,613; Pic Constantin, 2,784; Pic R. du Piton, 3,178; Piton Rouges des Cascades, 587 feet.

The foregoing are in the S.E. part of the island. On the N.E. part we find—

Pic des Neiges, 10,869 feet; Grand Bernard, 9,495; Petit Bernard, 8,059; Pic de Cimandef, 7,303; Morne Patates a Durand, 3,711 feet.

At length Bourbon is before us; but the weather is dull and gloomy, and the hills of the island have adopted the same dull, covering. Nevertheless, as we approach it, here and there among the sugar plantations and the coffee and spice groves the buildings peep out with a picturesque effect, from their white chimneys, and break the monotony of the ever prevailing green hue of Reunion. As we near the island, objects become more distinct, and the mist of the hills clears away. We shall soon become acquainted with our future residence; and for my own part, desirous of learning as soon as I can all about so interesting a subject, I avail myself occasionally of my friend's glass, and, knowing all about the island, he at once becomes my cicerone.

Look, said he, there is St. Benoist just going to disappear. St. Benoist the land of spices and rain. I wish you may never have to bring a ship of 600 tons here in winter, my friend, he added. Vile anchorage; I was here last year with the *Lydia*; five and twenty fathoms to come to in, and I was so pulled about by the currents (which happily set seaward) that I lost two anchors. Look there, that is St. Andrews, the tower you will see among the trees. Imagine to yourself, the bell for that tower has never yet found room enough to strike; so that merely to set it in motion, slightly vibrating, it requires two negroes to make the hammer strike. But St. Andrews is a good country and has less rain than St. Benoist.

Pardon me, a word of explanation, I added. I am informed from books and voyagers that this is the classic land of the sun. It always rains here, does it not? St. Benoist, St. Andrew—the land of rain, isn't it? If all the rest were like this we should have no very winning specimen of Reunion,—aye, if you like, baptize the whole island St. Medard, and begin again. Well, for my part, I have been deceived, and would never have come 4,000 leagues to find at Bourbon what I left in France, with no regret either, and that was fog and rain. Or rather tell me that you were only joking, and let us have no more of these gloomy stories.

My friend kept his point well, and before I had finished my phlippic was outlining on the deck with the toe of his shoe the figure of a turtle, while the heat was opening the seams, and thus rendering his figure more evident. There, said he, that is an outline of the form of the island to which we are running at a good rate now.

If you will observe, he remarked, in the middle of the island there is a natural line of demarcation which divides it into two dis-

tinct parts. This line is very evident. Commencing on the West with a chain of mountains, terminating at the sea and throwing out their enormous branches, the crest of the ridge extends directly across the island, and on the opposite side reaches a small desert formed by volcanic debris frequently overrun with streams of lava, and thus obtains the name of the burnt land, and where the volcano is situated which we saw last evening burning like a lighthouse. But before I go on with my description cast your eye on St. Andrew, St. Susan, and St. Mary, which we are just losing sight of to come abreast of St. Denis, the capital of the island. There,—now then, give me the glass and I will go on. The captain is looking out, and we shall have the pilot in about three-quarters of an hour. Now, you will observe our island is divided into two parts: these two parts have each their configuration and their peculiar temperature.

One of these is constantly refreshed by the Trade, watered by abundant rains, has a uniform soil gently sloping to the sea, and is cultivated from the shore to half way up the mountain. This is the windward part of the island and comprises the districts of St. Rosa, St. Benoist, St. Andrew, St. Susan, St. Mary, and St. Denis. The other part, on the contrary, prevented by the high mountain ridge from enjoying the regular wind, is consequently liable to frequent drought, and a large portion of it is sterile to a considerable distance from the coast. So much for being under the lee of the mountain.

Thus, in proportion as one advances East the rainy grounds are gained. So that on a road from St. Benoist to St. Denis a kind of udometric scale might be established which would show, without stripping off the leaves of the daisy, where you will find it passable and where there is none at all of that rain which in other climes is desolating, and which here, warm and refreshing, will be scarcely observed by you, but to which the weather side of the island is indebted for all its riches. Depend on it you will find that you may leave St. Denis with fine weather that will last you as far as St. Susan, where a little rain will welcome you; at St. Andrews the showers will be more frequent, and at St. Benoist no more sun, but instead of it a veritable deluge. What's that, pilot? Well, then, excuse me. There's the glass. Take your time and look at St. Denis. There's no hurry.

That was, in fact, just what I wished to do. But whether that I was ill disposed, from the description that I had just received, to be in a good humour with it, or the remembrance of Mauritius had spoiled me for Bourbon and I could find nothing in the view of it before me which at all interested, I cannot say. I could see before me, between rocks and mountains, some red roofs and white houses; but, like the smoke in certain pictures in the museum at Versailles, the fog prevented anything from being clearly visible, and this fog became still worse from mere opposition as it lay over the town.

To the left of us was a kind of hard way of enormous stones, consolidated with pebbles, which the sea seemed to have thrown up at pleasure. Then before us, at the end of a funnel-shaped inlet, not

very deep, where stands the town, were four wooden piers of primitive construction, with their heads projecting impertinently into the sea, standing there like sentinels intended to give the *qui vive* to any one who arrived. Again, to the right was a rocky point on which a mountain was threatening every moment to fall down, but having a fine, majestic appearance; and then around us were some twenty or thirty vessels going through all the violent manœuvres of rolling and pitching at the pleasure of a troubled sea and a stiff S.E. wind.

Such was the picture before me. My disappointment was, I fear, too evident, for my obliging cicerone roused me from my reflections with a slap on the shoulder, accompanied by the observation,—Well, shipmate, what do you think of St. Denis? fine place, eh? the first of the colony!

Well, you have given me no very flattering picture of it.

Ah, this roadstead I see is not to your taste; but do you know that you are come at a most excellent season. We are now in the midst of June;—from this to October is the fine season. The E.S.E. winds are not so heavy on the shipping, but they are not without their troubles for all that: here and there there is a nice little tide-rip. True, the ships in the roadstead are always obliged to be ready for getting under sail in a moment, and when an unfortunate passenger is just thinking of landing a gun fired from the battery sends the ship to sea for a run. Take care you are not caught here with the spoiling you have had at Mauritius, for what with the variolæ and cholera, which are tolerably frequent here, you would have to ride out a quarantine here when you come back, which is anything but agreeable I can assure you. But make yourself easy: your temper will not be tried just now with these troubles; the sea is not so bad as to prevent your landing, and the signal is up for us to communicate with the shore, so you will escape all those miseries. Your traps are in the boat alongside, give me your hand, and let me advise you to dismiss all gloomy anticipations, for you are going to live in a little paradise.

*Landing at St. Denis.—The Rope Ladder.—The Delights of a First Night on Shore.*

Everyone knows those charming lines of Lamartine:—

Et maintenant il faut que ma plume décrive  
La demeure nouvelle où Dieu veut que je vive:  
Vous devez dites vous savoir ou me trouver  
Quand d'un père ou d'un fils votre cœur veut réver.

A fin qu'en le cherchant, nos âmes reunies,  
Hantent les mêmes bords, vivant des mêmes vies;  
O mes anges absens, suivez mois donc des yeux,  
Je vais vous raconter la maison et les lieux.

I shall avail myself of the foregoing lines, those natural effusions of the heart, as a guide to tell you what I have seen to-day. You certainly can remember an engraving in some picturesque work of St.

Denis seen from the roadstead at Reunion. With the assistance of that precious document, you will more easily comprehend the kind of landing we had.

One of the four jetties which I have alluded to, called the *Pont du Roi*, is specially intended for the landing and embarking of that species of our race to which I belong. At the head of the pier, and rather towards one side, a long rope ladder hangs down. Our boat could not remain alongside the pier, and the steersman in a few words warned me not to lose the opportunity to jump up by it quickly if I would avoid either the inconvenience of being struck by the boat rising or washed away by a following wave!

All hesitation was worse than useless. So, invoking the protection of the patron saint of gymnastics, I did my best, and happily succeeded; but a poor fellow who came after me, and whose round stomach impeded his rapid ascent, got a complete ducking in the very middle of it. Happily, he held on the ropes, but just imagine his rage. By way of consolation he was told that near the ladder there was a wooden staircase, carefully adjusted, but fit to use for a quarter of an hour only it is true, and intended for the special benefit of passengers, in order that such kinds of accidents might be avoided when the sea admitted of using it. It was quite true, but that would not dry the clothes of my Triton. Happily, our baggage was landed dry, so that one could be certain of a change, which we both adopted after passing the inevitable *visite* at the custom-house.

We soon reach the Hotel de l'Europe, a very comfortable place and quite worthy of our attention. So, on returning to my room, after a meal at which those vegetables were abundant of which we had been so long deprived in our floating box; where, if I was not only rolled from one side to the other of my narrow bed-place, but had the pleasant alternative before me of being lifted first by the feet with my head lower than them, and then again with my head as it ought to be—the highest, as being among the varieties of those pleasures in store for those who go to sea.

But, alas, for peace and rest at night I had reckoned without my host, for a colony of little insects came together on me, and with their irresistible attacks made sad havoc while I was asleep. I thought of Gulliver of old, who had imprudently gone to sleep at Lilliput, and like him I found myself attacked all over with an infinity of little prickings, which caused an insupportable degree of irritation all over me. This was no dream, but a sad reality. What a pitiful condition I found myself in on waking this morning. One eye so much inflamed as to resist all my attempts to open it. My hands so swollen that I could not get them through the sleeve of my coat. I was nothing more nor less than a mass of sores. And then, instead of my condition exciting any feelings of compassion for me, it was ridiculed! My host, regarding me, observed, with a sang-froid *dont-care* sort of look,

Why you were sleeping with the mosquitoes last night. You forgot your curtains.

No, on the contrary, I said, they were well closed after I had chased the last of these abominable things from my dormitory.

Ah, my dear friend, that's nothing.

I hope so, indeed, said I; but in the meantime it makes me appear ridiculous enough, for I find already many a stifled smile at my strange appearance. Would that mosquitoes were annihilated, for in my condition I cannot get abroad, and I must reserve for another day my visit to the town.

### *The Barachois.*

Let us return, if you please, for a moment to the place where I landed, for I wish to introduce you to the *Barachois*. Does this word seem strange to you. No doubt, so I will have recourse to the excellent statistics of M. Thomas, who, in his care for strangers, has anticipated their wants, and has taken care the first time that the word was noticed by his pen to explain it in a note, which I transcribe as it stands. "*Barachois*, subst. masc., *small harbour or cove*."

Reunion has no port, and nothing more than an open roadstead, and its several governors from the beginning of our occupation of it, have endeavoured to remedy this great defect, but without success. From 1735 M de Labourdonnaire had pointed out, at a mile from the gardens, a point named *La Calle* as capable of being made available as a shelter for small craft in the bad weather season. In 1751 a jetty, formed on stones and secured by a strong chain, was built by the company of traders to India (where the Government house now stands); but it was destroyed in a hurricane. Then, after a great variety of projects, this is what was done in 1818. A jetty was built from the shore, 120 yards out seaward, at the end of which a mole was carried 116 yards in a W.S.W. direction, and again at this distance extended 45 yards to S.S.W., and then terminated by a circular head. N.N.E. from this another jetty with another mole was made to cover it outside, terminating near the elbow of the former, leaving a space of thirty-six yards between them. Then to protect this addition to the shore, where the sea generally breaks heavily, a large jetty, with its mole head of six yards above the sea level of high water, was constructed, bordered by a wall 140 yards above the sea level, and against this wall a sloping mass of broken rocks was heaped up, making it twenty yards higher.

These works were in an advanced condition in 1829, but in that year in a terrible storm the whole of the work was utterly destroyed by the sea. Then, out of respect for the great efforts which had been made, the sole remains were preserved with the greatest care. In fact, a kind of circular basin off the royal battery was formed with the wreck of the whole, mountains of sand and pyramids of stones, which are all that remains to this day; but they are further strengthened by a new wall protected by a solid mass of rock.

This basin is the present *Barachois*, all that remains of the gigantic work of 1829. It would seem, also, that certain parties speculating



their opinions of the works, considered them as destined to destruction by the sea, for at the office of the superintendant a placard was found fixed by an unknown hand with these words on it:—

Départs Projetés :

pour la Mer,

LA BARACHOIS.

In order to appreciate the point of this Bourbon joke, it is essential to know that no one can quit the colony without advertising his intention three times in the local prints. This serves as a notice to creditors. The Barachois, desirous of conforming to the law and not deceiving his creditors, thus gives them time to take their measures, and having announced his intended departure by sea, he keeps his promise, as I will explain.

Whatever may be the case now, the Barachois serves as an easy basin for country boats and little coasting vessels in the winter months. These vessels take care to enter it before the passage leading into it is obstructed, that is, at the commencement of the winter, and they never leave it until it is over. And yet the refuge it affords is quite an illusion, because, first, if the weather is such as to force these small craft to enter the Barachois, the sea is generally too rough to admit of their taking the passage into it with safety; and next, because even in moderate hurricanes the sea breaks over the jetty and makes great havoc among the small craft already in the basin. In fact, whenever there is any sea running the passage is completely obstructed either by sand or shingle thrown in by the sea, and even in moderate weather it is generally blocked up.

To remedy this, every day at sunrise and sunset a number of Negroes are set to work to clear out this pass. And such work it is; it may well be compared with that of the Danaïdes. Here is the process. About a hundred Negroes are divided into two parties; one party is in the water in line up to the knee, and take up one by one the huge stones that are thrown in by the sea (two at once is very rare) with a studious slowness, which is always the same; never accelerated; and cast them about ten paces behind them. The second division having followed in the same order, take up these stones and deposit them in a cart, which is there to receive them, and when full carries them away. Nothing can be more ridiculous than the gravity and deliberate slowness with which each of the Negroes employed in this work makes his arrangements so as to occasion himself the least possible movement and the least possible trouble in the execution of this duty. Every one of them stoops down mechanically, collects without any hurry five or six stones, as big as his two fists, and deposits them in a small shallow basket, which he then carries on his head, previously prepared with a ring or crown of straw or some rags. When all the detachment has performed this movement, they commence their march to their evident disgust, alas, and advance as before to the station in soldier-like order, having taken care to basket as many stones at once as they can, so as to have to perform as few journeys as possible in the course of their work.

You may imagine the result of this work on the pass. But for the new comer it is quite an exhibition. The arrivals and departures give life to the picture, and certainly impart life and animation to this portion of the town. Besides, it is always busy on account of the governor's house being there, surmounted by a railed terrace, which overlooks the roadstead. Here also is the mouth of the River St. Denis, dry in summer, in winter a torrent; the route which leads to the camp de la marine, which in the morning is frequented by groups of red pantaloons, showing themselves incessantly moving about. The camp, with its various graceful structures, shows the readiness of our soldiers in embellishing their temporary residences, and dressing them out as if by magic with gardens, alcoves, gothic monuments, and statues. &c., and finally, at the extremity of the camp, the crest of a magnificent mountain projects into the sea, on the red sides of which may be seen a flight of steps, which, before reaching the summit, folds itself several times in its gradual ascent. This is the road on the leeward side, and the enormous cape which terminates it is called the Cape St. Bernard. Such is the coup d'œil of a view from the summit of the government pier.

Meanwhile a signal is up, and well known too, that a ship is in the offing.

In a moment all conversation ceases, and groups of persons who are promenading collect themselves here and there, and an array of telescopes are sweeping the horizon. Then commence the guesses, the conclusions, and hopes, which for one party may be translated into gain or loss; for another by anticipated disappointment or realization, by the arrival or the return of a relative or a friend who has been daily expected.

The ship draws nigh; she is recognised as coming from Europe: the passengers land; an enormous sack of letters is conveyed to the post office, followed by a large group of expectants, who impatiently await the delivery on the steps of the door: at length that horrid little trapdoor is opened. Alas, there are always too few who are rewarded for their trouble in attending.

If a good artist were here, he would have a fine opportunity for producing a good picture of the exhibition of sentiment on these occasions; the expressions of countenance being proportionately stronger as they are lighted up by the tropical sky. No doubt there are here as well as everywhere else, letters of business as well as letters of friendship, aye, and love letters too, as well as souvenirs of all kinds; that is, of credit and bankruptcy, of constancy or failure, mementos of remembrance or blanks betokening short memories: but all this has been expected, wished for, and may be so for three months more; for three more are required for one to thank his correspondent, of whose probity he is well satisfied, who will honour at the specified date due, and he is saved from a critical position, because in his turn all may be blighted; he may receive either a piercing message, or one all that can be desired, while he may build and destroy and rebuild again a thousand airy castles with their shadows of gold.

But the news is talked over,—the mercantile as well as political gossip,—each has its important point, and each its share of comment. In fact, the crowd begins to disperse, but the last few loiter away with expressions which if overheard would be like these,—“Why hasn't she written to me?” “Sugar is thirteen dollars.” “Nothing from St. Ernest.” “Emancipation again!” At last all have disappeared, the sun has become high, a little longer and the heat will be unbearable.

Before we retreat also we must look at the aqueduct, a simple wooden trough, which runs the whole length of the pont du Roi. With the assistance of a leathern hose, the boats of the shipping come and fill their casks without landing them. Yet the merchant shipping are not permitted to land any merchandise whatever on the pont du Roi, but always on any of the others.

In the evening the Barachois is the rendezvous of company, and the female part of society is then naturally the most numerous, and bravely do they sport the result of the toilette and their charms in the fresh sea breeze, which comes from them redolent of perfume, a little too strong, perhaps, sometimes with the smell of mud. In spite of all that may be said by fathers, uncles, or grandfathers, our creole ladies persist in adopting the Barachois for their evening promenade, for their day is passed in the occupations of the house, dressed in their cool Indian clothing, where they are hermetically sealed, and where neither sun nor heat can have any chance of reaching them.

As for me I am quite disposed to excuse the ladies for their perseverance in preferring the Barachois to any other promenade. There is to me an indescribable charm in going there of an evening to enjoy the refreshing sea breezes, which may have swept perhaps over a country containing those who are beloved on its way here, to observe the planks of the jetty bending under one's feet; to see wave after wave dashing itself against it. Perhaps it may be weak to enjoy such pleasure, but I can fancy myself nearer to my country and my friends. I give myself over to this pleasing delusion as I contemplate the ships at the anchorage while rolling about from side to side, from right to left; it is then that I imagine myself embarked and en route for home; I can fancy I am holding to the side of the ship as I lean on the balustrade on my way home, and can even imagine that some distance has been run over. But, alas, my reverie is broken, the soil of Bourbon is before me, and I find myself alone. Ah well, so it is, and yet in spite of these realities I still like to resort in the evening to the Barachois.

St. Denis is very properly the capital of the island, for besides being thus the metropolis and the seat of government, it is also the principal seat of its commerce. Its roadstead boasts annually the presence of 400 ships, and the amount of its trade is about a million and a quarter sterling.

St. Denis being the principal mercantile depot of the whole island, it is there that the most important mercantile operations take place. The various ships which visit the island, (nearly all French,) bring

the industrial produce of every country and take in return that of the colony. They also bring from India the rice required for consumption in the island, amounting to 16,000 or 18,000 bolls per month, white cloth for the dresses of the black population from Java, Sumatra, and other Dutch colonies; and take horses and spices to Muscat, salt fish, dried fruits, and grain, and medicines for Europe, asses of a superior breed for rearing first rate mules. The Seychelles send cocoanut oil to Bourbon, Madagascar sends rice, rope-bands, and especially bullocks, and with Mauritius a constant communication is kept up by coasters.

So extensive and various a commerce accounts for the busy activity observed at St. Denis, especially in that part of it which fronts the sea. The streets from morn to dewy eve are crowded with people, and are incessantly replaced as they disappear. The noise of this concourse of beings is increased by that of at least some 300 carriages, elegantly turned out, belonging to the elite of the place; besides numerous vehicles from the sugar plantations, the coffee grounds, spice fields, taking there rice, wood, and building materials. Here and there are seen carts drawn by Negroes, singing as they move along a monotonous air, which, however, enables them to exert their efforts in unison.

The town of St. Denis is built on a slope which is terminated by the sea, and is connected with the mountain above, a state which renders it tiresome to walk, although the streets are crossed by others at right angles, and all of them macadamised. There is a company which supplies the town with public carriages, so that it is easy to get from one end of it to the other at a very trifling cost. These carriages or cabriolets are very good, well fitted with their horses, and would throw Parisian affairs of that kind into the shade, not excepting the established regulation cabs: their expense is moderate also, for in a country where the piastre is as twenty sous in France, their cost is at the rate of one to three francs the hour.

St. Denis has about 15,000 souls to about 1,400 houses. Five large streets traverse the town, terminating from the higher part at the sea, and these also are crossed by some twenty others at right angles. All the streets are good and of a handsome width; but they are bordered by reservoirs and alleys sufficiently disgusting for promenaders, especially of an evening, for, incredible as it may be, St. Denis, the capital of the island, which pretends to be the representation of a European town, St. Denis has not yet become more than a bad imitation. It is true that our town is about to be improved, for even the light of the moon shames it.

The houses are of wood and stone, and a good many of them may be considered elegant and almost monumental in their aspect. For instance, government house, a handsome stone building, is justly entitled to notice in spite of its want of repair. The eye is pleased by its appearance, with its two wings extending towards the sea, their terraces in the Italian style, and a handsome covered gallery round the first floor, commanding a view of the anchorage, and open to the

sea breezes scented as they pass over the flowers of a garden, small though it be. By the side of it the hotel de Joinville presents a sumptuous appearance, and further off the casernes, St. Philip's Hospital, the façade of which is not less than 200 feet; the hotel de l'Europe, intended like that of Joinville for the traveller, and which affords under an exterior less grand than its rival all the comforts that the most refined taste could look for. Then there is the caserne of the gens d'Armerie, the palace of the colonial council, the commanding appearance of which looks well at the end of the grand street of the Jardin du Roi, the courts of justice, the college, &c., besides a large number of handsome houses, their exterior elegantly ornamented, while their inside affords ease, coolness, and that feeling of being at home, which the climate renders so desirable.

The River St. Denis supplies three streams of water necessary for the consumption of the town, and large fountains near the prison at the entrance of the garden of the governor's house, and there is a good, clear, limpid stream down the middle of the rue Royale; moreover, in 1836, an aqueduct was constructed at the expense of the town that cost 122,000 francs. The length of it is about 2,000 yards, and it supplies abundantly all the wants of the town, requiring for its services very little attention.

But this minute account, this anatomizing of St. Denis, will scarcely interest you, it will be as insipid as the names of Homer's heroes. We will conclude here then for the present, and look into the town hereafter. At all events we shall see what is worth seeing, and contemplate the manners and customs of the people. Where shall we begin our task? At the Bazaar? very well, in our next.

*(To be continued.)*

---

#### GLEANINGS OF THE JAPANESE.

As might be expected from the late exchange of official visits between the people of the United States and the Japanese, more seems to be known of personal habits and general character of these people in New York than among ourselves. Such particulars as the following are to be found in their daily prints, and it is from one of these that we preserve them, as they cannot fail to be interesting to our readers:—

I was so fortunate as to be able to visit all the ports now open to foreigners—Nagasaki, Kanagawa (which includes Yokuhama), and Hakodadi—thus visiting each of the three islands, and circumnavigating the group. The effect of foreign trade and intercourse is already obvious. Kanagawa is the port of Yeddo, and made the chief

port of foreigners in July, 1859. I was there nine months afterwards, and found a town grown up at Yokuhama with almost the fabulous growth of a Californian city. What in June, 1859, was a little collection of Japanese cottages, with a few rural temples, farm-houses, and groves on the hill-side, is now a town of some five or six thousand Japanese inhabitants, with streets broad and straight, a fire department, street barriers and gates, fire-proof store-houses, two moles of solid masonry jutting into the harbour, and innumerable shops for the sale of lacquer-work, porcelain, copper-enamel, and engravings and cuttings in ivory, wood, stone, and crystal, books, maps and pictures, and all kinds of Japanese curiosities, as well as of the necessaries of daily life and the solid staples of commerce. All this is the work of Japanese capital and skill. Nor have the foreigners been inactive. They have built, and are building, their lodging-houses and fire-proof *go-downs* (store-houses), planting trees and shrubs in their little enclosures, and gathering about them all they can command of western or are willing to adopt from the eastern civilization.

Rice is the staff of life in Japan, and its exportation, as well as that of wheat is prohibited. The most promising articles of foreign trade are tea and silk; but they are not yet developed, and their fate, in competition with the silks and teas of China is not decided. But I find the best informed merchants confident of their success. The rape seed is largely cultivated, and its oil has been exported with success to Shanghai and a little to England. The vegetable wax is a minor article, but has attracted attention in Europe.

To China the exports are drugs and medicines, fish, flour, rape seed oil, seaweed, and various small articles of food and cookery, passing under the general name of *chow chow*. The amount of tea exported from Japan the last year is about one million of pounds, and of silk four thousand bales; and the prices of these articles have risen fifty per cent. in the markets of Japan since July, 1859, to the great advantage of the Japanese producer and merchant. But the trade of Japan is solely a trade of exports. As yet they buy nothing. Lowell and Lawrence, Lyons and Manchester, and Leeds are spread before them in vain. Silks and furs and cottons they have of their own (though of their cottons we know but little), and a fabric resembling flannel, but not woollen or linen, and their cotton fabrics bear no comparison with ours. But they are cheaper. The prices alone seem to stand in the way.

Gold, which was so plentiful at the opening of the trade as to be valued but little above silver, giving great profits to the foreign traders, who bought gold kobangs for a dollar apiece and sold them in China for four dollars,—gold has now risen to its European value, and the confusion and mistakes of the government as to coinage and currency are coming to an end; confusion and mistakes increased by the unreasonable and fraudulent demands of many of the foreign merchants, and natural enough in a people who had lived by them-

selves for twenty centuries, trading in oval and square coins of gold and silver, and suddenly found themselves beset by strange round coins, belonging to all nations, with unknown images and superscriptions, and varying weights and values.

Such are some of the material aspects of this newly admitted commerce. Its moral effects, more interesting, lie hid in deeper causes.

It is true, indeed, that Japan is still virtually a sealed book. The cover, the preface, and a few uninterdicted chapters alone are open to us. But some things we do know. The world knows that Japan is under a feudal system of the strictest sort and most powerful character; that this is surmounted by a monarchical power, vested in the Tycoon, and somewhat controlled by a Council of State; and that the Mikado, or Spiritual Emperor, believed to be of divine ancestry, has now no secular power. The Tycoon and the great feudatories, the Daimios, own the land, which is held under them, in strict feudal service, by subinfeudation, the eighteen greater Daimios moving through the country with trains of soldiers, civil officers, and servants, and occupying as many as three, five, and ten palaces at a time.

These princes are the civil and military chiefs and the judicial magistrates, as well as the landowners of the empire. Great as their power is, extending often to life and death, while they have tenants, soldiers, subjects, and servants, they have no slaves. There are universities, academies, common schools, degrees in belles-lettres and the natural sciences; yet, a military and feudal people, they do not rank learning so high as do the Chinese. The greater nobles, the lesser nobles or gentry, and the civil and military officers and priests, rank first in the order and state there. The doctors of science, medicine, and belles-lettres rank next, if they have no office; and last of all come the merchants and artizans, forming an inferior order.

Having had no foreign commerce they have had no class of powerful merchants or manufacturers, and they do not distinguish between these and the retail traders and artizans. Even the common soldier and the common soldier's son, with his two little swords, outranks them. The merchant is not *hof se*. What will be the effect of an extended commerce on this system? Will it be the old story of cities and burghers and guilds against castles and coronets? Already the effect of the infant commerce is felt in the increase of prices, the demand for products, and the rise in the value of labour. Will this raise the dignity of the merchant, and diminish the retinues of the nobles? It is said that the quick-sighted Japanese are suspecting this, and that a party is forming among the nobles to counteract it; and some suppose that the assassination of the Prince Regent by the emissaries of the Prince or Mito [vowels to be sounded as in the Italian] was something more than private revenge. Will the aristocratic institutions fall before these innovations, as in France, or accommodate themselves to them, as in England?

The social and moral condition of the Japanese presents curious

problems, and what seem to us to be anomalies. That sense of propriety which suggests neatness in the person and the house, the table and the bed, is to be reconciled with an absence or ignorance of modesty unequalled among any people who have made the first steps in civilization. We are to understand how it is that a people who in all classes punish adultery in the wife by death or perpetual ignominy, and in the upper classes guard the honour of a daughter with the sword, should take their wives—yes, even the gentry and nobles—from the jorogas. No people are more neat in their persons, bathing daily—the poorest of them—in winter as well as summer, and warm baths are as frequent here as drinking shops in England or America. Yet the sexes bathe together, and the platforms on which they dry and dress themselves are as open to the sight of every passer by as our butchers' shops.

Not only is the veil between the sexes rent, but the veil which protects other decencies of life. The maxim seems to be that whatever is necessary to be done, or is known to exist, there need be no attempt to conceal. Again, while you are relieved from the offensive sights of abandoned women who beset the streets of English and American cities, the jorogas are legalized and made as respectable as possible. There, foundlings or the daughters of the poor or unfortunate, or less scrupulous, are bound as apprentices, and are educated according to the style and degree of the establishment, in the necessary learning and in the accomplishments, as at boarding schools. From these places, where the prices over the doors furnish the only restrictions upon the admission of all men, are to come many of the confidential servants, and, in cases not few nor disreputably esteemed, the wives and mothers of the better classes.

Though a military, feudal people, yet common schools are provided everywhere and for all. The coolie, hammering stone in the quarries or carrying bales on his back, can read and write, and carries a piece of paper in his bosom and an inkstone and pencil at his side. Indeed, it is an encouraging reflection to us in New England that if we persevere in our school system, we may so work over our immigrant population that the proportion of our inhabitants who can read and write may in time be as great as it has been for centuries in Japan; and the Celtic hod-carrier and the gravel-tosser may yet, like the Japanese coolie, carry his tablet and inkhorn in his bosom.

The profession of the law and the sciences of jurisprudence they have not. No intellects trained to forensic life compete with the hereditary or military officials. The magistrate is the political or military officer, and has only the parties before him, and finds the law in a written code, and if not there in his own breast. The only learned class, except the priests (who are never politicians), are the doctors of medicine, science, and belles-lettres. They are two-sworded men, and have a respectable social position. As to their learning or skill I can say nothing of my own observation, except this:—A German savan, Dr. Lindan, who has spent some time in Japan as an envoy



from the Swiss Republic, was a passenger with me from Hakodadi to Shanghae. He had with him several volumes of coloured sketches of the birds, reptiles, insects, and flowers of Japan, the work of Dr. Kurimoto Tzuiken, the chief physician of the Tycoon, and the most learned naturalist of Japan. When Dr. Lindan exhibited these sketches to us we were amazed. Not only is every hair and feather delineated, and the colouring rich and various, but the attitudes and actions of the birds and insects are full of nature and spirit. The silver hues of the insects' wings are so given that they glisten to the eye. The flowers seem prepared for microscopic observation. I am wrong in saying that these are the work of Dr. Kurimoto alone. They were begun by his grandfather, continued by his father, and completed by himself.

Of the tea and silk culture we see nothing on the seaboard. But the rice fields, the wheat fields, and the fields of the rape seed are everywhere before the eye. Of the birds I can only say that they are numerous and noisy, and that the Japanese pheasant is the most exquisite thing I ever set eyes on. Japan is the most fruitful in evergreens of any land I have ever seen or heard of. At Nagasaki and Kanagawa, and in short distances from them, I found, in abundance, the white pine, the pitch pine, the ground pine, a delicate creeping pine, cedars of various kinds, a tree resembling the hemlock, the arbor vitæ, species of fir and spruce, the juniper, the savin, the yew tree, the holly, and the cryptomia, japonica, and box trees. The oak and the laurel are common. Hedges are made of the box and the civit. Camelias of every size and hue abound, and the double flowering cherry and peach. The English ivy and the climbing box grow everywhere, and the dense foliage, the creeping plants, and the hedges give a delightful air to the scenery, more home-like and reposing than the richest luxuriance of the tropics.

Missionaries, strictly speaking, there are none. Since the utter extermination of Christianity in blood and fire, in the seventeenth century, missionaries have been prohibited. By the late treaties they allow foreigners to build churches and practice their worship within the limits assigned for their residence; but they tolerate no preaching or teaching to the natives, nor the circulation of religious books. Two Roman Catholic clergymen, the Abbe Girard and the Abbe Wernet, are residing in Japan, sent by the society "Les Missions Etrangères," but confine themselves to learning the language and religious habits of the people, to the removing of prejudices, and the gaining of personal influence, in the hope of better days. Two of Bishop Boon's clergy, for the American Episcopal Church Mission at Shanghae, are at Nagasaki, and there are two missionaries of the Dutch Reformed Church of the United States.

All these confine themselves within the limits I have named, and so strictly that they do not explain their faith even to a Japanese who comes voluntarily for inquiry, knowing that such an act might imperil the Japanese and end their own residence here, or render it useless.

The people at home must not delude themselves into the belief that any strictly missionary work is doing or can be done in Japan. No clergymen are of any service here but scholars and gentlemen,—men who can master the language and literature of Japan, get an insight into the genius of its institutions, gain personal influence, remove prejudice, and prepare the way for the future.

Now that the Japanese embassy has returned home, having relanded at Yeddo on our Lord Mayor's day, a sketch of the company composing it shall conclude these gleanings, and for this we will make use of an account of them at Honolulu, the first place they visited after leaving Japan. The remarks of the *Commercial Advertiser*, in which we find the following, appear very apposite, and in the event of such an embassy coming to our Court, will convey a tolerable idea of what we may expect, an event which the yet closed fruitful volume of time may have in store for us.

This embassy consists of two ambassadors plenipotentiary, who are nobles or princes of the highest rank. With these are two others of nearly equal rank, a censor and a vice-governor. The duty of these latter officers is to act as *spies*, or reporters of the conduct of the ambassadors and others employed in the commission, and also to report anything that may pass under their observation. The number comprising the embassy may be considered to be very large, consisting, as it does, of seventy-two persons, viz., two ambassadors, one censor, one vice-governor, sixteen under officers and secretaries, and fifty-two servants or soldiers, viz. :—

1. *Ambassador*—Simme-Bujen-no-kami.
2. *Ambassador*—Muragake-Awage-no-kami.
3. *Chief Censor (or spy)*—Ogure-Bungo-no-kami.
4. *Vice-Governor*—Morita Okataro.

*Officers of the 1st rank belonging to the Ambassadors*—Naruse Gensiro, Skahara Jhugoro.

*Officers of the 1st rank belonging to the Censor*—Hetaka Keisaburo, Osakabe Tetstaro.

*Under Officers belonging to the Ambassadors*—Matamoto Sannojo, Yosida Sagosaimou.

*Under Officers of the Vice-Governor*—Masudu Sunjuro, Tuge Hosingoro.

*Under Officers of the Censor*—Kuri-sima-hico-hatsiro, Sewo-sawa-Scogero.

*Officer and Chief Interpreter*—Namura Gohatsiro.

*Interpreters*—Tateish Tokujuro, Tateish Onagero.

*Doctors*—Meodake, Morayama, Cowasaki.

It must be remembered that the Japanese, as well as the Chinese dignitaries, think that high rank demands a large retinue. The same ideas prevail with our native nobility, as well as with most semi-civil-

ized people. Before starting, the Japanese were assured that a train of servants would be annoying in travelling through the United States. But they were unable to comprehend the argument, and demanded that they should be allowed to travel according to their custom.

Whatever we may think of this people, comparing them with ourselves, they are by no means ignorant, and those who compose this embassy and who are probably a fair representation of their countrymen, appear to be educated and communicative, and compare well with foreigners. Their costumes are novel to us, it is true, but they are skilful and intelligent for all that. A steam propeller of 300 tons, is being constructed by the Japanese, similar to that recently presented to them by the Dutch, and in which Captain Brooke, late of the *Fennimore Cooper*, took passage for San Francisco, for which port he had left before the *Powhatan* sailed from Japan. This circumstance shows that the arts among them are well advanced, and that they are capable of doing what foreigners can do, if rightly directed.

We have met some of these officials on several occasions, and have found them very pleasant and exceedingly inquisitive. In fact, this appears to be their most noticeable trait, *extreme curiosity*, and a desire to see and examine everything. One of the ambassadors, accompanied by the censor, an interpreter, and eight or ten others, visited our printing rooms, and examined the presses, &c. Then in the book store they were much amused with the large and neatly printed books, as well as the pictures, and many curious objects in the stationary line. Proceeding into the post office, they were shown the style of letters passing to foreign countries and the various stamps used, and when informed that any letters they might wish to send to Japan would be forwarded via Hongkong, procured some stamps and promised to write.

An artist also accompanied the above, who appeared intently observant of everything. Before entering, we found he had sketched the outline of the arched gateway before the post office. We requested the privilege of looking over his sketchbook, which he cheerfully allowed. His sketches consist mostly of outline etching. In his book we found parts of the steamer's machinery, scenes on deck, individual portraits, outlines of the islands, and our harbour. The portrait of old Kamehameha the Great, hanging in the Hall of Representatives, has been transferred to his book. There we found, too, Kinney's hay cart and horse all in motion, also a loaded dray. In the printing office he sketched a compositor setting type, with the stand, case, &c.,—all done in one minute. But one of the finest of his pictures was that of "serving grog" on board the *Powhatan*.

Here he represents a group of fifteen or twenty tars, each with a cup, some drinking, some dipping into the container, some smacking their lips,—the expressions perfectly natural and life-like. Frank Leslie or Harper would give a day's receipts of their illustrated papers for this artist's sketchbook. Next he visited Howland's ambrotype rooms, where he was requested to sit for his portrait. This he declined, saying that when he had shaved, and put on another suit

of clothes, he would return and sit for it. Looking over the pictures which were lying on the table, he spied the likeness of Mr. Kern, artist on board the *Fennimore Cooper*. This he instantly recognized, and was perfectly delighted to find that that gentleman had been here. He had met him in Japan, and became acquainted with him. If our Japanese visitors are so taken up with the ordinary sights of Honolulu, what will become of them when they witness the splendid views and sights of Broadway?

Immediately on the arrival of the *Powhatan*, the French Hotel was engaged for the use of the embassy, and during the afternoon of Monday they came on shore. His Majesty the King, with that public spirit and hospitality for which he is so well known, immediately engaged the vacant Dudoit premises, and fitted them up, furnishing them with the best furniture that could be obtained, for the use of the ambassadors during their stay here. The Queen's carriage and horses appear also to have been placed at their disposal, as we have seen the ambassadors riding about in it. This special attention to these Japanese dignitaries on the part of our sovereign, is certainly praiseworthy, and can only leave on the minds of these visitors the most pleasant recollections of Hawaii and her King.

It must be a matter of pride to every American that his country has been the first to induce the Japanese to break through their ancient notions, and recognize the existence of nations of equal strength and importance. Except what they may have learned from returned Japanese and others, the rulers of Japan have hitherto been unable to comprehend that there are nations advanced far beyond them in every sphere of civilization. To dispel this ignorance, caused by the policy of exclusion pursued by that government, the visit of this embassy to the United States will do more than anything else. It is instructed to record and report, for the information of the Emperor, all that is seen. It is amply provided with secretaries, artists and draughtsmen to report everything, and illustrate their progress with views and sketches. It is easy to imagine how eagerly their return will be looked for by their countrymen, and with what intense interest the report of their expedition will be read. If published, as in other countries, the sensation it would produce would far eclipse that of either Dr. Kane's or Captain M'Clintock's voyage to the Arctic. But, as the policy of the Japanese government has been, from time immemorial, to keep the masses in profound ignorance of foreign countries, it is not likely that they will depart from it in this instance, but that the information will be kept only for the use of the government.

There can be no question but that the visit of this embassy will result favourably in opening Japan to foreign intercourse, though it may be years before it has that effect. It will be impossible for these ambassadors to return to their country without obtaining new ideas about foreigners, and perhaps reporting favourably of the knowledge, wealth, and skill of the American people, as compared with their own. And it is more than likely that they will recommend the re-

removal of every obstacle in the way of trade and travel with the United States, and perhaps Europe. This must rapidly increase the trade with that people, which is now springing up, and which meets with many obstacles. The empire of Japan has a population of 40,000,000,—one third larger than either the United States or England. To supply this population with the products of European manufacture, will in time create a trade as extensive, perhaps, as that now existing with China.

The United States government pays the entire expense of the Japanese embassy, both in going to and returning from Washington. This will be no small item, but the fact that it is the first foreign embassy that has left Japan, and also that she is the only nation that has succeeded as yet in inducing the Japanese to send out a foreign embassy, will give her an honour which will more than compensate for any outlay required for it.

---

EXTRACTS FROM A LECTURE ON THE LATE ROYAL VISIT,—*Delivered before the Young Men's Christian Association and Literary Institute, Charlottetown, December 13th, 1860, by the President, Captain Orlebar, R.N.*

For the first time in the annals of our country, the heir apparent of the British crown, at the early age of eighteen, and as the first step in official life, has been called on by the Queen, and the voice of her subjects on this side of the Atlantic, to cross the wide ocean, to gratify the colonists by his welcome presence, and to inaugurate the completion of the great tubular bridge over the St. Lawrence,—a gigantic structure, costing two millions sterling, and surpassing in grandeur and skill any work of art on this continent. A voyage of 2,000 miles across the Atlantic is not what it once was, especially when undertaken on board of a splendid first class screw line-of-battle ship; but it is not without its perils and its discomforts, and it is not likely that any other Queen but Queen Victoria would have parted with her eldest son for such a purpose, or conceded so much to the wishes of her subjects.

After suitable preparations, the Prince and his suite embarked on board one of our noblest screw steam ships of war, the *Hero*, carrying eighty guns, and accompanied by a monster frigate, called the *Ariadne*, of great power and swiftness, and a despatch steamer, called the *Flying Fish*. Great care was taken to arrange beforehand the programme of the visit, so as to economise time; and it is remarkable that every appointment as to date and time, although extending over three months, was punctually kept; and thus in that short space of time, by the blessing of God, every one of the North American colonies has been

personally visited by the Prince, as well as a considerable part of the northern United States.

The Prince's progress by sea and land has been one continued triumph or ovation. Old English loyalty has been stirred to its depths, the hearts of the colonists have warmed to the occasion, and no expense or exertion has been spared to give the Prince a right royal welcome.

Directed by the Admiralty, the author of these lines was among the first to welcome the Prince on this side of the Atlantic, and my intercourse with him and his suite, commencing on the 24th July, did not cease till the 18th August. On board the *Hero* he was in his undress, and as it were at home; and I was most favourably impressed with his amiability and good temper, and with the total absence of pride and self-conceit in his conduct at all times. With good natural parts and quickness of observation, he, like most boys of his age, seemed delighted to escape from books and intellectual-pursuits; and Oxford lore and learning were for a time laid aside, if not forgotten. He was always unobtrusive, gentle, and anxious to avoid giving trouble, and would rather wait upon himself than call for a servant. He was simple and temperate in his habits and unostentatious in his dress, and was ever thoughtful of the comfort of those about him. I have seen him break from the group of high officials on the quarter-deck and hasten to the gangway to give help and sympathy to one of the servants of the suite, whose foot had been crushed by a carriage-wheel; and when a sailor fell overboard from the *Hero's* quarter-davits and was nearly drowned, in Gaspe Bay, he was the first at the gangway to welcome the poor fellow back to life and safety. Such conduct in one so young could not fail to win all hearts, and he certainly was most justly loved and respected by all on board. He was embarked in one of England's largest ships, and the accommodation afforded him and his suite was all that could be expected. Yet there is a restraint as to time and space for locomotion, and a necessary subjection to noise and bustle at all times of day and night, that must be irksome to a landsman, and especially so to a Prince. Therefore it was a surprise and a pleasure to see him always cheerful and happy, and quite indifferent as to whether the sea was rough or smooth, or the wind was fair or foul.

I had not been used to intercourse with princes, nor did I wish it, but if anything could have reconciled me to it, it would have been the occasion thus afforded me of noting with thankfulness the many qualities of this young Prince, that seem to fit him for his high station, and to give promise of future good to the great people whom he is one day destined to rule.

The young middies were the Prince's especial favourites. Whenever he could escape from state trammels, he would be with them, and with the high spirits belonging to youth and health would join with hearty glee in their amusements and jokes.

How different were my feelings. I really felt sorry I could not be

equally light-hearted; but the sobering effect of fifty winters was upon me, and the vast ship with its ceaseless noise, its crowded decks, its heavy artillery, and no less ponderous routine only excited my wonder and destroyed my comfort. In fact, to me, there is something so artificial and constrained in the life of a sailor on board a ship-of-war, that it must require very early training, and the strong inducement of ambition, or a deep sense of duty, to make it even tolerable. After living so long on detached service, to return after twenty-five years' absence to the restraints of a sea life and the close atmosphere of a cockpit cabin was irksome indeed, and I felt often the dreariness of a prisoner and the sadness of an exile when retiring to my cabin after the bustle and excitement of my day's work as pilot.

Having a son just entering upon a middy's life at sea, I was on the watch to ascertain whether there was any respect paid to religion on board the royal squadron. My opportunities for observation were few, but there were some, doubtless, among the many hundreds of young men crowding their decks that lived for nobler purposes than met the eye of the casual observer.

Shortly after I went on board I was thinking of my loneliness, away from all Christian intercourse, and to escape the noise and bustle of the crowded wardroom, retired to my cabin. As I was stooping to clear the hammocks of the middies, hung up in the cockpit, and just as I arrived at my own door, I saw the lid of a chest thrown up, an open bible lay spread on the till, its precious page lighted up by a piece of wax candle stuck on the side of the chest, and before it was kneeling a young lad only half dressed. He was a midy praying and reading his bible before going to bed. Thus even here I found the Lord had his hidden ones. Each evening that I remained on board was this repeated, and I felt more pleasure in marking by stealth the quiet earnestness and boldness of that gentle lad thus daring to be singular in approaching his God and Saviour, than in all the pomp and ceremony that awaited me on the upper deck.

The following day was Saturday, and at noon, as the *Hero* lay at anchor, my thoughts involuntarily went towards the coming Sunday; and as I was hoping that it might receive the honour rightly due to the Lord's day, of a sudden there fell upon my ear the sound of young people singing, and I was surprised and delighted to recognize several favourite and familiar tunes. It was the choir beginning the practice for the morrow, and under the leading of the band-master, about fifteen young lads were chanting and singing in chorus the psalms and hymns for the Sunday's service.

The day following was fine and calm, and after breakfast the Commodore ordered the fires to be banked up and the engines stopped; and after trimming sails to a light air from the S.E., care was taken to give the men an opportunity for rest and worship. A pulpit and seats were prepared on the main deck, and after the usual inspection of the well-dressed crew, all hands congregated there for public worship. In a few minutes the Chaplain appeared. The service at once commenced by singing the morning hymn, and in the presence of the

King of kings and Lord of lords, all sat in humble reverence. How precious those moments are when earthly state and distinctions are cast aside and we feel our common brotherhood and plead our common wants before our Father's throne. The custom on board ship is not commonly to kneel in public prayer, but the Prince knelt reverently and paid marked attention to the service. The sermon was evangelical, and was well and earnestly delivered. Afterwards I heard the Prince remark,—“I like Divine Service on board ships: it is very solemn, the men seem so attentive, and it so becomes our place upon the wide deep sea.”

I was afterwards on board another man-of-war, where there was a *daily* recognition of the claims of God upon us, and the Captain remarked to me, that most truly had God put honour upon him ever since he had thus publicly acknowledged his dependence. That Captain's plan was to ring the bell for morning and evening prayers, and himself, and many of the men and officers attended, whilst the Chaplain read a selection of psalms and then prayed; and this public recognition of God only occupied six minutes, not too long surely for the worship of Him who holdeth the winds at his command. That ship was the happiest ship on the station and freest from punishment, and that Captain for his practical good sense and faithfulness was the most trusted by his Admiral.

But, to return, I continued aboard the *Hero* until her arrival at Quebec, and as an Englishman felt unusually gratified at the thorough heartiness of the welcome the Prince received everywhere. The tasteful arrangement of the triumphal arches, the grouping of volunteers along the streets, the heartiness of the cheers, and the sweet singing of the national anthem most favourably impressed our royal visitor.

After this, the Admiral requiring my services in the *Valorous*, I proceeded in her to Montreal; and from thence was permitted to return to the scene of my more immediate work. Before leaving Montreal I witnessed all the preparations, visited and inspected the magnificent ball-room, passed under the noble arches, had my eyes dazzled with the brilliancy of the illumination, and beheld the gathering of the many thousands of that busy city on the quays facing the river, in momentary expectation of the Prince's landing. The bells of all the churches were pealing out their merry welcome as I drove to the railroad station, and the cars soon bore me away across the Victoria Bridge to quieter scenes, and to employments more congenial to my tastes and habits. From that time I have only watched the progress of the royal party through the medium of the public journals, and with unflagging interest have followed the Prince to Ottawa—Canada's future capital, to Kingston, Toronto, Niagara, and Hamilton. The only interruption to thorough harmony and good will occurred with reference to the Orange lodges. Let us now follow our young Prince into the country of our natural friends and allies of the United States.

Everywhere the Prince, although affecting no state and travelling





as Lord Renfrew, was received with enthusiasm. There was too little time allowed the Prince to see much of that wonderful country; but never since those early days when the colonists thought of England as a fearing daughter thinks of a haughty mother, have the sympathies and attention of the Americans been turned so strongly to the parent land as during the visit of the Prince of Wales. Intervening time and history appeared forgotten, and one could almost fancy they were welcoming a prince as in the olden time. As an American said,—“We have welcomed him as a brother for our own sake, and for the sake of England with the respect and attention due to a king. When the Prince landed at the Battery, New York, all the world was abroad and waiting for him. It was a scene not easily forgotten. Broadway gay with British and American flags suspended across the street and decorating the houses,—the beaming faces at the windows,—the great crowd surging below, excited yet orderly,—the long line of soldiery with its stirring music,—and, as the centre of all interest, the open barouche where, with the Mayor and the Duke of Newcastle, sat the Prince, raising his hat and showing his pleasant face, as he bowed in acknowledgment of the cheers that everywhere greeted him. Surely there was not one of that multitude whose heart did not say—God save not only the Queen, but the future King of England.”

An American adds the following concluding remarks, which I earnestly hope may be true of our relations towards one another in all time to come:—“A few days more he will return to his studies at Oxford and his life of courtly ceremony in the palaces of England. But his visit will not be forgotten—its influence upon the public mind will be wide reaching and long continued. His noble mother will be deeply gratified at the universal welcome and honour he has received, and the great nation which he represents will think more warmly of us for our cordiality to him. Should trouble arise in after days, when he perhaps is on the throne, he will remember the kind hospitalities that greeted him in his youth, he will recal the fertile prairies, the great lakes, the bustling cities, and those eager multitudes that came forth to wish him well, and it will not be in his *heart* to do us wrong. And for our own part, when we shall look back and remember his handsome youthful face, his interest in our country, his graceful acceptance of our proffered friendship, we shall not be able to judge him harshly, no matter what years may intervene. From our hearts we thank the Queen for his visit, we love her more than ever, and we see in it signs of the brighter day which is to dawn upon the nations. May God guide him safely home.”

That such sentiments find an echo across the Atlantic may be seen by the following condensed paragraph from the *Times*, when announcing his return to England after a passage of twenty-seven days:—“The Prince has been made much of. He has passed under one hundred arches of welcome, and walked through miles of torches, he has danced with hundreds of fair ladies, amid acres of crinoline: he has received the cordial hospitality of the Capitol, and visited the grave of Washington. He has expressed to the Americans the real senti-

ments of his countrymen. Truly there is no nation in which the English are more interested; truly there is none whose successes and glories we so sympathise with, and none whose onward march to greatness we are so completely identified with. The Prince of Wales, while thoroughly English, has elicited the kind feelings of all true-born Americans, and in his most propitious visit we are again made to feel the closeness of our relationship. May our statesmen and people never forget it."

We now take our leave of the Prince, and proceed to consider the probable future of these colonies with relation to that event.

But, as the child is father to the man, and the after position of the individual determined by the circumstances that surround him in early life—his education and his associates, so also the future prospects of these provinces cannot be spoken of with correctness unless by considering their past history and their present character. I need not tell you the various ways in which these colonies came under the power of Britain; nor how it was that they survived the shock which British supremacy received at the time of the American revolution. Nor need I say how slowly and silently, and in the cold shade of imperial indifference, these colonies gradually increased in population, in shipping, and in trade. With the exception of Canada West, the immigration to these colonies has never been considerable; but still what we have as wealth and what we are as a people is mainly due to the emigration flowing from Europe during the last sixty years. The settlers that arrived here and in the other provinces were generally poor, often their only capital being health, strength, and the indomitable energy of the race. At first the struggle for existence left little leisure for other thoughts; but as they acquired property and became more comfortable in their circumstances, the consciousness of rights and privileges awoke in them a yearning for the institutions they had lived under in the old country.

The colonial governments in those days generally bore an outward resemblance to the institutions of old England; but their Houses of Assembly were rather halls of record than halls of legislation. The Governors and their Councils retained all the power in their own hands, and troubled themselves but little about the opinions or wishes of the colonists. In this state of things there was nothing outrageously bad, nor was there any direct oppression; but authority was often exercised in a way that now would be considered despotic.

But by degrees the increase of population and the spread of intelligence made the continuance of such a state of things impossible. Men would think, although they were colonists; and the monstrous anomaly of colonists not being allowed to manage their own affairs, stirred up such a storm of public indignation, and awoke such determined opposition to the then existing system of colonial government, that after a struggle, more or less protracted, according to the size and importance of the colony, the home government has conceded all that was contended for. We have thus seen, within the last fifteen years, a complete change of system; and now all appointments to offices within

the colony, and all control of customs, excise, and post offices, are left to the people themselves, acting through their representatives in the Houses of Legislature,—and only the appointment of the Governors is reserved by the crown.

As far as I understand it, the present system is that the Governor appointed by the Imperial Government is responsible to the Queen and Parliament for his exercise of the powers conferred upon him, and is to hold himself aloof from political parties, so as to rule for the good of all, and to uphold the majesty and supremacy of the law against all opposers. That he is to call to his councils those in whom, by vote of the House of Assembly, the colony has confidence, and to follow their advice when in accordance with loyalty to the Queen and respect to the law. Under this new system, which has been rightly described as the extension of the principle of freedom and liberty, and giving to the colonist practical independence of the British crown, the North American colonies have greatly increased in wealth, population, and political importance. Mines have been discovered, railroads have been constructed, trade has been stimulated, and intercourse and travel have greatly increased. Steamboats are now placed on all the lines of travel between the provinces and the United States, and more markets are daily opening to our enterprising merchants.

Perhaps this marvellous improvement is not all due to our new political system; but as the most important end of all free government is the political content of the governed, the leaving to the colonists the powers of self-government must in a measure remove all subjects of complaint, and prevent all collision with the home government; and in consequence allow and encourage the colonists to direct their energies into enterprises fitted to develop their yet unknown resources, and to ameliorate their social condition.

I have watched for some years the progress of several of these colonies, and have marked the rise and fall of parties, and have observed the conduct of those who for a longer or shorter period have been the leaders of public opinion and the ruling powers of the colony. Displacing men of the old regime, the so called liberal party came into power to make all things new, and to cleanse the colonies of all jobbery and corruption. That they have not done so in all cases, but have fallen themselves under the imputation of venality and corruption, is perhaps as much the fault of the public as themselves. A change of officials was doubtless required to inaugurate the new system, but the new men raised into power on account of their activity in opposition, were not always men of high character or of social standing. In some cases from ignorance, in some cases from incompetency, they fell into grave mistakes; and at last, failing to satisfy their friends and the just requirements of the country for good economical government, they found themselves in a minority and were obliged to resign.

There is something hopeful in the public opinion that has been so clearly and vigorously expressed in this island on the side of religious education and moral character at the last election. But still there are

questions requiring prompt settling, for the sake of public morals, that will try the temper and the principle of our public men to the utmost. You may readily understand what I refer to is the *Land Tenure*.

I value the good opinion of my fellow colonists, with whom I have now lived for twenty years; but on a question of such vital importance I must speak out, for I feel that there is a higher principle at stake than the sordid and mere monetary view of the matter. Unaffected as my position will be by your opinion of what I say, I only speak as a man to honest men; but I must not too harshly reflect on those who perhaps only differ from me because naturally their sympathies are with the people they live amongst, and whose ears have been so constantly filled with tales of landlord oppressions, that they can hardly judge the question at issue on its own merits.

First let me bear testimony to the honesty and good faith of the government in the appointment of commissions for the settlement of this long-vexed question. But, secondly, I have read many of the reported proceedings of the Commissioners' Court, and I have been pained and disappointed at the coolness and self-complacency with which tenants and their advocates attempt to set aside the plainest rights of property. For whilst I concede readily that the original granting of the land of this island to absent proprietors has been a serious hindrance to its advance and prosperity, I cannot, as an honest man, take part in an attempt to keep back from the descendants of those proprietors the rents they are fairly entitled to by lease or other agreement, or join those who would compel the holders of land to sell at a price fixed arbitrarily by a tenant legislature.

Very properly the cry has been raised in England against class legislation, and the principles of true liberty are now so much better understood than they were sixty years ago, that nearly all laws of that character have been repealed in the parent country, excepting perhaps the "Game Laws," which I hope will not long survive. But in this colony more than one act attempted to be passed, if not passed, has borne this character. Here the proprietor is the *bête noir*, the man that has no friends, and statements that would be reprobated in England find countenance here, because they favour the tenant and are supposed to be best calculated to injure the proprietor.

My friends, where are the principles we have learned together out of the Word of God? Let us only practice the golden rule of doing unto others as we would they should do to us, all these sophistries would be discarded. Depend upon it, right is right!—honesty is the best of all policies, and if land is held under lease rent should be paid for it,—and I will stake my life for it that the man who does act honestly, and does meet his engagements, will not be the poorer, either for time or eternity.

Whatever starts from a vicious principle will lead to dangerous consequences, and it appears to me that our future must take its complexion from our present acts. I shall only be hopeful for that future if I see a steady persistence on the part of our island legislature in

the path of rectitude, a ready fulfilment of existing obligations, and a determination to protect every class, whether proprietor or tenant, in the equal exercise of their undoubted rights.

Thus I have, in the course of my lecture, again returned to the present time, with its complication of interests, its vexed social questions, and its fierce antagonism of political parties. I have lately seen in some of our public men a disposition to disparage the capabilities of this island. I cannot concur with them. I think this island has great natural advantages. Its climate is unsurpassed for salubrity and clearness of atmosphere, for beautiful summers and bracing winters. It is well adapted for raising all the grain crops and for the rearing of cattle, especially sheep and horses. Its soil too is easily worked, and, if manured and properly cleared, repays well the labour expended on it; and I believe it to be one of the finest agricultural countries on this side of the Atlantic,—in many respects superior even to Canada. There is really nothing in our long winters to make us complain, or to keep us poor. Only let our farmers pay more attention to the collection and application of manures, and make agriculture what it is in Scotland and some parts of England—a carefully learned and skilfully practised science, and we shall be what our island was intended to be by Him who has placed us upon it, a fruitful field—a vast granary.

But whilst our island possesses a climate and soil such as few countries can boast of, the duty of our rulers is to aid in the development of our resources, and to improve our great natural advantages by wise legislation. In this, however, they will ever meet with difficulties. All admit that our roads require improvement,—that our public wharves require to be greatly increased in number and accommodation,—and that our government should possess public land to induce immigration.

But such matters require the expenditure of many thousands of pounds, and are therefore quite beyond our present means. We do not want increased taxation, but we want the courage to borrow,—and really the creation of public debt, on the credit of the province, for works of real utility would be economy in the end. The advantages derived from the increased expenditure on works conferring benefits on future generations will enable the government, at the time of their completion, to meet the demands of the public creditor more easily than we provide now for our present small annual appropriations for roads, bridges, and other public works.

Most of the colonies are giving their attention to the important subject of increasing their population by the encouragement of immigration. I am glad to see our government forward in this work. Population of a self-sustaining character is wealth; and the addition even of one thousand persons annually to the population of this island would soon effect vast improvements. For my part, I think if the capabilities of this island were properly represented in Scotland and England, and facilities provided at the expense of government for

bringing them out, thousands of their overcrowded agriculturists would gladly come, and would find in our island a happy home and a great and rapid improvement in their circumstances.

But I seem to forget that my lecture should speak of the probable consequences of the royal visit upon the future of these colonies. I have been led away from this branch of my subject by the temptation to speak of that which after all must interest my present audience far more than a dreamy and speculative supposition as to the *probable* and, always to man, uncertain future. I have given the subject some attention, and feel it is presumption and idle to suppose that the visit of a month from any individual, however exalted, can possibly determine or influence, except in the smallest degree, the future of countries so vast as the British North American colonies, with their teeming thousands, their conflicting interests, and political aspirations.

The Canadas and these lower provinces now number about four millions of people; at the natural rate of increase, in thirty years they will probably number sixteen millions. Remembering the character of the colonists, their self-reliance, their prejudices, their impatience of control, and the certain growth of interests peculiarly American, and therefore perhaps in antagonism to Great Britain, it can hardly be possible that they will remain very long with even the shadow of dependence upon Great Britain. But, whatever be their destiny, the people of these colonies will ever value as their most precious inheritance those free institutions they have derived from the parent country. There was a time when feelings of hostility were entertained by a large party against Great Britain. Those feelings have passed away, and the colonists everywhere have learned that England wishes to act justly and liberally towards them; and that having nourished them in their infancy, she is now ready to allow them the fullest liberty of action, while generously continuing to them all the privileges of Britons.

Merely to perpetuate her sovereignty, the parent state cannot do better than leave the colonies as they now are, with their petty legislatures and local politics, isolated and estranged from one another by differing currencies, customs, and laws. But such, I am convinced, is not the principle upon which the British Government is disposed to act. Proud of her colonies, and secure in her own integrity of purpose, Great Britain wishes to see them great and prosperous, the abode of a free, enlightened, and united people, and fitted to take their place hereafter in the commonwealth of nations.

To conclude. Young men, when I thus speak of the future I deal with subjects that your patriotism and ability will be taxed to carry out. Our noontide is past, and shades of evening are falling upon us,—the brightness of day is yours. Do not forget the claims your island home has upon you; and if you are tempted, through lack of employment, to leave these shores, and to seek your living in climes more remote, do not forget the privileges and blessings you have enjoyed here; and if God blesses your efforts to get wealth, return to

your native land, and bend your best energies, your enlarged experience, and your improved resources to the benefit of your countrymen and the honour of your God. May you, here or elsewhere, not forget your Christian name and your Christian obligations; and may this and kindred institutions continue to be the glory and strength of our common country.

---

THE STRENGTH OF IRON SHIPS. *By John Grantham, Esq., Memb. Council I.N.A. Read at the First Meeting of the Opening Session of the Institution of Naval Architects on Thursday, March 1st, 1860.*

[On rising to read the following paper, Mr. Grantham said:—  
“Before reading the paper which I have before me, may I be allowed to make one or two observations? In the first place, I wish to call your attention to the way in which I have treated this subject. I have been obliged to treat it with reference solely to the mercantile marine, and to avoid entering into the question of iron ships for the royal navy. In the next place, I have been obliged to treat the subject upon general principles, as it would require a volume to bring out each of the features of this subject practically in all its details. Indeed, it is not now very necessary to do this, because there are in existence sufficient printed and published statements as to the general construction, durability, and other properties of iron ships. But circumstances have forced the present question upon attention; and, curiously enough, another gentleman, who has given much attention to it, and whose proceedings in this matter have been as unknown to me as mine have been unknown to him, has written a paper on the same subject. Mr. Fairbairn, who will read a paper to you to-morrow *On the Strength of Iron Ships*, wrote for the purpose of explaining the subject to the Polytechnic Society of Liverpool; and I may observe that the whole, or very nearly the whole, of my own paper was penned before I had the pleasure of seeing any of the remarks of Mr. Fairbairn. I have even since seen them only in the shape of a short newspaper report. And, therefore, if the remarks of Mr. Fairbairn and myself correspond, or if they differ, you will understand the position in which we stood. We neither of us knew what the other was doing.”]

The art of iron ship building may now be fairly ranked as a science the elements of which have firmly taken root, and its full growth only requires the fostering care of those who have already nursed it in its infancy. It is no longer necessary to enter into the details of the construction of iron ships; this, simple in itself, is now familiar to all those who are interested in marine navigation. We cannot, indeed,

imagine anything that can arrest its progress; but there is still sufficient novelty to give occasion for doubts and hesitation when events occur that seem to point out objections and defects; these, however, if properly treated, will frequently react in favour of the principle, by urging its advocates to a fair and open discussion of the questions at issue.

A case of this kind arose a few years ago at Liverpool, when the late Dr. Scoresby, perhaps unintentionally, created great alarm in the minds of shipowners by lectures on compass deviation in iron ships,—a subject, indeed, well known and understood, but which being set forth by a high authority in vivid colours, uncoupled with the palliating circumstances which experience and the researches of science had provided, assumed a serious aspect. The result, however, of this alarm has been most favourable; for it gave occasion to the formation of a committee carefully to investigate the whole question. I took an active part in this work, and the investigation was carried on at considerable expense for four years. The results of these labours have been occasionally published at the expense of the government, and a complete report upon the close of the inquiry will shortly be printed. It need not be stated that much useful information has been the result of the agitation of the question, and increased confidence, because based on additional knowledge, has been gained. I may add that the views many years since propounded by Professor Airy, and the mode of correcting the errors in the compasses which he recommended, have obtained additional power.

Another question of great importance has lately been much discussed, and to which also much prominence has been given, viz., the strength and safety of iron ships as compared with wooden ships. This discussion arose from the fearful and appalling loss of life occasioned by the *Royal Charter*; the sudden breaking up of that ship when on the rocks at Anglesea indicating, as some have supposed, a weakness, which by superficial minds is easily transferred to the principle itself, and perhaps even going so far as to imagine it inseparable from iron ships.

In this paper it is proposed to consider the subject of the strength and safety of iron vessels generally, and occasionally to add a few words on the case of the *Royal Charter* in particular. My observations must be confined to questions relating to the mercantile marine, as the employment of iron in ships of war would lead me into matter too extensive for the present occasion.

All questions such as I have undertaken to discuss must be relative; there is no absolute safety in locomotion, either by sea or land; even the advance of science has in it the seeds of danger, by stimulating man to more daring efforts in his strife with those elements which are everywhere putting a limit to his power, saying, "Thus far shalt thou go, and no farther."

On the ocean, in a peculiar sense, the question of safety must be relative; and while *strength* in those vessels which have to contend with it should be one of its leading features, this also must be consi-



dered comparative. For instance, when we speak of the safety of a steam-vessel, and its power to avoid dangers, the mind is inadvertently reflecting on the comparative helplessness of a vessel not having the aid of steam,—not that we mean to assume that steam-vessels are never in danger or never lost; and again, when advocating the advantages of iron for the construction of bridges, girders, and other erections requiring strength and durability, we do so in comparison with similar structures made of timber, knowing that the former is both stronger and more durable than the latter, and is more easily adapted to such works,—not that bridges or girders made of iron have never failed. This is the only sense in which we can speak of iron or the strength of iron in its adaptation to shipbuilding.

One great difficulty has always surrounded every subject which relates to the strength of ships, viz., the impossibility, even with the aid of the most ingenious mathematician, of reducing it to a formula. No calculations, however elaborate, can afford any safe guide even in making a comparison, much less in ascertaining the *actual strength* of a ship. When we have completed our experiments by vertical tensile, and twisting strains applied to bars of iron or beams of wood, all the elements of comparison must cease; for in proceeding to the next step in the inquiry, to test the relative power of uniting the several parts of the respective materials, all attempts at comparison fail. What possible analogy can exist, for instance, between the modes of uniting the outside planking or plating of wooden and iron ships? They are utterly dissimilar; so much so, that it is by contrast rather than by comparison that we can speak of them together. It is for want of this distinction that such serious mistakes have been made in the construction of iron ships by those whose experience has been based on the principles of timber shipbuilding; while it was not to be wondered at that engineers and others unacquainted with shipbuilding, but who alone have the merit of promoting iron ships, likewise made mistakes on their part: but fortunately both parties are gaining experience, and it is now difficult to say to which class the art belongs. We have now an intermediate class, whom we must designate Iron Shipbuilders.

But to resume. Even could we show to demonstration that such a comparison in ships is possible, as regards the simple strains which an ordinary girder is required to sustain,—and such, indeed, is one very important feature of the inquiry,—we are still at a loss when we attempt to deal with strains so varied as to embrace nearly all the most complicated forms under which the resolution of forces can be computed. The outward and unequal pressure of the cargo; the inward pressure of the water; the concussion of the waves; the wrenching of machinery, or the strain of masts; the ever varying condition of the ship as she rides over a heavy sea, which may be compared to a lever with an ever changing fulcrum; the strain arising from taking the ground; sometimes borne up by the ends while the centre is unsupported, sometimes by the centre while the ends are unsupported; also the effects of collisions, either in striking another ship or in being struck; and lastly, the effects from encountering rocks or hard ground,

and the length of time they can resist the battery of the waves on a lee shore before they are finally destroyed;—all or more than these would have to be considered if any calculation of the actual strength of a ship were attempted.

But even if all these points be clearly shown to be reducible to a satisfactory comparison, one more disparity may be noticed. The change in the material has given rise to a great difference both in the forms and the proportions of ships built of iron.

It appears, therefore, that the comparison must be estimated by experience rather than by direct calculations; and under these aspects, the inquiry is rendered every day more conclusive as examples become multiplied.

Many attempts have been made to diversify, I cannot say to improve, the system of iron shipbuilding which has prevailed from its origin. The diagonal system is one of those which has been strongly advocated as applicable to iron ships. Although this has been the subject of a recent patent, yet it has not been overlooked by iron shipbuilders, but has for the last twenty years been a frequent subject of discussion. Excellent and almost essential as this system is in a well built wooden ship, it is very questionable whether in an iron ship the material can be better disposed of than in the present simple form. It would perhaps be difficult to reduce this question to calculation; though the advocates of the diagonal system exhibit the results of experiments from which they draw conclusions highly favourable to their views. May there not, however, be some peculiarity not observed which gives this result? Let us examine this question also by contrast. The shell of a timber-built ship is made of transverse wooden frames and horizontal planks, the latter bolted to the former. Their relative position may be familiarly represented by the fingers of one hand being placed across and at right angles to the fingers of the other; then make a slight movement, so as to destroy the right angular position of the fingers, and you have the motion that takes place in the planks and frame of a ship when she begins to strain; each bolt being a fixed point, but the seams being in constant motion. To counteract this motion in the seams, diagonal braces of wood and iron, and of various forms, are applied; and, being strongly bolted through all, give a firmness which no other fastening can give, and with a comparatively small amount of material add prodigiously to the strength. Now in an iron ship there is no such motion in the seams. The outer shell is as nearly as possible made into one plate; the joints which necessarily occur are lapped, and the plates are riveted together, and the butt-joints are also crossed! so that very little loss of strength arises from the seams. Across these seams the ribs are riveted at short intervals; but in such a way as to render a movement in the lateral direction impossible. This is not the point in which iron ships show weakness. If the vertical strain be too great for the sides to bear, the top seams open or the plates tear. If the strain be at right angles to the surface of the plates, the vessel loses her shape; and the lateral motion generally affects the vertical, not the horizontal seams.

To counteract the first of these, it is clear that an addition should be made to the strength of the plates, or, what is better, to the stringers of the deck: to counteract the lateral motion, additions should be made to the depth of the ribs; and it could probably be shown, that the increase thus made to the weight of the iron would not exceed the additional weight caused by the adoption of the diagonal system.

But any one who has seen the difficulty of building a diagonally fastened iron ship,—the derangement of the beam-ends, of the bulkheads, and the great additional cost it must entail,—will admit that its advantages should be very well ascertained before it would commend itself and receive a preference over the old system.

In one point diagonal fastenings are advantageously applied to large and long iron ships, viz., in the braces that are used in the decks, consisting of flat bars running across them under the planks, and secured to each beam; but in this case we have to deal with planks, and not iron plates, so that diagonal fastenings here are consistent with sound principles.

Another has been termed the cellular system, of which a remarkable specimen is seen in the *Great Eastern*. Here the hull to about ten feet above the water-line has an inner and outer shell, with a space between them of two feet ten inches wide; the framework runs horizontally, and there are no vertical ribs except at the bulkheads; portions of the deck are of iron, and are also cellular. In the latter case the application seems to be good; but I doubt the expediency of the hull being thus constructed. Theoretically this application of iron plates is the best for the development of strength compared with the quantity of iron used; but disadvantages are to be found in the difficulty of painting and cleaning the inner portion, together with the space which is lost to the ship. In the *Great Eastern* this is not seriously felt; but it would be so to a vessel of ordinary size. The system of longitudinal bulkheads in a very large vessel has not the same disadvantages, and affords an amazing addition to the strength. The protection given by a double skin does not seem to have much weight; for the number of bulkheads in the *Great Eastern* divides the ship into so many compartments that she is perfectly safe without any additional precautions. I also feel that nearly equal strength might be obtained by the same weight of iron otherwise disposed of.

The subject of seams and rivets requires great attention; and the principles laid down in Lloyds' regulations are perhaps as good as any that have yet been given: generally it may be observed, that the vertical seams or butts require the greatest attention, being those which are most liable to work. These seams are now almost always double-riveted, but the horizontal seams only in large vessels. This, I think, would not be necessary even in large ships, were it not that the thick plates there used would not in all cases be sufficiently closed at the lapped joints by a single row of rivets.

(To be continued.)

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XVI.—  
*The Malta Crack.—Wrecks and Lifeboats.—Refuge Harbours.*  
*—Sailors' Homes.—Belligerent Rights at Sea.—The Certificate*  
*and Merchant Ship-Building.—The Late Captain Boyd.—An*  
*Irish Light—Affairs in Japan—Banca and Gaspar.*

What! Malta gone cracked?

Yes, quite true;—not exactly *echoué*, but veritably cracked, and all the islanders got groggy on the occasion!

O! aye, you mean not cast away and vanished like Sabrina Island, but a little merry at affairs progressing in Italy and the first Italian parliament of Victor Emanuel.

There's that youngster with his shaves again, said Rodmond, overhearing these remarks between the junior of the Club and their facetious Secretary. The case is simply this, Arion;—it was on the veritable day, the 9th of February, when we were wincing under a heavy gale, and our coasts being strewed with wreck, that Malta was visited by an earthquake. Early in the morning three slight shocks were felt. The most severe of them was at twenty minutes to one. The sensation it produced was as if the island was shaken with a tremor, and not, as on former occasions, passing from one side to the other. Very slight damage has been done: indeed, many persons were not even aware of it, and most who did, knew of it by the priests ordering the bells to be violently rung.

For a long time past a succession of balls and parties has taken place almost every evening at Malta, and on the night of the 8th there were several masquerade balls going on. Directly after the most severe shock, which lasted for several seconds, the ladies stopped dancing, and many hurried home—the rattling of the carriages and the ringing of the bells creating no slight concern. But balls have been postponed in consequence, and Jack says the effects of the earthquake were such as to make him think that his ship had got groggy!

It is curious that in 1785, when the great earthquake took place in Sicily, the whole city of Messina made a vow to keep a week's fast and have a penitential procession annually. Strangely enough, this procession and fasting commenced on the 5th, being the anniversary of the great earthquake.

Certainly the mischief done in Malta is a crack in the Governor's palace, the casino, and some other private buildings.

There, I told you Malta had got cracked, remarked Arion; but perhaps it was the ships or the sailors that were groggy.

Terrible destruction of ships on the coast, continued Rodmond, on that 9th of February.

Aye, continued Arion, and there is a remarkable fact for our meteorologists, if they are not aware of it already, in respect of that heavy gale of the 9th of February, which was so severely felt on our coasts, that a hurricane burst over the port of Toulon on the previous day. It was accompanied by heavy thunder and lightning, and the

mast of a sloop in the port was struck, and the sail, which was furled, reduced to ashes.

We will leave that to Admiral FitzRoy, for our Chairman is for business.

The Chairman stated that the various subjects to which he should have to allude for placing among their records were so numerous that he scarcely knew to which he should first turn. But that which seemed to come more immediately home to them was our severe losses by the late gales; for although, like many more which had gone by year after year and left the same effects in the destruction of the lives of our seamen, these had happily given rise to a hope that the subject of refuge harbours, which in many cases would have averted the loss of life, seemed to be in a fair way of being at last taken up in earnest. He might be mistaken, for nothing is certain in life, and certainly nothing more so than the loss of the seamen of our wretched coasting craft, for want of refuge to run to when they were both unable and unfit to keep the sea. The horrors of our exposed eastern coast in easterly gales were too well known for him to allude to. But such occasions gave rise to efforts sometimes almost superhuman, he was going to say, and they frequently deserved that epithet. However, he would preserve the following record of some of these by the excellent boats of the National Lifeboat Institution, that had been placed in his hands:—

*Seaton Carew, Durham, February 10th.*—At five this morning the Seaton Carew lifeboat, belonging to the National Lifeboat Institution, saved the crew of eight men of the brig *Providence*, of Warkworth, which, during a fearful gale of wind, was stranded a mile to the North of Seaton Carew. Again, at 8½ a.m., when the storm was raging in its full fury, the noble lifeboat went out and took off the crew, eight in number, of the brig *Mayflower*, of Newcastle, wrecked on the East Gaze Sand, at the entrance of the Tees. The boat behaved very well on both occasions.

*Redcar, Feb. 11th.*—During the heavy gale which visited this coast on Saturday, the brig *Roman Empress*, from Sunderland to Naples, was driven on shore on Marsk Sand. No sooner was her perilous position seen, than the Redcar lifeboat, belonging to the National Lifeboat Institution, was immediately manned and launched. After reaching the wreck, the lifeboat took off the crew of ten men, and afterwards brought them safely ashore.

*Beaumaris, Feb. 10th.*—At daybreak this morning, during a gale of wind, some sailors were observed clinging to the rigging of a vessel which had sunk during the night on the Dutchman Bank. The Penmon lifeboat of the National Lifeboat Institution immediately proceeded to their assistance, and brought them, four in number, safely on shore. They belonged to the schooner *Village Maid*, of Fleetwood, and had been in the rigging thirteen hours. Any other boat than a lifeboat would have been swamped on the occasion, as five suc-

cessive seas nearly filled her, but she immediately emptied herself of them.

*Rhyl, Feb. 10th.*—It blew here yesterday a strong gale from E.N.E., with thick weather and heavy rain. The schooner *William*, of Liverpool, was observed to be stranded about a mile and a half from Rhyl. The tubular lifeboat, which also belongs to the National Lifeboat Institution, was, after some delay in procuring horses, launched, and afterwards succeeded in bringing the whole of the crew of five men, safely ashore.

*Arklow, Feb. 9th.*—The Arklow lifeboat, belonging to the National Lifeboat Institution, was instrumental during a terrific gale from the N.E., and a fearful sea, in rescuing the crew of five men from the schooner *William*, of Morecambe, which had got ashore between the South pier and the rocks. Owing to the very tempestuous state of the weather, the lifeboat experienced immense difficulty in accomplishing her mission of mercy; but, thank God, she at last succeeded and brought the poor fellows safely ashore.

*Wicklow, Feb. 9th.*—During the height of the fearful storm which visited the East coast of Ireland this day, the brig *New Draper*, of Whitehaven, drove on shore near Wicklow. The lifeboat of the National Lifeboat Institution immediately put off to the rescue of her crew; and, after some difficulty, succeeded in bringing the whole of the poor fellows (eight in number) safely ashore.

*Skerries, County Dublin, Feb. 9th.*—A frightful storm has been raging all day on this coast, and there are no signs of its moderating. The schooner *Margaret Ann* came ashore near Skerries, and her crew of five hands were taken off by the lifeboat of the Royal National Lifeboat Institution. The crew of the smack *Gipsy*, of Newry, were also taken off by the same valuable lifeboat in the height of the storm, at the back of the Skerries Islands. The lifeboat's crew behaved nobly on both occasions.

*Carnsore, County Wexford, Feb. 10th.*—During the heavy gale of this day, the barque *Guyana*, from the Clyde to St. Kitts, came on shore and became a wreck on the Carrig Rocks, near Carnsore, where she lay dismasted. The Carnsore lifeboat, belonging to the National Lifeboat Institution, was immediately launched, and after considerable difficulty and risk, succeeded in taking off the whole of the crew, consisting of nineteen persons. The cost (£300) of this lifeboat establishment was presented, about two years ago, to the National Lifeboat Institution, as a thank-offering, by a lady resident in Durham, whose life was saved from drowning, at great risk, by H. A. Hamilton, Esq., of Balbriggan, on board whose yacht she was when the accident happened. It is probable that the lives of the nineteen poor shipwrecked sailors, thus saved by this lifeboat, are owing to that occurrence,—an illustration of the inscrutable goodness of Divine Providence—which thus often prepares a great and permanent good through a temporary and lesser evil.

*Castletown, Isle of Man, Feb. 12th.*—During the furious gale on

the 9th inst., it was reported that the lugger *Nimrod*, of this port, at anchor in Castletown Bay, was dragging her anchor; and as certain destruction appeared to await her, the lifeboat of the Royal National Lifeboat Institution was immediately launched, and with great difficulty took the crew (consisting of two men and a boy) ashore, leaving the lugger still dragging. It appeared that about 8h. a.m. the chain cable had given way, and an anchor with a hemp cable was let out. The lugger dragged about two cables' lengths after the lifeboat left her; after which the anchor held during the day and following night, when the weather moderated, and she was fortunately recovered on the morning of the 10th. It is a singular fact that both the men rescued on this occasion were also saved by the same valuable lifeboat from the lugger *Queen of the Isles*, of Castletown, on the 15th November, 1858; and it was said that one of them had on a previous occasion been rescued by one of the Lifeboat Society's boats elsewhere.

It is a gratifying fact that throughout these numerous services of the lifeboats of the National Lifeboat Institution, not a single accident has happened, either to its boats or to their crews.

*Lamentable Accident off Whitby.*—Seven ships were driven on shore at Whitby on Saturday, and three of them almost immediately broke up. The new lifeboat was launched and succeeded in saving all the crews. When proceeding on their fifth errand of mercy a violent sea caught the lifeboat, which was capsized, and twelve out of thirteen of her brave crew perished in the foaming billows, within twenty yards of the shore, where thousands were assembled, unable to render the slightest succour. This lifeboat does not belong to the National Lifeboat Institution, having been built locally from local designs. It was said that the man who was saved was the only one of the crew who had on an efficient life-belt, which was on the plan of those worn by the crews of the boats of the Lifeboat Institution.

Her Majesty the Queen, in appreciation of the important and philanthropic character of the work of the Royal National Lifeboat Institution, has signified her intention to become an annual subscriber of £50 to its funds.

The Chairman then resumed:--

Intimately connected with these gallant actions was the next subject to which he would allude, namely Sailor's Homes; and his friends around him would rejoice to see that these too had found a friend to bring them forward in Parliament, with the view of inducing the Government to patronize them, and, indeed, regulate them. Very much good might be done by such a measure properly carried out. He had heard of a "Home" being about to be established at Southampton, and they were all acquainted with the noble exertions in favour of these institutions of some of our naval officers, who could see the stuff on which the independence of their country rested.

He had found the subject alluded to very ably in the *Shipping and Mercantile Gazette*, by which it appeared that Sir Henry Tracey had

already obtained a return of all the Sailors' Homes of the United Kingdom, that these consisted of thirty-one erected or in course of erection, namely,—twenty-two in England and Wales, five in Ireland, and four in Scotland. Of these establishments but six are in receipt of State assistance in the shape of Royal grants or Parliamentary aid. But without going into the question now of why they should be so favoured and the rest excluded, he was confident that the Club would agree with him in these views of the paper to which he had alluded. "Every man of common discernment must feel that it is a reproach to a maritime nation such as this that the support of any institution for ameliorating the condition of her sailors should be left to casual and voluntary efforts, however well meant and sagaciously directed. The care of our sailors, whether of the commercial marine or of the fleet, is the business of the State. To the men who navigate our ships the country is more indebted than to any class of the community, and to provide for their comfort and welfare is the plain duty of the Legislature." Every one who wishes well to his country would pray that Sir Henry Tracey's exertions may prove successful, and he was quite sure that there were to be found in Parliament those who remembered the lines which had often been urged on the care of our seamen,—

"Then, oh, protect the hardy tar;  
Be mindful of his merit:  
And when again you're plunged in war,  
He'll show his daring spirit."

Those were the lines which had done wonders in former days, and they should never be forgotten by Englishmen,—for those were the men who "kept the foreigners from fooling us."

[These sentiments of the Chairman were received with loud applause throughout the Club, and high were the encomiums passed on Sir Henry Tracey's exertions.]

Again, continued the Chairman, and intimately connected with this subject as well as the former, a very deep scheme has been brought before Parliament of what is called "belligerent rights at sea!" or in other words a scheme for assisting your enemy to defeat your own exertions! The hollow argument on which this had been founded, this right of your own countrymen or any one else to throw supplies into an enemy's port and thereby at least to prolong a war by thus giving foreign aid, was thus set aside by Lord John Russell in the House of Commons,—his remarks embraced at once the whole case, and any one would immediately see the ill effects of it on England.

Lord John Russell said no steps had been taken by her Majesty's government with a view of carrying out the recommendations of the committee of last year on the subject of belligerent rights at sea. Perhaps the house would allow him to state the reasons why he had not taken any such steps. He found that when the matter was under the discussion of the conference at Paris, the opinion of Lord Clarendon was unfavourable to the proposal that private property at sea should be respected during war. The American government subse-



quently expressed a wish that all negotiations upon the subject should be suspended, and some time afterwards Mr. Dallas read to him a despatch which had been written with a considerable ability, and which was sent to Mr. Mason, the American ambassador at Paris. In that despatch it was stated that it would be desirable that private property should be respected at sea on board the vessels of belligerents. General Cass stated that he considered the right of blockade as authorized by the law of nations was liable to very great abuse, and that the only case in which a blockade was allowable was when a large army was attacking a place by land while the fleet was doing the same by sea, but he considered that to interrupt trade by the blockade of a commercial port was an abuse of the right which ought not to be permitted. That opened a still wider question, and his answer to the despatch was simply that as the war had ceased, and the treaty of Paris ratified, it would not be advisable to continue the discussion.

With regard to the proposition itself, it was one of the utmost magnitude, and it was in effect this:—That where there were two powers, one with a strong army and a weak navy, and the other power with an army inferior in numbers and a superior navy, the latter power should forego all its advantages and leave the contest to be decided by the army. (Hear, hear.) It was besides a mode in which a war would be more prolonged than it was at present, because the only way in which a great maritime power could act as a belligerent was by crippling the power of its opponent, and in proportion to the greatness of its maritime strength was the chance of bringing the war to a termination. (Hear, hear.) But if this proposition be accepted, that power would be given up which Great Britain possessed. In the next place, he was persuaded that difficulties in details would arise which would prove insurmountable. The mercantile navy of a belligerent would then be free to enter the ports of its enemy, but no one could say that amongst what might seem to be merchant ships on the coast, there might not be some which were used for the purposes of war.

Mr. Bright rose to order. He begged to ask whether the noble lord was in order in going fully into this difficult and important subject, in answer to a question by an hon. member, while other hon. members would have no opportunity of stating their views upon it, and which might be different to those of the noble lord.

The Speaker said it was usual for the house to give to ministers of the crown an opportunity of stating, in answering questions of that nature, their reasons for the course they had adopted. The noble lord was explaining to the house some reasons why he had not acted in the way which the question of the hon. member pointed out, and the house would consider whether the noble lord had transgressed the limits allowed on such an occasion.

Lord J. Russell said a select committee of that house had made some recommendations in very positive terms, and it might be thought that it was his duty to act upon those recommendations, and he was venturing to explain why he did not consider that it would be prudent

to take any steps in the matter. He would not go further into the argument except to say that the question was one which affected the whole maritime power of this country, and any minister of the crown ought to be most cautious before he took further steps in respect to it. (Hear.)

The, Chairman, in continuation of his remarks, observed that he thought it right that decision should be preserved,—they deprecated war as all good men should do, and though the rule “burn, sink, and destroy” was harsh and severe, yet was not war itself so? and the sooner it was concluded the better. It is true that Acts of Parliament might be repealed, but it would be quite another thing to make treaties in times of peace with foreign countries for circumstances and conditions in war which those very circumstances would oblige you to break,—and therefore why make them.

But this evil is happily averted and passed away, with another which promised, when we might be deprived of our fleet, to show our enemies into our ports in time of war, by placing huge forts outside to serve for them as leading marks, instead of those buoys and light-vessels which at such an extremity would have been removed,—this, indeed, would have been a crowning suicidal measure to complete what the other had begun. There is virtue in the motto, *cura quietem*, said the Chairman, and he hoped the lion in his dreamy composure would not allow his claws to be cut by his friends!

[Some looks were interchanged among the members of the Club, and a little running conversation about rules of excluding politics, but the Chairman, with some appropriate remarks, considered the connection of this with our glorious navy as fully justifiable for discussion at the Nautical Club.]

And in reference to our own mercantile marine, the following letter which he had received would show that all these measures were working to the same end,—to deprive us of the advantages of our navy. This letter had appeared in the *Daily News*.

At a time when we all so much depend on our navy, I think the public attention cannot be too strongly called to anything likely to deprive us of the services of British seamen.

Applications were made to the local marine board of this port by several American captains last week requesting to be allowed to pass the Board of Trade examination, in order to command their ships when under the British flag, which permission the board had no power to withhold. Now, really this does appear monstrous. I think, sir, it was clearly proved before the select committee of the House of Commons that there had been a melancholy falling off in our mercantile marine, in consequence of its being thrown open to all nations. When we had a law compelling us to have at least two-thirds of the crew, in addition to the captain and mate, British subjects, and also a law obliging us to take an apprentice for each 100 tons, we could defy the world in seamen. How is it now? We have

no sailors; they do not learn their business, and they must be worthless. This every man will allow is a sad state of things; but to grant a foreigner a British certificate, because through a sham sale he has got his ship put under a British flag, is more suicidal still. You put an instrument into his hands, which, should any rupture take place between his country and ours, (which God forbid,) makes him an Englishman and a spy at his pleasure.

I would not ask for a return to protection on commerce; but really to grant free trade in the thews and sinews of our country is worse than murder.

The sensation here is very great, where numerous masters and mates are wanting employment, and really the legislature ought to take immediate steps to put a stop to it, or in a short time we shall have no officers, for the respectable youth of the country will not go to sea with such a prospect before them.

#### A BRITISH SAILOR.

*Liverpool, February 9th.*

There is ample matter for uneasiness, observed the Chairman, in this letter of a British Sailor at Liverpool, but the same has been shown in London as far as the legality of the examining goes. We are examining foreigners in the navigation of our coasts, and permitting them to take command of our ships, while our own mercantile officers may or may not be out of employ, as if they were no longer fit for it: no wonder parents are disinclined to send their youths to sea.

Rodmond would wish to observe that the Club had heard something of a new life-buoy lately invented by Messrs. Fenn, of Nottingham, but he had only met with a brief account, which said that a series of experiments have been made at Woolwich for the purpose of testing the efficiency of a newly invented life-buoy and jacket, under the superintendence of Commodore the Hon. J. R. Drummond, C.B., and witnessed by numerous officers of the dockyard, and a favourable report has been forwarded of the invention, which is considered to be superior to any life-buoy hitherto in use, for aiding sufferers at sea under the disasters of shipwreck, the swamping of boats, &c. Mr. Thornton, a gentleman who accompanied the inventor, plunged into the river from the wharf without removing any of his clothing, and, with the aid of the life-jacket, floated about 400 yards down the stream with the tide. In order to demonstrate the facility with which he could direct his movements with or against the tide, as well as the perfect efficiency of the invention to aid in the rescue of life, Mr. Thornton constantly changed his position in the current, and proposed to take charge of any person totally unacquainted with the art of swimming, as the jacket is able to sustain two adult persons above water for any reasonable time. The materials of which the invention is composed are waterproof and non-absorbent, and consequently not liable to increase in weight by immersion.

In the course of the remarks which followed, allusion was made to

Peacock's poncho, which had been before the Club, but that, it was observed, was for wreck, while this was for immediate accidental use.

Rodmond also stated that as the Club had heard nothing of late concerning the progress of the Armstrong gun——Oh, yes, said Albert, it is being supplied to the Channel Fleet,—he had seen an account of that somewhere,——but, nevertheless, added Rodmond, the following statement in the *Mechanic's Magazine* may be worth preserving among our papers. We have heard of the cost of the 12-pounder being somewhere about £300, but the 100-pounder reaches a sum in a very fair arithmetical proportion, so that if the cost of a ship of war equipped for sea with the wages of her crew amounted to a thousand pounds a gun, what would she cost with Armstrong guns. The account is this:—"The 100-pounder Armstrong gun last tried at Shoeburyness after seventy-five rounds, is *hors de combat*. At the end of the sixteenth round gas began to escape from the vent, and towards the end of the trial the escape of gas was so large that the gunners experienced great difficulty in working the gun. There are three longitudinal cracks in the powder chamber, so large that the flame during the last shots poured through them for a few seconds at each discharge. The tin disc in front of the vent piece was found to be worthless. The vent piece alone in this gun weighs 130 lbs., and requires two men to lift it. It is stated that the authorities at Woolwich Arsenal estimate the cost of the Armstrong 100-pounders at £1,500 each. The bursting of one of them must therefore be a very costly experiment."

Yes, and this is not the only one that has burst, said Albert,—but other observations on the unfavourable effect of this bursting tendency on the minds of seamen were suspended, on the Chairman announcing that a paper had just been placed in his hands that gave evidence of a highly satisfactory nature showing the good feelings that were springing up between officers of the navy and those of the mercantile marine. It was on the occasion of Captain Mends leaving the command of the *Majestic*, at Liverpool: who, in answer to some highly complimentary sentiments of him expressed by the Mercantile Marine Service Association at Liverpool, had thus expressed himself, and he was certain that the Club would readily record such expressions among their papers. The sentiments alluded to were concluded by a gentleman who said,—

We shall all be glad to see him obtain a yet higher rank in his profession, and I am sure he will bear away with him the good feelings and good wishes of every member of this vast community.

Captain Mends, on rising, was greeted with enthusiastic applause. He said,—I cannot take the compliment as paid wholly to myself, for I stand before you as the representative of a service which I have served for many years, and which I still love with all my heart. I have not been, as you are well aware, a silver spoon man, and in the beginning I had not perhaps the benefit which the *Conway* is now conferring upon many. But I persevered, I was taught the path of

duty at any rate, and to look to honour and an honourable position always. I feel that that, and keeping truth before me, has brought me to what I am—a position of great respect, for great it is. Some thirty-five years ago I entered the naval service, and for thirty-two out of that I have walked the plank. Up to this moment, I have been only three years and about a month unemployed—that is on shore. On my return from foreign service three or four years ago, having sought a home appointment, and applied for one of the district ships then being prepared, I directly asked for Liverpool. I had always heard there was a little feeling in Liverpool against the service, and when I applied for the place several of my brother officers said, “You will have great difficulty in Liverpool; it is a difficult place.” But I felt that if I did my duty the service might be as well carried on in Liverpool as any where else.

When I arrived in the good old *Hastings*, I was much surprised at the cordial reception given to her by every person—and especially by the pilot, who was intensely gratified in bringing the first large ship of war into the Mersey. Our progress on that occasion was so slow up the tidal stream, that it gave every one an opportunity to show good will. The hospitalities of Liverpool are proverbial; and the anchor was scarcely down before I received innumerable invitations on all sides, and the other officers and myself were made members of every community and every institution in the port of Liverpool. These rooms, the Underwriters’, and other rooms, were thrown open to us; and I really felt myself utterly powerless to make any return for the kindness. I scarcely knew what to do, for it was impossible to accept all. But never was any set of officers more cordially welcomed anywhere than we were by this association. I was thus thrown absolutely into close communion with a class of men whom I found thinking as I thought. Their object was to raise the tone of the mercantile marine, and my idea was to raise the tone of my own service, and so we went on hand in hand, acting and reacting on each other. I should have been unworthy of their kindness if I had not done the little I did; but that little has been magnified. However, I have always felt it was my duty, as well as pleasure, to give the result of my experience amongst seamen; and I feel that this special institution is the one of all others that must raise the seamen of this country. I have always gone upon this—that if you raise the officers you raise an example to the men. I do feel now, and I know you all must feel, that the seamen of this country, so to speak, have degenerated. They are not what they were 300 years ago—they are not the God-serving and God-fearing men who went abroad and raised in old times the reputation of the country. In late years, in fact, we had been living on the history of the past and the tradition of the past; for the seamen are really, so to speak, sunk. I feel, and I must repeat it, that this is an institution that will help to lift them out of the mire, and make them better men and more fitted to serve their country with honour.

When I was bidding my men farewell, yesterday, on the quarter-

deck, I talked to them on this subject; I dwelt upon their forgetfulness of the Sabbath, and told them that if a man had not learned to respect God, he could not respect himself. The whole object of my life has been, and will be as long as I have breath, to lift up the seaman; and I have seen enough in my intercourse among you in these rooms that it is through such an association as this that this great object will be effected.

With respect to the *Conway*, she is a link in the connection of the two services that will help to improve both. I am sure no one could look upon the successful effort of the *Conway* without gratification. Any one who has seen those little fellows day by day—their manly bearing, their spirit and good temper, and the way in which they do their work—cannot fail to feel gratified with the progress of the institution. I hope soon to see a ship twice as large as the *Conway* in the Mersey. Liverpool has the credit of establishing the first mercantile marine college ever established in the country, and it, therefore, must be especially gratifying to Liverpool to see the result. Now, at the first start of the *Conway* a sort of pressure was made about the cadetship. I also felt much interest in the *Conway*; but I felt it was well she should work her way a little, and that really the committee should not be beggars for a cadetship. After the examination of last year, which was one of the most satisfactory things I ever witnessed, I laid before the Duke of Somerset what my feelings were upon the occasion, and his grace at once tendered the cadetship. I was only the instrument, for the *Conway* spoke for itself. I am sure the influence in after life of the *Conway* training will be felt by the boys—that it will deter them from committing a fault, when they think of their fellows in the *Conway*; and I am sure that men have by this *esprit de corps* alone been kept from tumbling into error and from temptation, when a higher morality was not kept in view.

I regret that, on account of existing laws, sailing ships avoid ships of war on the seas, for the ships of war should be the closest and most intimate friends of the mercantile service. It was my good fortune to meet many distinguished men in the mercantile marine—and some of them I am glad to see here to day—during the Crimean war. I had much to do with the conduct of that great expedition. In fact, I had to organise it with the merchant captains, with whom I was then, for the first time in my career, brought in contact. I will now and always say that the result and success of that expedition was mainly owing to the services of the mercantile marine. They conducted an enormous flotilla over the Black Sea, and, notwithstanding a great storm, I believe only one jibboom was carried away. Every one of them on that occasion had an Englishman's heart, and though they had not taken the shilling to fight, still they were ready to do anything. Captain Mendis concluded by again thanking the meeting, and assuring them that the document presented to him should be handed down to his children with the greatest pride.

Reverting to the severe gales with which we have been visited,

continued the Chairman, there is an event connected with that of the 9th of February which should be recorded among our papers, in the loss of an excellent naval officer and an ornament to his profession. He alluded to Captain Boyd, the author of that valuable little work called the *Naval Cadet's Manual*. It has been very truly observed that seldom has the record of a storm contained so many and such fatal casualties as that of the 9th. The greatest amount of loss, both of life and property, has occurred on the N.E. coast of England, but the gale which swept with such merciless fury that portion of our seaboard has left upon the East coast of Ireland equally fearful evidences of its powers of destruction. From Belfast to Queenstown there is hardly a locality upon that coast where a vessel might get embayed, from whence we have not received intelligence of the destruction of vessels and their crews. Kingstown and its neighbourhood have been the scene of most appalling disasters—events which will long be associated with the gallant, though unavailing, sacrifice of their lives incurred on behalf of the drowning crew of a coaster by the late commander of H.M.S. *Ajax* and seven of his ship's company. The narrative given of this event is a long and painful one, but the following briefly relates it and runs thus:—

Captain Boyd, of H.M.S. *Ajax*, with a detachment of his men, were standing on the pier endeavouring to save the crew of a vessel which had gone ashore at the back of the pier, when a tremendous wave swept them all into the sea. Mr. John Mullvany, architect, was with them, but was saved. As far as can be ascertained, sixteen vessels have gone ashore in and about the harbour, and many lives have been lost in addition to Captain Boyd and boat's crew.

Captain Boyd was highly esteemed as an officer and beloved by all under his command, and his profession can ill afford to lose such men. It is said that his body has been found, and that Dublin is stirring with characteristic enthusiasm to honour his memory.

You are aware they have been busy of late in expressing their high appreciation of the services of their countryman, Captain Sir L. M'Clintock, of the Royal Navy. The account of it which has been sent to me states that a large number of the nobility and gentry assembled in the Oakroom of the Mansion House, Dublin, for the purpose of showing by their presence their respect and admiration for Sir F. L. M'Clintock, on the occasion of his being presented with a magnificent service of plate, in testimony of his brave conduct and unwearied exertions while seeking to discover the fate of Sir John Franklin in the Polar Seas. Among those present were a number of ladies.

The presentation service consisted of a full dinner and dessert service, and a splendid centre ornament. The base is composed of a central block of Irish oak, round the upper margin of which is intertwined a cable of silver. On the plateau stands an exquisitely wrought claret jug, bearing on the several compartments national emblems, and adorned with two shields representing the most distinguishing features in the exploratory voyage of Captain M'Clintock

in relief, and finely wrought. Surrounding the foot of the jug a representation of the animals of the arctic seas and two polar bears in dulled silver are introduced with sound taste and judgement. It bears the following inscription:—"Presented by the citizens of Dublin and gentry of Ireland to Sir F. L. McClintock, Captain, R.N., in testimony of the admiration of his countrymen for the skill and heroism by which, as commander of Lady Franklin's expedition and the yacht *Fox*, he and his gallant companions, in the years 1857, 1858, and 1859, solved the mystery so long involving the lost crews of the ships *Erebus* and *Terror*, despatched by her Majesty's government in 1845, under the command of Sir John Franklin, for the discovery of the North-West Passage."

We may congratulate this very deserving officer on his success; and while we are on the coast of Ireland, continued the Chairman, we will turn to another subject. A vessel has been lost at the entrance of Lough Strangford, and her loss is attributed to the want of a light in a tower which has been waiting for it, according to report, for some years. But here is what is said in Dublin about it, and it shows that there is something wrong somewhere. It appears under the designation of "An Irish Lighthouse," and proceeds to say:—

"A vessel belonging to this port (Dublin), laden with coal from Whitehaven, was wrecked last Tuesday evening at the entrance of Strangford Lough, and all on board perished. This is but one of many cases of destruction to life and property in that place, and might have been averted by the simple precaution of placing a light on the Angus Rock, to indicate the true channel. An edifice called a lighthouse (*lucus a non lucendo*) is there, which was erected seven or eight years ago by the Dublin Ballast Board; but it appears to be nobody's business to trim the lamp. The Ballast Board have no authority in the matter; the Trinity House pleads, in justification of the neglect, that the place is not yet in its jurisdiction; and their highnesses at the Board of Trade have not condescended to give any directions, or to throw light upon the matter in any way. Sooth to say, enlightening is not their province. There stands the column, a hollow mockery, and the subject of many a taunting jibe against Ireland and Irish lighthouses—or dark lanterns—to the passing seaman."

This was, unfortunately, no joking matter for the vessel and her crew, and it may no doubt be said the master had no right to expect to see a light; and yet others would say had the tower been lighted the vessel would have been saved,—but it remained an Irish "dark lantern."

We will now turn our attention abroad, Gentlemen, and our friend, "Experienced Albert," will enlighten us on Japanese affairs, which do not seem promising at present.

Albert was afraid he must confirm the truth of their worthy Chairman's observation, for the accounts he had received were not entirely satisfactory. The Ambassadors to the United States had relanded in Japan, having gone round the Cape in the U.S.S. *Niagara*, and certainly the absence of all display or sensation caused by their re-



turn was a good proof of the system of that government in keeping the lower classes in ignorance of any such matters. Perhaps they were the first Japanese who had thus gone round the world. It appears that Prince Meto, the great opponent to foreigners, is dead; but the usual collisions still occur. An attaché of the French Legation was assaulted and seriously wounded in his own yard by the very official whom the Government had sent to protect him. The French Minister had expressed his determination to demand full reparation. The Prussian Admiral was still at Yeddo, having been unable to effect a treaty, which it was thought could not be brought about without coercing the Japanese. The Admiral, while riding with his Aids one day, had been set upon by a large mob, and a bloody scene would have ensued, had not the old veteran placed his back against a wall and fought at sword's point for some time, until rescued by the arrival of a posse of officials, who dispersed the mob. Some of his Aids, however, were pretty severely cut. The Americans are the most favoured people there, but that is saying but little.

The position of foreigners in Japan is not to be envied. The French Minister had openly expressed his opinion that in a twelve-month there would not be a living foreigner in the country. Trade is on the decline: there were only ten ships in port; three were loading for London with teas and silks and oil; the others were seeking freight. The foreign population was about 250. The Missionaries have obtained a chapel, and public worship is held every Sunday.

A terrible typhoon raged over Japan in the beginning of September, in which the Japanese frigate *Kankinmarrah* was lost; and the British brig of war *Camilla* was still missing.

Captain Manjaro, of the Japanese steamer which visited San Francisco and Honolulu, had been imprisoned for three days, because he was considered too familiar with the foreigners.

This could not be considered a very satisfactory state of affairs with a people, numbering forty millions, who hold life and death at so low a value as they do, and probably may account for the haste with which our Admiral has left Shanghae for that part of the world. The Americans decidedly hold the first place in their estimation of the foreigners, and very justly so, but they even obtain privileges denied to others with considerable difficulty.

It might be worthy of remark, and certainly so for us to do justice to the valuable services of a good officer, that Mr. Stanton's excellent chart and directions for the Strait of Banca were appreciated as they should be; and, inviting as Gaspar Strait appeared, with its spacious accommodation apparently for a fleet to pass through, there were dangers in it which had been more than usually fatal to shipping. The *Herculean*, from Shanghae, with a cargo of tea and silk valued at £70,000, has been added to the list of wrecks in that strait. She was totally wrecked on a coral reef in the Strait of Gaspar, and on the same spot where the *Alceste* (with Lord Amherst, British Ambassador to China) was lost in 1815. The *Herculean* is the ninth vessel lost this year in Gaspar Straits.

It is stated that in consideration of the great advantages of the new route through Stanton Channel, of Banca Strait, over the old one through Gaspar Strait, Sir Robert M'Clure has ordered all the transports to adopt that route on their homeward passage,—a very wise measure, considering how little we really know of the dangers of Gaspar Strait.

At Charleston, continued Albert, matters seem to be getting more complicated still, shipping now being obliged to pay two clearances, one for the general and the other for the local government, and lights and buoys seem not likely to find their places until matters are adjusted one way or another, of which there seems, unfortunately, to be little chance at present.

But, talking of the seceding states, observed Rodmond, I have met somewhere with a notice to mariners, saying,—“Lights not extinguished; buoys not removed, and not likely to be.”

Yes, replied Albert, that was at Mobile in January last, but we must wait for results yet.

The proceedings of our Club had gone forward before we met with this extract, which discloses the views of the government in reference to refuge harbours, which had been under discussion there, and therefore this addition to them may be desirable for our own readers. The *Daily News* says that—

The Premier recoils from the stupendous undertakings which some of the representatives of our maritime towns and districts, with the most magnificent conceptions of the resources and duties of the government, would press upon him. If it were to be understood that the government were bound to make a harbour of refuge, with the public money, on every part of the coast which can be correctly described as dangerous, or where the wreck chart shows many black dots, scores of millions sterling would not suffice. Of course the gentlemen who were so importunate last night did not contemplate this. Each spoke for his own locality. But if all were gratified the result would be as we have stated. The extreme difficulty of averting the terrible loss of life on the coasts by anything the government can do may be inferred from last night's debate. It might be supposed that the best way of saving a vessel was not to send her out of port just as a gale was coming on, and that the shipowner would be very thankful for information of an impending storm. But Mr. Liddell, referring to the organization connected with the Board of Trade and administered by Admiral Fitzroy, for giving warnings of gales at our ports, said he must remind the House that “large fleets of coal-ships could not remain in their ports without enormous expense.” If this is the view of the matter taken by those who have property at stake—if they would rather run enormous risk and expose the lives of their men than observe a natural precaution—there is very little encouragement for the community to interfere at a great sacrifice.

The object of the measure which Mr. Milner Gibson is to bring in,

and which is already prepared, is the improvement of the harbours already existing. This is to be effected not by the initiative of the government, but by local enterprise. The Exchequer Loan Commissioners are to have very large powers to make advances on easy terms to those who are willing to take money for the purpose on certain conditions. The efficacy of such a measure will of course depend on the detailed provisions by which its principle is applied, but that principle seems the only one applicable to the case. If we were not spending prodigious sums every year in warlike works, fortifications, "Warriors," and the like, to say nothing of China wars, we might be able to take a broad and generous view of the case of our seamen. Perhaps we may be able to do this some day. But while our present belligerent expenditure lasts, harbours of refuge are not the only glorious works of peace which must remain in abeyance.

---

*Secretary's Memo.*

It is stated that a dry dock is to be built at St. Helena, which will afford an excellent opportunity for vessels to repair that may be disabled in rounding either Cape Horn or the Cape of Good Hope.

The Mersey Dock Board are about to construct a gigantic graving dock at Birkenhead. It is to be 750 feet long, 85 feet wide, and 106 feet deep. The estimated cost is £84,000. There will be accommodation for two rows of vessels on gridirons at each side of the dock, the construction of which is to be proceeded with as promptly as possible.

Patent slips for repairing ships of all sizes and men-of-war are forthwith to be erected at Lisbon. The concession has just been made to Mr. Thomas White, of Portsmouth, and some Portuguese capitalists, who are making all the arrangements necessary for the commencement of the works.

The Department of State, Washington, by a recent notice, states that the only ports open to foreign commerce in the Phillipine Islands are those of Manila, Sual, Holio, and Zamberanga, and that no foreign flag will be allowed to carry on a direct trade with Jolo or the ports adjacent thereto.

---

**BOTTLE PAPERS.**

A bottle from H.M.S. *Perseverance*, on the 25th August, 1860, in lat. 14° N., long. 65° 14' W., on her way to Honduras, wind light from East, was found at Coxen Hole, in Isle Ruatan, on the 9th of November, 1860.

NO. 3.—VOL. XXX.

Y

This has followed the usual set of the equatorial current, and travelled about 1260 miles in the interval.

A bottle from H.M.S. *Curaçoa*, Commander Phillimore, on the 3rd September, 1859, in lat.  $16^{\circ}$  N. and long.  $26^{\circ}3'$  W., was found at Colon on the 10th November, 1860, making good a W.  $\frac{1}{2}$  S. course and distance about 3300 miles.

Both of these bottles seem to have been influenced in the latter part of their voyage by northerly winds.

The following appeared in the *Shipping Gazette* of the 15th January last:—

The following is a copy of a paper found in a bottle which was washed on shore at Figuera on 31st December last—

“July 2nd, 1860.—The bottle was dropped by Dr. Ira W. Bragg, in lat.  $50^{\circ}$  N., long.  $20^{\circ}$  W., from the packet-ship *Fidelia*, bound to New York from Liverpool. If ever picked up please inform where, when, and by whom. Direct to Dr. Ira W. Bragg, Croydon, New Hampshire, United States of America.”

The course S.W.  $\frac{1}{2}$  S., distance 780 miles. This seems to have been influenced by northerly winds, all the bottles thrown over near it, having been set to the coast of France across the bay.

We add the following, received from Revel, the bottle having been found on Dago Island, a short distance to the southward of where it was thrown over, at the entrance of the Gulf of Finland, on the 23rd September, showing the southerly set of the current:—

“This bottle has been dropped into the Baltic from on board the *Leopard*, steamer, bound from Hull to St. Petersburg, on the morning of the 14th (2nd) September, 1860, in lat.  $59^{\circ}$  N., long.  $23^{\circ}$  E. Passengers all well. The object of this is to find the course of the stream flowing out of the Baltic, and it may be reported to any of the Admiralty offices in London.”

The foregoing concern the currents of the ocean, but the following rather relate to the *current of life*!

*South Ronaldshay, December 7th.*—A bottle was picked up floating past the Barth Head, in Pentland Firth, containing a piece of paper, seemingly hurriedly torn from a log-book of some unfortunate vessel sunk at sea. The writing, which was in Norwegian, states:—

“The Norwegian schooner *Albion*, of Christiania, sunk on the 4th of December, about abreast of the Brekaress. The crew, consisting of Captain Frantz Holst; the mate, Robert Bockman, who in the hour of death invokes the forgiveness of his aunt and uncles, and that they will pay my debts at Christiania, about twenty specie dollars, which my cousin, A. Bockman, knows of. Lars Dahl bids his wife farewell. The rest of the crew send remembrances to all.

Remembrances are sent to Ludwig Host and his wife. They live at Sandefjord. In a like manner my beloved Ellen Han—, an eternal farewell, until we meet in another world. Likewise my father, mother, and brother, greeting, from their obedient son, Frantz Holst."

"Thea Jorgensen, at the house of Frisch, I hope to see in another world. Farewell, Thea; comport yourself better in this life than I have done. Farewell, Thea,—Thy Robert."

"Care of Messrs. Lorum and Wegner, Timber Merchants, Christiania."

"Dear Frederick Host,—Fare thee well, and think on God while you are living,—Your cousin Rasch."

"We have just commended ourselves into God's hands. I hope he will forgive us our manifold sins."

The *Albion*, Holst, sailed from Portsmouth for Christiania on the 4th of last November; and not having since been heard of, it is supposed she must have foundered.

*Wyck-on-Fohr, December 12th.*—A bottle picked up a few days since on the strand at Sylt, containing a memorandum, without date, as follows:—"English brig. Several will be lost to-day, as the ship is very leaky. We have lost all boats, therefore we are lost.—William Boller, master, of Shields,"

A bottle, containing the following, has been picked up on South Shields sands:—

"North Sea, February 2nd, 1860.—Dear Friends,—When you find this the crew of the ill-fated ship *Horatia*, and Captain Jackson, of Norwich is no more. We left Archangel on the 8th of January, all well. On the 2nd of February we hove to under close-reefed top-sails, after scudding before the gale for ten days. We have not been below for six days. A Norwegian brig hove to for our assistance. Four men got into the jolly-boat, but after leaving a sea struck her and sank her, and the four men were lost. Our crew consisted of eight men, master and mate, second mate, and two boys. When I am writing this I have just left the pumps. We are not able to keep her up—eight feet of water in the hold, and the sea making breach clear over her. Our hatches are all stove in, and we are worn out. Our master made an observation to-day. We are in 60° N. lat.; wind N.E. I write these few lines and commit them to the foaming deep in hopes that they may reach some kind-hearted friend who will be so good as to find out the friends of these poor suffering mortals. I am a native of London, from the orphan school—John Laing, apprentice. We are called aft to prayers, to make our peace with that great God, before we commit our living bodies to that foam and surf. Dear friends, you may think me very cool, but, thank God, death is welcome. We are so benumbed and fatigued that we care not whether we live or die. John Ross, John Thompson, James Lee, Jos. Brig took the boat on the 21st of January.—William Ham,

Peter Young, Sam Jones, James Bruce, William Ham, chief mate; Thomas Wilson, second mate: John Laing and Frederick Maff, apprentices."

ARGO.—A friend has sent us the *Bermuda Gazette* of the 1st January, in which we find the following:—

A bottle containing a paper on which the following is written was picked up at Bailey Bay on Christmas Day.

"To show the set of currents this bottle was thrown overboard in Atlantic Ocean, lat. 30° 41' N., long. 81° 5' W., April 10th, 1860, wind South, from U.S. surveying schooner *Argo*, Lieut.-Commanding Alexander Murray."

This bottle has made good 600 miles on an E.b.N. (true) course in 259 days, an interval which gives it a rate of 23½ miles nearly per day. The locality in which this was thrown over renders it interesting from the circumstance of its having to cross the Gulf Stream; with which it would be set to the northward, and then, like the *Vulture's* bottle, drifted with a northerly wind over to Bermuda.

---

#### LUNAR EQUINOCTIALS.

22nd February, 1861.

Sir,—The fearful nature of the gale on Thursday last ought to excite us all to increased energy; in our attempts to encourage precautionary measures. If weather warnings be possible, let us have them.

The first thing to be done is to set the public right as to the barometer,—some rely solely on it, while others ignorantly repudiate its warnings, and even ungratefully upbraid those who do their best to help the question.

Let us propose, then, that I attempt, in your next number, to show both the dangers and the advantages which attach to the use of that valuable instrument. I am convinced that the subject is capable of still further elucidation.

I beg to add another list, in advance, of periods on which the weather may reasonably be suspected as *liable to change, most probably* towards high winds or lower temperature, being emphatically periods of atmospheric disturbance.

1861, March 4th—11th—18th or 19th—25th.

April 7th—15th—21st—27th or 28th.

The equinoctial gales are very likely to set in about the 25th, and we may look for a very high tide on the 27th of March.

I have, &c.,

S. M. SAXBY.

*To the Editor of the Nautical Magazine.*

## Nautical Notices.

## PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 102.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
1. Port Said	Egypt	31° 0' N., 32° 19' E.	F.	66	9	Est. recently.
2. Kronstat	Baltic	.....	..	..	..	Alteration of the lights. (a.)
3. Gulf of Riga	.....	.....	..	..	..	Beacons in. (b.)
4. Brindisi, on Pedagne Rocks	Adriatic	40° 39' 5" N., 17° 59' 6" E.	Fa.	73	18	Est. 31st Jan., '61. Flash once in 3 minutes. A short eclipse precedes and follows the light.
4. On Point Torre de Penne	Ditto	40° 41' 1" N., 17° 56' 3" E.	R.	129	20	Est. 31st Jan., '61. Once every half minute.

F. Fixed. Fa. Fixed and Flashing. R. Revolving. I. Intermittent. Est. Established.

(a.) 2.—The Russian Imperial Ministry of Marine has given notice that the following alterations will be found in the lights of Kronstat, on the opening of the navigation in the spring of 1861:—

The three *fixed* lights in the midst of the fort of Emperor Paul I. or Risbank Fort are to be discontinued.

The eastern light of the Nicholas Battery at Kronstat, that is 45 feet above the mean level of the sea, is to be raised to 58 feet above the same level, and should be visible from the deck of a ship in clear weather at a distance of 12 miles.

The western light, which is now 21 feet above the mean level of the sea, will be raised to 23 feet above the same level; but there will be no change in the horizontal range of these lights.

(b.) 3.—The Russian Imperial Ministry of Marine has given notice of the following changes in the beacons of the Gulf of Riga:—

Two mast-beacons, to show the direction of the channel into Riga, are surmounted by a triangle with the apex upwards, and over it a small barrel. They are 85 and 87 feet high and 478 yards apart, in a direction N.W.b.W.  $\frac{1}{4}$  W. The N.W. beacon is higher and its base larger than that of the S.E. beacon. They can be seen 10 miles distant.

The lower light at Riga has been opened out 30° to the westward, so as to be seen from N.  $\frac{1}{4}$  W. to N.W.  $\frac{1}{4}$  W.

The following beacons are to be in their places on the opening of the navigation in 1861:—

A red broom turned downwards on the South side of the banks of Kuno, S.W.  $\frac{1}{4}$  S. 6  $\frac{1}{2}$  miles from the church of St. Nicholas.

A red broom turned downwards at 3  $\frac{1}{2}$  miles South from the end of the Sorkholm Reef.

A black broom turned downwards on the coast of Livonia, on a 9-foot shoal, S.W.b.W. 2 miles off Cape Taker-ort.

A double broom, red above and white below, on the 11-foot shoal W.b.N.  $\frac{1}{4}$  N. 4 miles from the village of Kablukula.

A white broom placed upright on the 17-foot bank N.W.b.N. 3  $\frac{1}{2}$  miles from the farm of Ainensch.

A double broom, white above and red below, on the end of the reef off the entrance of the River Att Salis, about  $6\frac{1}{2}$  miles from the beach, in 26 feet water.

The bearings are magnetic. Variation at Riga  $8^{\circ} 15' W.$  in 1861.

#### ALTERATIONS IN FRENCH LIGHTS.

We find the following in the *Moniteur de la Flotte*.

##### *Port of Cette Light,—Change of Position.*

Mariners are hereby informed that on the 15th of February the fixed light of the port of Cette will be removed to the tower recently completed at the mole head of the port of St. Louis. The neighbouring sea light of Fort Richelieu will be established at the same time at the S.W. angle of this fort, in a manner to show, with the light, the course for entering the port.

The tower stands in lat.  $43^{\circ} 23' 30'' N.$  and long.  $3^{\circ} 42' 4'' W.$  The light is 82 feet above the ground, and 105 feet above the sea, and may be seen 15 miles distant.

##### *Light of Fort Richelieu.*

Is 253 feet to the West of the lighthouse. Mean height, 272 feet; distance seen, 4 miles.

These two lights will appear to be one at the distance of about  $1\frac{1}{2}$  mile. They will be hereafter replaced by two lights; one of which will stand at the end of the jetty of Fontignan, and the other at the end of the breakwater.

##### *Light of Biarritz,—Lower Pyrenees.*

Navigators are hereby informed that the revolving light of Biarritz, about  $2\frac{1}{2}$  miles S.S.W. of the mouth of the Adour, the eclipses of which are now every half minute, will be altered in the month of July next to every 20 seconds, and that the light will be alternately white and red.

A temporary light of the same character as the intended light will be shown at the tower while the works are going forward; but that will not be visible so far off as they will be.

#### IANTHE SHOAL,—*Caroline Islands.*

The following extract from the log of the barque *Nile* confirms the existence of the Ianthe Shoal; but the position given by the *Nile*, although agreeing in longitude differs in latitude.

Barque *Nile*, Destin, reports:—"Left the Sea October 1st; had moderate weather down. February 9th, in lat.  $5^{\circ} 31' N.$ , long.  $145^{\circ} 42' E.$ , at 6.15 p.m., passed over a sunken reef, with very little room to spare, the rocks being plainly visible on each side of the vessel, and the man aloft reported breakers on one side. The barque was



before the wind at the time, and was only two minutes between the rocks. She was heading in the sun glade, which prevented the earlier discovery of the danger."

As nothing is more likely than that this shoal may extend even thirty miles South of its latitude in the chart, which is so much to the northward of this, the mariner will be cautious in its vicinity.

---

#### GLENDINING SHOAL.

The first account of this discovery, as given by that excellent paper the *Shipping and Mercantile Gazette*, appears in our last number. The following notice of it by the Hydrographic Office, contains some further particulars worth preserving.

Captain Glendinning, of the barque *Queen Mab*, of Liverpool, reports that on his passage from Singapore to the Cape of Good Hope, on the 20th October last, in lat.  $9^{\circ} 54' S.$ , long.  $97^{\circ} 50' E.$ , he came upon a dangerous shoal not marked in any of the charts, and lying in the direct track of vessels coming from the strait of Sunda on their homeward voyage.

Captain Glendinning states that at 9h. p.m. of the above date he observed the water all around the ship much discoloured, in appearance milky white; that he immediately hove the ship up in the wind, had a cast of the hand lead and got 7 fathoms, but the next cast (having run about two miles W.S.W.) had no bottom with the hand lead. The water continuing discoloured at eleven o'clock, having run ten miles further to the W.S.W., hove the ship to, and sounded with the deep sea lead in 55 fathoms, hard ground.

*Caution*,—This shoal lies about 130 miles N.N.E. of the Keeling or Cocos Isles, and directly in the track of ships on the homeward voyage from China and Singapore by the strait of Sunda.

As it is most desirable to verify the cast of 7 fathoms and to ascertain how far the bank extends, any captain passing this neighbourhood is requested to get a few deep sea casts of the lead, and, if time and circumstances will permit, to endeavour to trace the possible connection of the bank with the Cocos Isles. And we may also add that as the deep sea lead will bear arming, that thereby the nature of the bottom might be ascertained,—a very desirable and convincing particular, and one contributing much to the value of deep soundings.

Bearings are magnetic. Variation  $0^{\circ} 15' W.$  in 1861.

---

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of February, 1861, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

England, South coast, Cowes Harbour and Medina River to Newport, Comdr. Cudlip, R.N. (2s.)

- Ireland, North-West coast, Horn Head to Bloody Foreland, Capt. Bedford, R.N., 1858 (3s. 6d.)
- Ireland, West coast, Killibegs, Donegal, and Teelin Harbours, Capt. Bedford, R.N. (4s.)
- Ireland, West coast, Broadhaven Bay, Comdr. Beechey, R.N. (5s.)
- Ireland, West coast, Blacksod Bay, Comdr. Beechey, R.N. (5s.)
- Mediterranean, Candia Island, Sitia and Grandes Bays, &c., Capt. Spratt, R.N., C.B. (1s. 6d.)
- South America, West coast, Santiago River, Posa Harbour, &c., Capt. Kellett, R.N. (1s.)
- South America, West coast, Salango Island Anchorage, Caracar River, and St. Elena Bay, Capt. Kellett, R.N. (1s.)
- South America, West coast, Chame Bay, Capt. Kellett, R.N. (1s.)
- South America, West coast, Chepo River Entrance, Perlas Island, Capt. Kellett, R.N. (1s. 6d.)
- South America, West coast, Santa Cruz, San Rosa, San Miguel, and Anacapa Islands, Capt. Kellett, R.N. (2s. 6d.)
- East Indies, Banka Strait, corrected by Wm. Stanton, Esq., R.N., 1860, (2s. 6d.)
- New Zealand, Hokianga River, upper part, Capt. Drury, R.N., 1856, (3s.)
- British Lights, corrected by Comdr. Dunsterville, R.N., to January, 1861, (1s.)
- French, Spanish, and Portuguese Lights, corrected by Comdr. Dunsterville, R.N., to January, 1861, (1s.)
- South and West coast, North America, corrected by Comdr. Dunsterville, R.N., to January, 1861, (6d.)
- North Coast of Europe Lights, corrected by Comdr. Dunsterville, R.N., to January, 1861, (1s.)
- Mediterranean Lights, corrected by Comdr. Dunsterville, R.N., to January, 1861, (1s.)
- West Indies, Lights, corrected by Comdr. Dunsterville, R.N., to January, 1861, (1s.)
- United States, Lights, corrected by Comdr. Dunsterville, R.N., to January, 1861, (1s.)
- Admiralty, 21st February, 1861.*

---

 NAVAL.

*Promotions.*—Captain Sir Edward Belcher, C.B., to be rear-admiral of the blue.

*Appointments.*—Captains: E. Heathcote, to the *Ajax*, vice Captain Boyd, deceased; Sir F. L. M'Clintock, to the *Doris*, vice Captain Heathcote; D. Curry, to be superintendent of the Royal William Victualling Yard and Plymouth Hospital, vice Captain Lyster, resigned from ill health; and C. F. A. Shadwell, to the *Aboukir*, vice Captain Curry.

Lieutenants: G. B. Evans, to the *Icarus*; and R. Sheepsbanks, to the *Jason*.

Surgeon W. H. Cameron, to the *Mutine*.

Assistant Surgeon W. R. Bennett, to the *Britannia*.

Assistant Paymasters: G. V. Gruzelier, to the *St. Vincent*; and H. H. P. Shanks, to be secretary's clerk in the *Impregnable*.

Acting Assistant Surgeon W. Redmond, to the *Bacchante*.

---

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle

---

APRIL, 1861.

---

PIRACY IN THE EAST.

However successful our efforts may be in establishing British commerce in the waters of China and Japan, there seems yet to be a serious obstacle to be overcome there in the shape of piracy. Sea robbers have long been notorious on the Chinese coast. The overabundant population of that country of hundreds of millions can well spare a horde of ruffian pirates to infest those seas; and at present, while our cruisers are not so numerous as they have been, their atrocious proceedings there are becoming more frequent and are being imitated by their noted brethren of the eastern seas, those of Borneo and its neighbouring isles. Our mercantile shipping even in the vicinity of Singapore appear to be threatened by these outlaws, three of which have just been captured by the *Hooghly*, a colonial vessel of war, and taken there for justice. These are recognized as the same who murdered eight Chinese in a tongkong above a year ago. They were surprised and easily captured, all of them being Malays, with the stamp of atrocious deeds in their faces.

In our number for January last we preserved an account of a piratical vessel in the Gulf of Siam, one of those prowling about the islands on the eastern shores of that gulf ready to cut off any of our merchant shipping that may be unprotected and unprepared for such a visitor. We find in the East a periodical, entitled the *Friend of India*, making these remarks:—

NO. 4.—VOL. XXX.

Z

It is a surprising fact that in the middle of the nineteenth century, when liberal ideas are supposed to pervade the nations whose authority and influence over the world's affairs are supreme, a system should be allowed to exist which has been branded by all civilized communities since the world began as the most guilty and disgraceful to which human nature can lend itself. The profession of piracy is now confined to Greek waters, and to those seas that lie around the numberless islands of the Eastern Archipelago and wash the coasts of China. The extent of the crime in the former locality is inconsiderable. It is thus that we are surprised now and then with such an account as the following of daring piratical proceedings in the waters of Europe. Thus, at Constantinople,—

The bad conduct which characterised the idlers of this port last winter has now recommenced. The barque *Gateshead*, of Newcastle, Captain W. Seymour, while lying at the entrance of the Golden Horn, has been plundered at night of brass binnacle and compass, although there was a watch on deck. The captain of the *Gateshead*, hearing some movement, came out of his cabin just in time to see a boat with three hands shove off from his port quarter. The villains escaped. Another case has occurred on board the *Clara*, of London, Captain J. Pouton, when lying between the two bridges. The pirates attempted to board forward, but the crew called the officers, and drove them back by pelting them with coals. They had only time to steal the jib down-haul. Several other vessels have been robbed; in short, scarcely a vessel in port has escaped attack. A daring case has also been discovered on board the steamer *Champion*, Captain Lindsey, from Kustendjie for Constantinople. One man shipped for the passage up, another for the passage down; and the two having managed to get into the same watch, in the Golden Horn, sent the rest below, and then got several bales overboard into a boat alongside, and escaped. One was a native of Heligoland, and another an Englishman.

In the East piracy flourishes almost uncontrolled in the very seas where the three powers of England, Holland, and Spain ought to protect a commerce which is not under forty millions sterling a year. The principal haunts of pirates are in the neighbourhood of Borneo. The Lanoon pirates, about whom we read so much in the Straits' journals, inhabit the cluster of islands between Borneo and Magindano. The Sarebas and Sakarran tribes, at one time wholly given to piracy, but kept in check by Sir James Brooke, inhabit the N.W. coast of Borneo. Magindano itself is a favourite resort of these miscreants, who frequently assemble in large numbers on their plundering expeditions, killing or carrying away their victims, and then retreating to their hiding places. In the China Seas pirates appear to thrive well, both on account of the richness of the booty and of the weakness of the efforts made to resist them.

The official statistics of piracy that appear from time to time reveal but a small portion of the evil caused to trade, and the suffering to which many of our fellow creatures are exposed by pirates. Some

few cases are reported, and voluminous correspondence is published, showing how large vessels tried to catch small, swift prahus and failed; how out of a large fleet one or two boats were destroyed and the rest allowed to escape, and there the matter ends. The pirates, indirectly encouraged by the petty native rulers of the islands and feebly opposed by European powers, find their occupation too safe and too profitable to be relinquished. The only man who ever saw the magnitude of the evil and took stringent measures to eradicate it is Sir James Brooke. When he assumed the government of Sarawak head-hunting on shore and piracy at sea were among the ordinary amusements of some of the tribes. He made the penalty of these crimes death, and the result was that in a few years life and property were as secure in Sarawak as they are in Europe, while the lives taken by the pirates, which averaged two or three hundred in former years, were in 1842 reduced to twenty or thirty. The outcry against Sir James Brooke in 1852 seriously interrupted his measures for the suppression of piracy; but when his reputation was cleared from all blame in 1853, on his return to the country of his adoption he continued those measures with great success.

The year 1860 has been remarkably unfortunate to ships passing the Strait of Gaspar, and no sooner does an accident occur than these pirates are at hand to profit by it, as in the following extract from a private letter, dated Singapore, September 17th:—By the mail that brings this you will hear of the loss of the American ship *Africa* in the Strait of Gaspar. They were surrounded by pirates a few hours after striking, and only that two well-armed Dutch ships came up and stood by them, they would, no doubt, have all had their throats cut. The Dutch ships sent a part of their crews to help them; but, after trying every expedient, they were forced to abandon her, and they were landed here on the 9th inst. The Dutchmen acted nobly by Captain Jardin, and the consul here is about to lay the case before the home government, and I have no doubt but that their services will be acknowledged in no mean way. The ship was burned before the captain got out of sight of her; but whether set on fire by the pirates or whether it was by the coals getting wet and taking fire is unknown.

The Dutch and Spanish Governments have occasionally made a feeble effort to resist the evil, but the result has been very insignificant. So little respect have the pirates for these powers that in 1844 they sent a letter to Macassar threatening to burn the place, and appointed a rendezvous where they would meet the Dutch Admiral in a fair fight. This was done in consequence of the Dutch having captured some prahus. It remains therefore with the English, who not only have the greatest resources at command but who have the most valuable interests at stake, to undertake a final crusade against the pirates of the eastern seas. The value of our trade in these parts is enormous. The tea and silk that constantly flow westward from China is almost all bound for British ports. The native craft that suffer so much from the depredations of pirates would carry their

produce to our eastern ports if they could do so in safety. The rulers of some of the islands encourage the pirates, and carry on a profitable trade with them in the merchandize they plunder. Sir James Brooke proposed to make these chiefs responsible for the actions of their subjects. To keep the piratical tribes in order, he required only a steamboat of 100 tons burthen, drawing little water and well armed, the cost of which he estimated at £4,000 or £5,000 a year. This was many years ago, and we are now in a position to do much more than supply one steamer. We have a whole fleet of ships of the line, frigates, sloops, and gunboats in China, which will soon be released from employment. What better use could some of the smaller and swifter vessels be put to than the suppression of the evil that has so long harassed eastern trade? Were piracy suppressed commerce would increase rapidly among the islands. When Sir James Brooke arrived in Sarawak the population was small and unsettled: in a few years it consisted of 60,000 peaceable, industrious people. When he began his career the trade of the place was represented by a few miserable prahus: in 1852 it had increased to 25,000 tons. The same result would be seen in the case of all the islands were trading pursuits rendered safe by sufficient protection on the part of a European power.

It might be advisable to establish a naval station on one of the islands and to have a number of steam gunboats constantly cruising about. Operations should not be confined to destroying the pirates on the open sea, but their haunts on land should be discovered, and their settlements burnt. This would strike at the root of the evil, and is the only way of effecting any good.

On the coast of China, happily, the well disposed Chinese are not only aware of the evil but are themselves anxious to extirpate it, as appears by the late proceedings of Commodore Woo on that coast. Such accounts as this may not now be so frequent since this mandarin has taken the business in hand:—

We remember hearing of the ship *Rajah of Sarawak*, Captain Giles, of Swansea, being attacked by pirates in June last, in the Canton River. The *Rajah of Sarawak* was bound from Calcutta for Whampoa. The particulars of the attack are thus described in a letter from Captain Giles to his friends:—"The ship was attacked by pirates coming up the river. We however beat them off without losing one of our men, but killed eight of the pirates. There were forty men in the pirate proa, thirty-two of whom made their escape, though their boat sank before reaching the shore from the effect of our 9lb. grape." And, again, lately it is stated that an American named Meredith, engaged in his lorcha in escorting some merchant junks, has been taken by pirates near Wanchew, and is held to ransom for 4,000 dollars. The United States gunboat *Saginaw* has left Hong Kong to try and liberate him. Another distressing case of piracy appears in the following:—

The French schooner *Christian* (late *Kate Darling*), Besse, of ninety tons, from Hong Kong, chartered to convey stores to the troops at

the Peiho, on the 1st of November fell in with a fleet of piratical junks near the mouth of the Wang-chew River, by which she was attacked and taken. The crew was composed of the master, mate, the master's son—a lad of about fifteen, three or four Manila men, and six Chinese, all of whom were murdered by the pirates with the exception of the lad, who saved his life by swimming on shore. The poor boy's father was killed while in the act of trying to save his son from the hands of these merciless scoundrels, who were spearing him; during the confusion he swam on shore, and was fed by some fishermen for four days, when the British lorch *Hong Kong* took him out of a fishing boat and brought him on. The poor boy was handed over to the British Consulate, and will it is presumed be sent on to Shanghae.

The retribution of Commodore Woo has been terrible. He seems to have considered most of the river population as pirates, and would render such services as were recently rendered by H.M.S. *Nimrod* no longer necessary. A letter from Fuhchau of the 23rd November says:—

The whole community here, native and foreign, has been thrown into a state of great excitement during the last few days, the cause and progress of which I shall try to give you as briefly as I can. You are already aware that for some years past a feud has existed between Cantonese and Chinchewite sailors and lorchamen. This broke out afresh during June of this current year, and in a more formidable form than it had previously assumed. By a wily policy the warlike lorchas, numbering some twenty-eight, were enticed to leave this river. As soon as this was managed, the local authorities determined hereafter to confine all Canton lorchas and West Coast boats to the anchorage at Quantow, about ten or twelve miles below the Pagoda station.

To carry out this resolution a large body of native militia and marines were collected, chiefly from Quemoy and Amoy, several war junks and armed pullaway boats were fitted up, and the entire force was put under the command of Commodore Woo, a brave and fierce fellow, dreaded by his own clan as a man of war, and hated by Cantonese as a savage villain. The chief duty of this newly elected hero was to put down piracy in any form on the river or along the coast, and likewise to see that no Canton lorchas were admitted up the river, they being regarded as part and parcel with pirates. Of course Canton lorchas could not brook this, and combining with West Coast boats and all other pirates, they have had collected outside a formidable fleet to annoy, defy, and, if possible, defeat this newly appointed navy in our Min River.

Commodore Woo has been on the watch, fully anticipating the move that this outside foe would make to bolt past his station and ascend the river in a body. They attempted this on the 19th, but found their match in the commodore. Then sailed past his guard-post eight, some say ten, Canton lorchas and tymoons; others hanging on

outside in case this detachment succeeded. They were attacked by the mandarin force: three were burnt, two ran up to take refuge at the Pagoda anchorage, and the rest made out to sea as fast as they could. The remainder of that day was occupied in pursuing and capturing the fugitive pirates who had escaped on shore.

Next morning (20th) the mandarin armed boats were in pursuit of the two boats that had escaped up the river. They came up with them about noon, lying in shore at the Pagoda. They were attacked. Their crews dashed into the stream to swim ashore, and while floating on the water, some forty or fifty were speared and shot,—a fine sight for foreign seamen and residents!

Early in the morning of the 21st it was evident, from the packed throngs on the great bridge and the hubbub around, that something strange and novel and exciting had occurred. About nine o'clock some of the mandarin war boats had come up with two prizes and 200 captured pirates. The latter they commenced to land, each man under the guard of at least four Chinese, bearing drawn swords, spears, matchlocks, or sporting gay flags. The captives were in a terrible plight, stripped and naked, hands tied with awful tightness behind their backs, and feet scarcely able to walk, while they were driven along with the most barbarous savageness. Eight or ten had been beheaded on their way up the river, and two or three just as they were shored on shore, for showing fight and reluctance to move on. The heads of these unfortunates were slung on poles and swung before the eyes of the remainder, as a token of what awaited them very shortly.

When all had been landed, they were marched across the bridge to the northern end, and on the way, as if to gratify the public gaze, the heads of four were deliberately chopped off, and their corpses flung into the river below. But we were surprised at seeing, when it was supposed all had crossed the bridge, a large band of captives returning post haste. They were stowed away again on board these war junks, bound and tied with double fury, several hands and tails tied together. No mercy was shown to any. A boy of ten was pushed in with a naked sword over his head. An aged wretch failed to creep back to his boat, and was flung on board to expire as he best could. Almost all had their wrists so tightly tied that the flesh was eaten into; and the spectacle brought vividly to mind the tortures inflicted on our countrymen in the North, over whose cruel fate there is no one that does not mourn.

These armed boats, with a cargo of 170 Canton pirates, shoved off to go to back to Quantow, to have them decapitated there, the remaining thirty having been carried on to the North gate execution grounds. On this announcement the thick crowds moved away, and the thronged streets and bridges were cleared. But that mandarin move was found after all to be a dodge. At nine o'clock the crowds had been thickening, and it began to be apprehended that the large Canton population here might rise and attempt the rescue of their countrymen, who



were treated before their very eyes so mercilessly and brutally. The manœuvre succeeded in thinning the streets, and at a signal the boats were moored back to their position as in the morning. The unfortunate victims were at once landed, and, with the same guard, they were hastened along a street of two miles in length at double quick time to the parade ground outside the South gate.

Here, at three o'clock, some of the principal officials were seated at a tribunal which, without trial or mercy, was to hurry 150 of their fellows into eternity. The work was short: one after the other the whole lot was beheaded, and in half an hour the judges, troops, and staring mobs were dispersed. Among the captives there were two youths of ten and twelve: for one of them seven merchants advanced their guarantee, and he was saved; the other died unheeded and uncaring under the executioner's knife. The executioners, of whom there were several, vied to see who could do the largest amount of work, one succeeding in cutting off sixty-three heads, for which he would receive what he would consider a handsome *douceur*, as 500 cash is given for each *caput*.

Commodore Woo, the hero of the day, went to the tribunal with a blue button, but returned to his fleet with a red one, honoured and applauded by all his co-mandarins. But it is to be feared "the end is not yet." The effect at present of beheading more than 200 bandits in a few hours may be severe in overawing the natives of this place, and may perhaps check some of the smaller pirates outside. But will it frighten the Canton desperadoes?

The foregoing narrative reminds us of the bloodthirsty Governor Yeh, who was taken captive to Calcutta by us from Canton. But this part of the Chinese character has been described by the author of *Twelve Years in China*, who says, under the head of—

*Chinese Views of Death.*—There is nothing in the Chinese character more striking than the apathy with which they undergo afflictions, or the resignation with which they bear them. There is so much elasticity in their disposition that the most opposite changes in their condition produce but little effect. A coolie can admirably ape the dignity of the mandarin when promoted, and a disgraced official or ruined merchant who formerly had lived in luxury appears little to regret the change he has undergone. There is no fear of death amongst them, though they have a character for cowardice. It is true they have the relics of the dead constantly before their eyes. The country is covered with graves, and in many places about Shanghae the coffins are openly exposed in the fields. They are even kept in the houses till a propitious day arrives for the burial, months passing by sometimes before the body is removed. When the coffin is decayed, the bones are carefully gathered; and in a country walk one very often comes upon jars containing "potted ancestors." Money is saved for the purpose of a coffin, and is put by till ready for use. The first time I saw this was in a little cottage near Shanghae. There was an old cob-webbed coffin in the corner; I asked a young lad why

it was there; he quietly pointed with his thumb over his shoulder to his grandmother, standing close by, and said it was for her; she was very old, and was nearly wearing out the coffin before she was put into it. At funerals females are hired to do the "inconsolable grief" parts of the performance. It seems very ridiculous that such a custom should be kept up when it is known by everybody that the mourners howl for hire. They certainly work hard for their money, and their piteous moans would be heartrending if they were real.

---

ISLE REUNION,—*Late Bourbon,—Indian Ocean.*

(Concluded from page 123).

*The Bazaar.*

This market, peculiar to St. Denis or nearly so, is situated at the end of the street called the *Grand Chemin*, which runs horizontally or level through the midst of the town. It is entered by a wooden gate and a single door, a precaution in favour of putting down any disturbance. That forms the façade of this building, closed everywhere by walls, against which some wooden houses lean, being occupied by butchers and bakers, &c. The ground is divided into small squares, carefully defined by a rough embankment of pebbles raised a few inches above the surface of the ground, and separated from each other by little narrow pathways for passengers.

The middle of each of these squares, taken at an annual rent for the benefit of the town, is occupied by a Negro and Negress, surrounded by all kinds of produce from different parts of the island. Like me you would no doubt be astonished at seeing all the most beautiful tropical fruits lying about here in utter confusion. And if you were to see them on their trees, you would be no less struck with admiration at the beautiful mango and its superb girandoles of flowers, along with its fruit, which by good management is varied without end; the orange, also, with its balmy flowers and delicious scent; but the orange would not eclipse its companions the vengasaye, the mandarine, the pamplemousse, even more esteemed and quite as delicious. Nor should the Jam Rosa be forgotten, with its spherical shaped fruit, which rivals the perfume of the rose and the flavour of the pomegranate.

But we will leave these for the heterogeneous population which crowds into the Bazaar. A picture of this would represent the prevailing hues varying between those of ivory black and the sienna brown, although here and there might be seen the fairer forms of some young mulattoes, and these, too, with pretty smiling faces: accustomed to the Bazaar, they all resort here morning and evening, more for the sake of seeing and being seen than for the purpose of buying provisions. Thus the gallant and early voyager, the enter-

prising sailor, who comes on shore for a short run and to pass a few brief moments among these flowerets, so fresh and smiling to-day, would perhaps find them faded and gone to-morrow.

At daylight every day the Negroes who have charge of the market are summoned to the Bazaar by the morning gun; but even long before then these busy attendants are on the way to their stations, carrying vegetables, fruit, fowls, animals, everything indeed which is over and above the consumption of their master's family. For nearly all of them are employed on their master's account. But there are some Negroes, too, who do business on their own account, although they are very few.

Notwithstanding the allowance of 50 per cent. at least on everything to the Negro charged with the sale at the Bazaar, there is another more profitable source of industry than that of the Bazaar that is very well understood here by the creole ladies who live on their estates here, and this taste for trading, this love of *banyandage*, as it is termed here, is developed by them from their very infancy. Children are each severally gifted with one or more square plots of ground, always kept in a state of cultivation, the produce of which is sold to their credit, or perhaps it serves to raise animals on, but the profit is still for them.

As for the town people they find sufficient to satisfy their trading propensities in making sweetmeats, pastries, and all kinds of bonbons for sale, either at the Bazaar, or in the town, carried about by a Negro on the head, in a little white box of iron, which contains a whole assortment of them.

But the mercantile genius of these people is more fully developed in hawking their goods from door to door; these goods consisting of all kinds of merchandize, (dresses, silks, flowers, ornamental finery, &c.,) obtained by wholesale purchase. These hawkers, who deserve a Mercury for their patron on more accounts than this, are about the Bazaar every morning, and enhancing their attractive goods in the eyes of the Negroes and Negresses strolling about; who soon become captivated either by a *palicat*, (as a silk handkerchief is called,) the colours of which contrast well with their black pates, or by a Madras barirole of flashy colours, or by some captivating dress of a good round price. But suppose then that the purchaser has not sufficient funds to pay for it! Oh, the Negro is not in the least embarrassed at that. His favourite maxim comes to his assistance at once,—“To steal from my master is not stealing at all,”—and so the bargain is forthwith concluded, making the contents of his basket do the business. He divides each packet of goods which he had to sell into two, so that by selling each at the original price of the former this little operation doubles his capital. Only as they are thus smaller, he debits them something less, but charges the rest to his master in the evening, (after having restored the remainder to their former size,) telling him that he had not had sale. And this is by no means an uncommon trick with them, for their deception and cunning when they intend to rob their masters are almost incredible.

It is not customary for ladies to be seen at the Bazaar. At nine o'clock it is all clear, even the visitor is gone, and each tradesman is wending his way homeward, ruminating in his mind on the profits of the day, and what those may be of the morrow.

In winter the Bazaar is nothing but mud and filth, and the exhalations from it a mixture of odours of the most disgusting kind. Another place for promenade is then found, either in the town or in its vicinity. On Sunday, for instance, the carriage drive from four to six in the afternoon is the Jardin du Roi, and from those vehicles the young newcomers, ladies in elegant dresses, and romping children, roam about among the gardens at pleasure, enjoying themselves highly in their own society. Under the shade of trees the garrison band is stationed, the music of which is enjoyed by the company promenading. It is also to this band that the Jardin du Roi owes its crowd of visitors on Sunday, for it is observed if there is no band there are no visitors; and of course on every other day of the week it is entirely deserted.

Nevertheless this garden, so well laid out and well planted as it is, with its beautiful walks, really deserves better than this. In the fresh early morn or in the evening when the business of the day is over, it is delightful to resort there with a friend or a book to pass an hour or two and enjoy the balmy air; and yet it is not much frequented, but I cannot say why. On holidays the people of St. Denis resort to an extensive plain to the West of the town, called the Plain of the Redoute, on which stands the military prison, the magazine, the camp of Negroes, who are colonial artizans; but throughout this plain there is not a single tree to be found before you come to a charming grove, which I have already mentioned in alluding to the military camp. There at least the masses of verdure, flowers, and abundance of plantation are ready to relieve the eye, fatigued as it is by the continual sameness of either a scattered, wretched, parched up grass, or the calcined fragments of rock which cover the ground everywhere.

To reach this plain, the River St. Denis must be crossed; and it is quite extraordinary to see on both sides of the river the variety of houses with their little strips of verdure, Swiss cottages and all kinds of buildings, each one more picturesque than the other. Again, the exercise of the military takes place here, and a review is sure to bring always the same crowd of people to witness it. Then of course they surround the hippodrome, to augment if they can the speed of the horses. But I am not joking when I say that St. Denis has its race-course, its jockey club, its gentlemen riders, and its favourite winning horses. A stud is all ready for amateurs in a charming locality, where there are well found stables, and even breeding mares; among them the famous Patriot, the descendant of Langar, whose triumphs are well known in Ireland, and whose descendants have won in twelve years the enormous sum of £45,356! The road to the stables is a delightful walk, and so is that returning by the Chassée de Butor, spacious, and enlivened by the constant passing of carriages and passengers on horseback as well as on foot.

To the East of the town opposite the barrack of the gend'armerie, by the sea side, there is a little place where an attempt was made to grow poplars, and this also affords a very pleasant walk. But, alas, it is the place where the ends of justice are carried out in executions! It was here that in 1843 I witnessed the execution of a Negro named Fantaisie, who had employed the time of his maronnage in assassinating several of his brother Negroes. Their proceedings on these occasions are peculiar. On the morning of the day of execution a red flag, called the flag of justice, is hoisted at the port flagstaff, and this is no sooner done than it is announced by the discharge of a gun. When the proper time has arrived, a common cart is sent to the gaol for the condemned criminal. The poor wretch, as a last repast, asked for a couple of bottles of arak and a plate of Creole sausages. But, alas, whether the appetite might be capricious at such a period or whether the time was too short to satisfy it, the sausages remained untouched, for Fantaisie had but little relish for the enjoyment of this last feast. However this may be, with a sang froid leap, he sprang into the cart, attended by the chaplain, and was followed by the usual funeral escort and a horrible crowd of bloodthirsty wretches, as Victor Hugo calls them, to the place of execution. Arrived at the foot of the scaffold, he jumped to the ground and hastily seized the steps by which he ascended to it. Moustique, another Negro, entitled the executioner, took him and placed him flat on his stomach, with his head on the block; a roll of drums gives the signal, and by the stroke of an axe at the next moment the poor fellow's head has bounded away from his body. Human justice is appeased and the blood-red flag is immediately hauled down.

This miserable proceeding is witnessed by the prisoners who may at the time be in confinement, so that it may operate on them as an example. But the effect of it all is lost on them: they are little given to reflection. They are generally employed at hard work on the roads, chained in pairs. As to the other Negroes collected in crowds round the place of execution, mere curiosity is the prevailing motive amongst them. A large number of these in a week or two will be figuring away at a Kaffir ball at the very place where this has been going forward, and will even stain their feet with the blood of one of their late companions without caring for it.

But this Kaffir ball is so different from all others that it deserves a passing word, if only to remove from your mind the execution of Fantaisie. It takes place every Sunday, occupying about three hours. The first person who appears on the scene is a Negro drum-major, in something like the costume of the *boeuf-gras* procession at Paris, wearing a head-dress and girdle ornamented with feathers, carrying a drum and rustling together the rings of dried leaves which are secured round his legs. The music which he produces, sometimes lugubrious and sometimes merry, soon brings the dancers together, who form a circle round him, and his business is to excite them as much as he can with his strange gestures and contortions as well as his song. All the dancers, male and female, keeping up the ball.

imitate this Corypheus and accompany his voice, joining in occasional chorus with such stentorian lungs as to overpower the voice of their conductor.

And all the while the circle of dancers is whirling round, at every turn increasing in swiftness, and the bodily contortions of the leader are becoming greater, leaving the spectators to speculate whether or no they have a band of epileptic subjects before them about to succumb to that terrible complaint. But it is nothing at all: on goes the dance all the same without ceasing until night, and when any one is exhausted, in a few minutes, after a slight rest, he begins again as fresh as before.

Such is the Kaffir ball, improperly so called, but it is the name given to the national gymnastics of these people; and I would now try to give you an idea of the dancing parties of the country, if I might be allowed to do so, from three points of view, very different and far apart from each other. The Creole girls, as is well known, are passionately fond of dancing, and the love of it corresponds well with the supple body and graceful movements for which they are known. An adopted child of Bourbon, born in France and connected with one of our most admired writers, Madame Tatsu, has truly said,—“They may be given to indulge in the pleasing fatigues of the dance, but does the infant’s cradle, the sickbed of their husband, a parent, or a friend require their services, no care or vigilance untired is greater than theirs: and now that a more liberal education is developing the faculties with which Nature has endowed them, Bourbon may well be proud of her charming daughters, and being French also, well entitles them to a place among the first ladies of France.”

The 1st of May is an anniversary observed by the government as a holiday, when a grand ball takes place at which all the ladies of the neighbourhood are present. Carriages, sedans, palanquins, and footmen in abundance crowd round the brilliantly lighted hotel. The aristocracy of St. Denis arrive by a stone staircase in an antechamber which separates the two reception-rooms and terminates at the gallery, and the orchestra is well placed in a recess on the right of the saloon. But what most attracts the attention of a person on first entering is of course the collection of ladies arranged in a semicircle before him, presenting a variety of beauty, youth, and elegance of figure that would rival any other in the world, contrasting well with the sombre dresses and slovenly uniform to be seen in the middle of the room. But what costly show! Cannot one enjoy a dance at less expence? The silk, the velvet, the lace, the diamonds displayed on these occasions are overpowering, when a simple white muslin dress, and a few flowers, ladies, in your beautiful hair, would add far more to your charms than all those superfluities, and would enable you to enjoy your dance much oftener without the risk of making the envious (jealous bachelors, no doubt) or some frowning husbands grumble while they are reckoning the cost of them all,—alas, poor Benedicts! Then, again, there is the expence of the toilette, in which the newest fashion, the very latest which gold can obtain or the manu-

factories of Paris can provide. Verily the emulation to surpass each other is so great among the ladies here that a sumptuary law will soon have to be established in consideration of the female Areopagus.

This desire for finery and brilliants has already had its baneful influence on our theatre, for those ample productions that are so conspicuous this evening are by no means the same as were seen at the last (for who among our ladies wears the same dress twice so as to be known?) but others just as expensive must replace them, and incessantly are they thrown aside after each appearance. So that what purse is there that is not lightened by the bills proceeding from these exhibitions, and who would not draw close the strings at even the thoughts of such ruinous inroads as the long chapter of expenses which they are sure to entail.

It is easy to avoid such a state of things by not going to the dance at all. Even our little balls feel the ill effects of this taste for overdressing, and I fear—but never mind, dance away ladies, turn a deaf ear to unwelcome moralists who would spoil a ball,—dance away and drown these unwelcome calculations with your agreeable conversation and pretty laughing faces, and say with the amiable author above mentioned whether this is not your portrait:—"How is it possible not to admire Nature where she is so rich and prodigal? After all, are we not French in heart and origin?—why then assume that unbecoming air?"

The orchestra gives the signal and immediately the middle of the room is filled with cavaliers seeking partners. Country dances follow, and then the exciting scene takes place of those enchanting female forms, so fresh and happy with their fortunate partners, all desirous to please, warmed up with the enlivening music and the little incidents of the "gay and giddy throng."

But the heat becomes intolerable, and as refreshments are not very abundant, ices are in request in the gallery, in the cooling breeze, while the soothing sound of the waves washing the beach meets the ear; or we may saunter into the card-room and observe the gold that is changing hands. There grave gentlemen may be seen between two ritournelles, and a party at whist or some other game are consoling themselves for the ladies' sake, are passing remarks on worldly politics, and perhaps leisurely discussing the balance of the affairs of Europe.

At Bourbon politics are not attractive, but they do force themselves into conversation on events at a distance on the invariable system of faits accomplis. As long as an event remains unknown every one is at liberty to change his opinions according to the different views in which he may see the subject; but news once arrived, the event is three months old, and many persons may have forgotten it. In spite of this, however, the press, that gormandizer of politics, has two or three organs at Bourbon. One does the part of opposition in earnest, with the permission of censure; the other takes the part of government. But they are like the opposite poles of an electric battery, for these two journals have the same proprietor and are published

from the same office alternately every two days. In order to equalize between them the chance of living, their privileges are divided: thus one has the privilege of publishing the government orders, while the other is employed to announce arrivals and departures of ships and legal and other advertisements. And in regard to announcements;—the manner in which things of a totally opposite nature are announced as being on sale at the same store is most ludicrous. Thus, in the fourth page, some merchant advertises for sale the following articles:—iron beds, violin strings, literary works, black varnish, salad covers, night gowns, green wormwood, telescopes, &c.; and as these appear in every fresh number one becomes accustomed to seeing them completed with this strange conclusion,—from literary works to black varnish, from umbrellas to polkas, Gruyere cheese to stockfish, flou-rishing away without change.

But let us go back to the ballroom and we shall find that it is quite impossible for any one to do the honours of the evening with more grace and elegance than Madame Baroche. She is, in fact, the all in all. The Admiral, also, with his fine handsome figure is present, chatting here and there, adding hilarity to the scene, and as he is cooling himself seems to say,—“Good room full, beautiful sight; go on, my darlings, I’ll look out for you.” Such is an assemblage of the aristocracy, which they more or less resemble elsewhere.

But, meanwhile, if you have no objection to descend a little in the social scale, take my arm and come along with me into the darker streets of St. Denis. As we approach a house, the windows of which send forth a glare of light, along with shouts of laughter and joyous noise, there is a ball going on there also, and I will take the liberty of introducing you to it. Do you think that because you might have a few drops of coloured blood in your veins you would love pleasure less? No, on the contrary. Well then, this ball is purposely intended for the ladies of colour. It is not that these respectable ladies collect here out of opposition, to show their indignation at being excluded from the other ball on account of their colour; for at Bourbon it is not the same as at Senegal, where the higher ladies form a caste apart, having their own peculiar habits and customs. The free people here come as near as they can to Europeans, and if the complete mixture of the females in society is not yet come to pass it is very nearly so with the men,—always, indeed, when their conduct and education does not contrast strongly with the privileged caste with whom it is their ambition to join. I merely wished to show you these as a sample of our coloured people, for they are a tolerable collection of these enfans perdus of our colony. Poor grissettes of distant lands, who owe all their sorrows to their first fault, their first happiness liberty, and who after having dearly paid for it, still throw away each day in the current of life, without the slightest consideration for the future: they are yet abundantly cared for, they may well be excused and have a good right to enjoy well the few pleasures which they have.

If we can scale that little ladder without hurting ourselves we shall



be in a little room scantily furnished; in fact, which has only a few planks round the walls for seats, and for lights some quinquets. In a corner immediately in front of the refreshments is the orchestra, formed of several violins of their own fashion and a clarionette. Whatever you do, take care to pass well clear of that lethargic old Negro, if you wish to avoid certain asphyxia. The miserable black fellow who is blowing it with all his heart produces his exciting music with the assistance of a powerful but pestiferous blast, which scatters around him strong odours of garlic, old quids of tobacco, and other ammoniacal flavours impossible to describe!

The dancers here are few generally, and because they are not fond of hiring tapestry (the wall-flowers), they take care only to invite as many as will make one or two quadrilles. As to the cavaliers it is different: the ladies are invited to bring with them their male friends, and certainly the attentions of these gentry to their female patronesses is highly entertaining. They are all reverence for them,—the compliments and gallantries which they lavish on them are prodigious, and of course taken by the damsels as right and proper, and showing their own knowledge of etiquette!

A lady somewhat the worse from the effects of nine or ten country dances is all at once eager to satisfy her thirst, and in joyous anticipation of doing so makes no hesitation in taking by storm a seat behind the orchestra, where she must brave the pernicious influence of those fumes of malaria ventilated from the clarionette which I mentioned, besides those other peculiar odours common to Negro musicians. Scarcely is the glass, sparkling with lemonade or frothed with beer, presented to her when some twenty hands armed with handkerchiefs are thrust between the beverage and the dress of the first lady who is in possession of it, and a volley of oaths is poured forth to preserve the equilibrium of the glass perhaps, besides the finery of the lady. But what splendid finery has been thus preserved. Observe that huge mulatto woman, at least six feet round her waist, in all the vigour of robust health, strutting about in a dress of three petticoats of white satin, as an agreeable contrast with her bronze skin! There, again, is a charming dress, ornamented with a profusion of ribbons and pearls, dashing about on a young danseuse with a Jewish profile, which shows her origin. By her side, another, of a sylphlike form, with an air of nonchalance, having emerged from the Creole caste to the fairest white, is seen in a dress brilliant with gold and diamonds, which the donor perhaps refused but yesterday to his own lawful spouse! This is too much the custom of the country for one to be surprised at it. As to the gentlemen, I know nothing of them, but I have no doubt of the pains they take to give the ladies all the opportunities they can, which so seldom offer, of having a dance, and that they launch into the embrouille of country dances promised and remembered long beforehand. But I know well that the ladies thoroughly enjoy it, and that they are made of iron, and even of steel, to undergo so easily the fatigue which no African chasseur could sustain. They never stop: on they go with a waltz, a galop, a country

dance,—all of which follow each other till daylight. Then, with heavy sighs, the retreat must be thought of, but not without a ceremony which seems to promise a repetition soon of what has afforded so much pleasure.

The person who has given the ball presents her bouquet to a gentleman of the company, and the happy elect then singles out one of the ladies; they then confer together, and fix a day for the next ball. Every one then is contented and happy, because the regret at the departed pleasures of the night is compensated for by those anticipated from that which is promised.

From the white caste we now turn to the free, and these very naturally mingle with the blacks, and I am much inclined to believe that there is less of restraint and even more reality than in either of the two classes abovementioned. When speaking of those gaieties of the black population, I do not allude to the fetes given at their houses, and where plenty of eating and drinking give occasion for the display of good feeling, which the master's eye is by no means careful to avoid, if he should not enliven them with his presence. These are confined to peculiar cases, and to find him often and under different points of view the best place would be at the six sous ball. Let us have a look at one of these,—that is just a glance from the door at what goes on there, for it is well kept and ordered for all who wear shoes—be they white or black—and no one else is allowed to penetrate beyond the threshold.

Here may be seen the Kaffir, with his flattened nose, elbowing about, animated with the pleasures of the evening, as well as at the anticipation of a good supper; the Malgache, with his large thick prominent lips and his intelligent eyes, which indicate strong passions and a will that does not brook restraint; the Iambane, whose delight is to lacerate his face from the forehead to the chin by a line distinguished by fleshy excrescences like buttons; the Malay, with his glossy locks, and his blue tint and treacherous glance; and, lastly, the Creole, with as much variety of manner, colour of hair, and hue of skin in the individuals as they are unlike each other in their features. Among these may be distinguished a numerous collection of workmen,—tailors with their hats jauntily cocked over the ear, with a mass of long flowing hair and a greater or less display of curls, their fashionable waistcoats and their gaudy pantaloons girded tight about the waist to set wide and loose about the legs.

Then there is the Negress of the island, who has come four or five leagues to be present, to enjoy her Sunday and display her fine dress of blue cloth. Then there is the superior Negress, who looks with disdain on the common rustic of the country; she who with her finely dressed hair is so attractive and coquettish, and is a complete copy of the white lady of whom she is the servant. As she walks of course she throws up the dust with the train of her silk dress, made in the very newest fashion! But woe betide her if the vigilant police discover her, for an old law recently renewed does not allow slaves to wear long dresses, and she would have to pass in gaol the hours which

she intended for pleasure, and even the audacious commentator, the brutal sabre of a *chasseur d'ordre* (the name of the police) would deal roughly with this morsel of finery, as she is thus braving the law. The musicians commence tuning up, and the huge violencello case sends forth its enchanting sound, while a cloud of dust for a short moment conceals the whole room, but as soon as it is cleared away discloses the dances formed. As to the quadrilles, it is impossible to count them. At this six sous (three of ours) ball good dancing is much appreciated; the proper figures are scrupulously adhered to, and there is no difficulty whatever in detecting the country to which each of the dancers belongs in the curious contrasts which they present.

Observe that fat Negro, with his dull inexpressive face, and his well starched false collar cutting his ears, attempting fine dancing like an ill-formed graceless bear. He is confronted by one of those tailors just mentioned, who is a pet of the Negresses. So the Adonis soon twigs his companion and imitates with a burlesque fidelity the very steps and gestures of his friend, of course to the great amusement of those who are looking on. But such satire is not confined to the ball, although it may find abundance of subjects, for here, as elsewhere, valets are not slow to imitate their masters. In one corner of the room there is a merry coterie, full of frolic and noisy with immoderate laughter, but harmless, although caricaturing. One of them says,—“Virginie, oh Virginie, do dance a little, if you please, like a fine lady as she is doing the ‘en avant deux.’ No, no, not so; hold out your dress like that. There, that’s right; now wave your head like a gendarme’s horse at a review: that’s capital.” No doubt the caricature was faithful enough, for a young Negress looking on could not help exclaiming,—“Ah, excellent; who would have thought that you were so fine a lady! Pardon, my dear madam; excellent, oh, you do it to perfection!” But, says another, you forget the best part of it, when her zami (friend), an artillery officer, appears in his place, and the very condescending and gracious manner in which she bows to him. Comme ça! eh! and then follow shouts of laughter.

Again, there is a Negro who in performing the *en avant deux* is passing his hand through his long hair and rolling his eyes about, singing,—“Look there, mon enfant, see that mountain!” And his observation is not lost, for a voice replies—“You’re another, sir, with your tourniquet locks!” He is a loungeur in the saloons of his mistress; nor does she escape the aping propensities of these people. And so the affair goes on, from which you can imagine what passes and repasses in every house on these occasions, for nothing can be more piquant or more sarcastic than the remarks of these gentry. Next day these little pieces of gossip will fly through the town and find their way to places far away, where they will be listened to with a delight in proportion to their proximity, especially when they come from the master.

The morning gun is the signal for breaking up, and there is an end of the ball and all its caricaturing. The company of Negroes and

Negresses hasten to their several homes, for if they are found in the streets half an hour after, even on their way home, without a written pass from their owners, they are carried off to gaol and locked up till next day.

To conclude with the amusements of St. Denis, I have only to add a word about the theatre. Alas, it is defunct, and we are left to our recollections of the operas of *la Juive*, *Robert le Diable*, *le Guitarrero*, *les Diamants de la Couronne*, *le Domino Noir*, *l'Ambassadrice*, *Lucia de Lammermoor*,—all of which have been successively performed during the past two years by a French company, which had an excellent *prima donna*, a capital tenor—brought up at the Mauritius, and also a counter-tenor; as to the others, there were none who came near these. At the end of the engagement all disappeared and returned to France, and we expect a new company of these warbling travellers to condescend a visit to us, and contribute to shorten our long evenings.

Thus I have attempted to follow out the precept conveyed in the lines of Lamartine that I have quoted above, with some account of the little community of St. Denis of Reunion. This same Reunion; that is a mere speck on the ocean, but one that is filled with a society of as much importance in its own estimation as that of any capital of Europe. Somewhere or other I have picked up a translation—or perhaps rather a paraphrase—of those lines in English, that you shall have. And I propose then to conclude these observations with an account of a hurricane which has just taken place here. These are the lines, but you should have Lamartine's by them, and they might be quoted in earnest by any absentee like myself, who might be forced abroad by duty of any kind from his own country. Lamartine would not know them, and if he did would not perhaps own them. So, if they should ever want an owner, set them down as from some one who has *gone abroad*.

Yes, let my pen with welcome words dilate  
On all that meets me in my wand'ring fate;  
Let loving friends in distant homes combine  
To scan adventure in my rambling line!

Then what is absence, far from those we love?  
But means designed by Providence above;  
That kindred spirits may united soar,  
Haunt the same scenes, the same abodes explore!

So now for the hurricane. I was at my usual station the other evening at the Barachois, meditating in a corner by myself, and careless of the conversation of my neighbours, when my attention was suddenly attracted by the appearance among us of one of the most important persons of the place, the captain of the port. Like a new Asmodeus, whether his wooden leg, like a faithful barometer, indicated the least revolution in the atmosphere, or whether, with a similar prescience of nauscopie that enabled the signal-man of the Mauritius, under General de Caen, to see in the clouds the approach of ships to

the island, he foretold with wonderful precision the raging sea and the violent winds which followed. But his appearance this evening was simply to announce a coup de vent and warn us to take care of ourselves.

I must say that on seeing a beautiful clear sky, and enjoying as I was the delicious calmness around, I thought he was joking, more especially as I had also consulted the barometer of the port but a few minutes previously, and which had not shown the least indication of falling. But I was fully inclined to believe him, for our friend was not given to talking unnecessarily or to account for his predictions, but merely said, in answer to our astonished looks, "Wait a little, to-morrow there will be no mistake."

Certainly, never was the weather more serene, and I could not leave my favourite walk until very late, having really forgotten all about the predicted weather.

The next morning, on jumping out of bed, I opened my window to get some fresh air, for the heat of my room was intolerable, when I found that there was a stagnant calm, the air being as hot as if in an oven and the sea as still as if it was formed of oil. Then, as the sun approached the horizon, the atmosphere became more and more charged with vapour, the surf became high, and the barometer, after becoming concave, began to fall. At length, on this day, the 19th of December, the wind set in strong from the S.S.E. At sunset the surface of the sea assumed the red tint which it reflected from the sky, and the waves dashed themselves with fury on the island shore, as if they would overwhelm it. Leaden coloured clouds collected about the mountains, chasing each other rapidly as they were driven by the wind. The rain fell in torrents and the squalls of wind succeeded each other incessantly.

The Negroes who resided in the outskirts of St. Denis rushed into the town, reporting that the ravines were becoming flooded, that in some places the rivers were swelling over their banks, and that all the miserable effects of the hurricane were at hand, which the howling of the wind, sometimes as loud as thunder, too well indicated. There could be no doubt that the modern Cassander was perfectly right;—the sudden gusts of wind came fast, and in a few hours the hurricane was upon us.

In the course of the morning some ships had to put to sea, unable to hold on at their anchors; but at eleven o'clock the discharge of the port gun was the signal for those that remained to depart. A fine ship, the *Amphitrite*, loaded for France, first obeyed the signal and sheeted home her close-reefed topsails. Poor *Amphitrite*! what was her fate? for she never reappeared. All the other ships followed her and put to sea. It was trying work to their commanders, for being detained by business on shore, it was as much as they could do to get on board in time to get away, for the hurricane gave them but little time for such arrangements, and all communication with the shore was at an end. This was an opportunity for the seconds in command to show skill, and let it be said to the honour of

our rising officers that accidents proceeding from imprudence or want of skill are very rare on such occasions, notwithstanding the number of ships that are thus forced away sometimes from roadsteads abroad.

The anchorage was not clear of the shipping long before we had the imposing spectacle of the war of the elements. The sea was dreadful, and its enormous waves opened out its depths as if to invite the eye to look down into its dark abyss; while a watery mountain lifted its foaming crest and then came crashing down with headlong fury on the shore. The very shingle dashed about by it on the beach contributes its moaning noise to that of the storm. Here, the sea is tearing away the logs from a timber yard and smashing boats. There, one of the piers is broken in the middle, and, scorning its usual position, is drifting away with the wind and sea, gliding over the exposed ground of the shore and lodged on the steps of the government house, at more than a musket shot from the beach. In another place the sea ebbing from a river returns and invades its bed, and this, swelled already by the mountain torrents, overflows its banks, and in its impetuous and unlimited course washes away stores, houses, and up-rooted trees.

The torrents of rain soon make rivers of our streets. Nothing scarcely is seen but fragments of walls thrown down, roofs of buildings torn away, and trees lying with their roots uppermost. The very ground is shaken and opened in large gaping fissures.

Thus the hurricane continued for twenty-seven hours; during which the wind continued from the S.S.E., the barometer always down, and fell as low as six lines below 28,—at this time being generally two lines above 28.

After going round the compass, the wind coming round to N.W. and West, all was over and the barometer gradually rose to its usual height. The heavy clouds cleared away, the sun reappeared, and with thankful hearts we saw the deluge abated. Still we had to reckon our losses, and this was a doleful chapter of the hurricane's history, for our poor islanders had been roughly handled. All their outhouses and magazines were blown away into the sea, and their contents of different wares and provisions all destroyed and lost; the cane fields were flooded, and the maize and rice destroyed: this was sad work, and a multitude of poor Negroes, including whole families, were thus consigned to the care of charity.

And where are those ships that were compelled to leave our inhospitable shores on this occasion? Heaven only knows! One by one they reappear on the horizon, and heartily are they welcomed on their return; but what anxiety there is about the later that have not yet come. They did, however, all return but one, out of thirteen that had to leave us, and that was the unfortunate *Amphitrite*. All the rest had suffered more or less from the effects of the hurricane, but she was gone!

You will naturally ask what we did on this occasion, so trying to us on shore. Every usual routine was naturally suspended, and when one is in a house which is waterproof (a very rare circumstance in-

deed) and one does not run the risk of being washed out of it, it is all very well, and one has only to be quiet and stay at home. But there are few who are in so fortunate a condition, for as soon as the gale comes on every one adopts the plan of defying the weather, and that is to put on a foul weather dress, as a traveller would do, and then go and walk the streets and observe the progress of the storm, what it has done and is likely to do.

The Creole has not become French for nothing, especially those who have not to fear at the end of this sentimental peregrination that a cold, or catarrh, a tile (I mean those of wood) on the head may make them fully aware that there is pleasure in going to the wedding, especially when it costs nothing. Alas for those who presume that for them it will cost something.—Well, they will do as others do. It will be quite time for them to sigh when they know the extent of their loss; otherwise their tears would flow unperceived in the midst of the deluge which surrounds us.

In conclusion, it appears that in October last the local government at Reunion notified to the inhabitants that a convention had been passed with the British government, by which 6,000 hired Indians would be sent to Reunion, a piece of intelligence which was received in the island with considerable satisfaction. The firm of Camin and Lamoroux, as agent of the French government at Calcutta, has undertaken to send them to the island,—a service in which they will not be interfered with by any other party. An order was sent to the firm on the 30th August in respect of the distribution of these emigrants on the island as soon as they arrive, and the laws affecting their protection in the colony.

According to official documents, the following were the numbers of emigrants on the island on the 31st July, 1860:—

Indians . . . . .	87,777
Africans . . . . .	26,748
Chinese . . . . .	423
	<hr/>
	64,948

This number is formed respectively of

Males . . . . .	52,422
Females . . . . .	9,512
Male children . . . . .	1,802
Female children . . . . .	1,822
	<hr/>
	64,948

From the 1st of January, 1855, to the 31st of December, 1859, 37,876 emigrants were landed in the island. The number of those returned and died in the same period does not exceed 15,227. The following shows the numbers landed and disposed of in that interval for each year:—

<i>Year.</i>	<i>Imported.</i>	<i>Expended.</i>
1855 .....	7,489 .....	3,027
1856 .....	6,388 .....	2,253
1857 .....	5,242 .....	2,496
1858 .....	11,334 .....	3,810
1859 .....	7,423 .....	3,611
	37,876	16,227

Thus it appears that the returned and died does not amount to half of the number imported; and if an increase of labourers is necessary for the increase of production, it is no less essential, it is said, that they should be obtained from every country, and under all conditions on which they may be obtained.

[The foregoing on Reunion is from the *Moniteur de la Flotte.*]

#### LUNAR EQUINOCTIALS,—or, the Past and Future.

Sir,—We are happy in possessing the *Nautical Magazine*, in which mere prejudices in favour of time-honoured notions are forbidden to oppose the endeavours of the humblest to develop improvements.

I need such an impartial medium through which to appeal to the nautical world, for the cause I advocate is unpopular, and opposed to the opinions of some of the greatest intellects of the age.

I have, however, two sources of encouragement to persevere. In the first place, the Brussels Meeting in 1853 originated in a desire to increase our knowledge of physical facts, and *did not* decree that such facts as were discoverable by professed *savans* were alone to be received; nor did it threaten persecution against persons of ordinary powers, like myself, if they stumbled upon a novelty in science; and, in addition, the Admiralty even issued a *Manual of Scientific Inquiry* to direct the observer (whomsoever he might be) in his pursuits.

In the second place, a grateful shipmaster sends word to me, through a well known Sheerness pilot, that being one of a group of merchant captains assembled at Sunderland on one of the days against which I had warned them, he did not sail on that day; but that to his certain knowledge, at least three who did sail were within twelve hours, with their crews and vessels, lost upon the coast!

Hence, Sir, I conceive that in availing myself of this means of publicity I am performing a sacred obligation to my fellow men, and that sneers, especially from professional men, reflect more upon them rather than ridicule upon me; especially as not a single argument against my theory has appeared, although it is fourteen months since I first announced my discovery in your interesting magazine. My course has been to say openly to sailors "I think I can help you; perhaps save some of your lives and properties." I caution them



against certain periods of probable change of weather, and merely advise their keeping a weather-eye open at such times.

It may suit the temperament of another person to say in public contradiction, as to these days,—“Take no precautions. Keep your eyes shut. Don't believe him,” &c. The cause of science, and especially one so little understood as meteorology, was never advanced by such ill-judged, ill-timed, and unphilosophical advice; nor is it in accordance with notions of common fairness or the spirit of the age to hoot at novelties which are only vexatious from their simplicity.

I have not been daunted by the frowns of the illiberal, but for many months have ventured to predict long beforehand periods of change, most probably towards high winds or lower temperature,—and from what I have above stated feel called to the bar of public opinion.

Now, Sir, “predictions” are valuable or ridiculous, as they may prove to be in accordance with their fulfilment or otherwise. Having named these periods in your last February number as suspicious, viz.:—1861: January 2nd; 8th or 9th; 15th or 16th; 23rd; 29th; February 4th or 5th; 12th; 19th; 25th or 26th.—And in your March number:—March 4th; 11th; &c.;—I beg leave to state their absolute fulfilment (according to my publicly registered daily diagram) as under:—

January 2nd.—Very strong wind, with great fall of temperature.

8th or 9th.—Snow set in; change of wind from North on the 7th to S.E. on the 8th.

15th or 16th.—Strong gale on 15th; moderated on the 16th.

23rd.—Change of wind from N.W. and very hazy to S.W. and very clear. A strong gale on the 25th. N.B.—The *Daily Telegraph* describes 22nd as a day of great magnetic disturbance at Greenwich.

29th.—At Sheerness a remarkably brilliant day, preceded by a most gorgeous sunset: this and the marked *flying of scud* during the calm indicated disturbances not far off. N.B.—High winds prevailed in the Mediterranean, and at Balta Sound, Shetland, set in at 6h. p.m. Change of wind at Sheerness from S.W. to East.

February 4th or 5th.—Very strong winds from 4th to 6th.

12th.—Change of wind from W.N.W. to S.W. P.M.—Snow, hail, and sharp frost set in.

19th.—Dead calm at Sheerness,—the *flying scud*, however, indicating much atmospheric disturbance. The wind rose next morning rapidly, and it blew a strong gale, increasing till it became the fearfully destructive gale of 21st.

25th or 26th.—On 25th change of wind from North to East; on 26th change of wind back to N.W.: both days *scud flying* very fast from N.E.

March 4th.—3rd and 4th, very heavy gale from West to N.W.

11th.—Strong northerly gale, with a fall of barometer equal to 1.27 in. in thirty-three hours! and snow in heavy squalls; moderated on 12th to nearly calm.

These are my facts, and I can produce such for a period of several years. I could make them even plainer by showing that changes were still more marked than I have room to describe. *Query*.—Will any one try his hand at similar prognostications? Let those who cannot, be mute or unoffending. I claim publicly the protection of Admiral FitzRoy, as head of the Meteorological Department; and from the highly gratifying and courteous manner in which he received me on Friday, the 22nd February last,—promising me all the assistance in his power in the pursuit of a purely scientific question so mutually interesting,—I cannot doubt that the establishing of my theory, and the benefits resulting from a proper *system* of weather warning, will soon be accomplished.

It is, however, incumbent on me to avail myself of the advice of the gallant Admiral, as printed in his *Barometer Manual* for the use of fishermen and persons on the coast, because in testing my marked days I might otherwise be accused of twisting facts to suit a purpose. The *Barometer Manual*, Direction No. 16, says,—“To know the state of the air, not only barometer and thermometers should be watched, but the *appearance of the sky* should be vigilantly noticed.”

No. 44 says,—“ \* \* \* \* because their indications may be affected by *distant causes*, or by *changes close at hand*. Some of these changes may occur at a greater or less distance, influencing neighbouring regions, *but not visible to each observer* whose barometer feels their effect.”

No. 45 says,—“ *There may be heavy rains or violent winds* beyond the horizon and the view of an observer; by which his instruments may be affected considerably, *though no particular change of weather occurs in his immediate locality*.”

I must further state that at some of my marked periods I find the atmospheric disturbances lead to immediate consequences, while at others the maximum result happens on the second day afterwards. At these periods, the moon's attraction may be the chief agent in such disturbances, as it is in its influence upon the tides, which are affected most on the second day after each syzygy; while at the former periods electric disturbance itself may have more direct influence. I have found, moreover, that Admiral FitzRoy's advice in No. 16, as above, is good, as we frequently see at these periods of disturbance, during a perfectly calm day, the scud racing overhead at a velocity quite inconsistent with the stillness of the air at the earth's surface.

Having thus, I believe, substantiated the accuracy of my predictions, as given in January, from my own observations, allow me to turn to the registrations of others,—and with pleasure I find in your February number all that I need ask for. I prefer the records of so experienced an observer as Sir Leopold M'Clintock to any commonplace registrations. At page 76 of the *Nautical* for that month, I find he remarks that gales had long prevailed and prevented his soundings until the 18th August, when he was able to resume them. Well, this 18th was the day of lunar equinox, and a day of change

according to my theory. Again, at the same page, he says—"Gales of wind had been experienced on the 22nd, 23rd, 24th, 25th, 26th, 27th, and 29th July, and also on 5th August." Now, I would ask why not on the 28th? A reference to an ephemeris will show that the 22nd was the day of lunar equinox, and the 28th the day of lunar stitial colure, another of my periods. What more reasonable than that gales should set in at one period of disturbance and last till the next time of expected change? And again, the 5th August was also a day of lunar equinox. Also, at page 79, he says,—“We experienced strong gales of wind on the 21st, 22nd, 24th, 27th, and 28th September.” Here, also, the gales set in at the lunar stitial colure and ceased at the lunar equinox; recommencing continuously on the 5th October, which was also the period of lunar stitial colure. I might proceed, but such corroborations need neither addition nor comment.

I had intended entering upon the delicate and difficult task of examining our barometric system of weather wisdom. It is assuming proportions that will prove beneficial or otherwise, according as its truths are separated from its fallacies. That this is called for by publicly expressed opinions no philosopher can deny who read the remarks on weather warnings in the *Times* of 13th February last. That powerful censor made admissions which startled me, and I confess myself so far deficient in such “wisdom” as to be unable to receive such remarks as truths. The *Times* says,—“Meteorology now rests upon evidence as palpable as that which confirms our theories of astronomy.” “An eclipse occurs at the hour and minute set down for it, occultations and transits take place with similar punctuality. The truth of the principles on which the science is based becomes evident to all, whether learned or unlearned. We are now in exactly the same position as regards meteorology.” “If we have indeed got to this point (and there appears no reason to doubt it) the rest ought to be easy.”

If so shrewd a paper as the *Times* has been misled by some recent events, so may my own conclusions have deceived me. I was about to venture on a lamentation of our ignorance of such matters, such as was acknowledged by Sir James Herschel himself in the same paper not many months since, but must pause till your next number; when, if permitted, I will either read my recantation or make an attempt to lay before your readers an estimate of the *real* value of the Barometer,—its defects,—and also the manner in which it is used, with suggestions for improvement.

I have, &c.,

S. M. SAXBY, R.N.

*To the Editor of the Nautical Magazine.*

P.S.—I accidentally omitted 31st March as a marked day of change in your March number.

REPORT ON THE FRENCH IMPERIAL NAVY,—*By the Minister of Marine.\**

It would be most desirable to banish from this our civilized world the pest of war and that expensive evil of large armaments, for it is a melancholy prospect to see those who consider themselves reasonable beings expending both their treasure and their blood. What barbarous folly it does seem to make over to the effects of instruments of destruction, improved as they are now to perfection, a crowd of beings who do not dislike each other and who do not desire a premature removal from this world. We may celebrate the glory of battles and the valour of heroes; but strife between Christian nations, what is it but fratricide and revolting to every honest heart when it has no other object than ambition in view, forced to the field by the pride of confidence.

Philanthropists and financiers have abundant reasons for enlarging on this peaceful theme. Here they are in accordance with all social and Christian principles. But, alas, if from the world of notions we pass to one of facts, what do we see? The constant necessity for man to defend himself against his fellow man! Nothing is so scanty as brotherly love in the human heart. Every one is obliged to look out for his personal safety in society,—still more so among individuals, for an improvident weakness would not long remain free from attack. And again, the more sudden the attack may come, the more necessary it is to be prepared for it. In these days steam and electricity admit of such formidable combination and such immediate application, that vigilance was never more necessary. Never, in fact, was it more necessary for governments to have at their disposal a force sufficient to protect the national interest, to secure the chances of fortune, and to protect the lives of its people.

This duty is more especially required of those who have to watch over the healthy condition and security of France; for although Frenchmen may have warm hearts, an ardent patriotism, and, may be, a taste for war, still they have more energy than perseverance—they are more impulsive than enduring. They like a rapid war, remarkable for a series of brilliant exploits. The conclusion is of the first importance to them. They are discouraged by repeated reverses in the beginning of a campaign: they become uneasy and down-hearted, exclaim against their leaders—often even to treason, and it is very

\* The *Moniteur de la Flotte* has presented us with the report of M. G. de la Tour, of the Corps Legislatif, to the Emperor, on the Imperial Navy of France; and, considering that it is a document that will interest a large majority of our readers, we propose giving them an entire translation of it. There are several points in it of more than ordinary interest; and many just observations with which it may be as well that our own readers should not be unacquainted. They will therein see that if the glitter of our service is tarnished here and there by hardships, our neighbours opposite are not without their difficulties also.—ED.

difficult to make up for these checks upon their ardour, and sometimes to avoid defeat from them.

It becomes, therefore, actually necessary that our force should always be found in a disposable condition, organized and prepared. War becomes more and more to be decided by grand and sudden descents well combined and rapidly carried out. Such a descent we are in a condition to make on any empire of the continent, whatever that may be, if we have not to fear a coalition. Our navy, well capable of seconding the impetuosity of our soldiers, is an admirable completion of our continental power. In a word, we could defend victoriously our land frontier, however vulnerable we may be on that of the Rhine! But is it so with our coasts? That magnificent maritime frontier of 2,400 kilometres,—is that secure from sudden attack? Could it withstand attacks vigorously conducted? Is our nautical progress equal to that of England? Should we be as capable of a rapid and aggressive resistance if the honour of France and the command of the sea were at stake? These are the questions for us to consider.

Let us first look at the latest move in England. That country is in an absolute state of effervescence, as if an enemy were at her very doors, and all the time we at home are asleep. On the other side of the strait 150,000 Volunteers have seriously sprung up at the words of some writers who from this side in their folly would incite France to conquer the British islands. Without depreciating the merit and valour of our neighbours and allies, our soldiers, well proved in battle, may smile on hearing of this whimsical army; and, without being terrified, may contemplate the forces called the "Devil's Own," composed of the lawyers and advocates of London and Edinburgh; drawn up in battle, if the God of Battles was favourable to them, they might even hope, without much boasting, to put these choice troops to route, and we dare wager that in the heat of battle the cohorts of the English six feet giants—"Six Feet Volunteer Guards"—would not resist the carbines or the bayonets of a batallion of our little chasseurs.

But as a proof of national sentiment, this armanent, almost general and unanimous in England, is of real importance. A powerful and warlike people, conscious of their own strength, are fatiguing themselves with incessant agitation; they conclude in a moment to run right at a danger to dissipate it. Has it not been so in England with those who originated this agitation? Without exactly looking for war, have not they shown a desire to assure themselves of the means of carrying it on eventually in the best possible way if it should be at hand? This supposition only can explain the alarmist language of the "leaders," against which one man only, Mr. Bright, has protested. Lord Palmerston, in spite of his being seventy-five years old, is enrolled in a brigade of riflemen; the Duke of Cambridge is in command of another; the Government fans the flame from time to time, instead of trying to quench it. We are permitted then to ask if the English are always quiet and inoffensive in their foreign policy, and we are compelled to give serious attention to the enormous expenses

which they have imposed on themselves for several years, but above all for the past year, to obtain a crushing preponderance over the French navy.

In less than five years £36,000,000 have been expended on the defence of the English coast, and two-thirds of this sum have been applied to those floating ramparts in which British clear-sightedness recognises the principal source of security for the country. During this period the only extraordinary effort of France was in 1857, appropriating £680,000 to the fleet for the sake of fourteen exercises, and until 1872 inclusive. In 1858 our navy was sufficient to resist the English fleet that was disposable. We had twenty-nine screw ships and forty-six steam-frigates. The English had not then more than twenty line-of-battle ships and thirty-four steam-frigates. Our £680,000 of extraordinary subsidy had for their object to raise the number of our ships to forty, and that of our frigates to fifty.

One would believe for the last three years that this was sufficient to keep us in a respectable position. But now the proportions are all altered, and very soon England will again have the advantage of us. England goes to sleep in entire confidence of her strength, but she learns that we have been busy during her nap. Not only is the number of our guns superior, but also their quality. Moreover, Malakoff and Inkermann begin to sound unpleasantly in British ears. The first angry cry or one of alarm will raise the whole country: she will set to work and will not rest until she has removed the smallest cause for disquiet. During the years 1858 and 1859 the English steam fleet was increased by fifteen vessels, either new or converted, five new frigates, and two block ships. The newly constructed vessels of the English for the last ten years amount to 46,284 tons. On the 1st of July, 1860, England had a fleet of sixty-three ships of the line and forty-one screw frigates; while France had only twenty-eight ships of the line and thirty-five screw frigates, carrying half the number of guns of the English.

In the short period of twenty-six months the English have augmented their force by thirty screw ships, new or converted, while we have not launched above five or six. We have not had more than £680,000 to expend in exercising, while our neighbours can readily lay out £8,000,000 to augment their fleet. A screw ship of the line costs £200,000: a frigate, with her iron armour, cannot be built under £240,000; and when these formidable engines of war go to sea they will consume from £160,000 to £200,000 a day in their coal. One can easily imagine that with our little budget we have not been able in this short period to preserve our normal position. The English budget, doubled since 1855, now reaches £15,600,000;\* ours remains fixed at £4,960,000. The actual difference is by far too great.

\* This budget was not more than £6,132,000 in 1854. It was increased to £11,857,000 in the following year, on account of the war in the East. England then had two fleets at sea, manned by 70,000 men.

The increase to the *personel* of our neighbours has followed that of the increase of their navy. In 1836 they had 17,500 men; but in 1859 they had far abandoned this modest number, and had obtained 37,000 men: last year it was more by 4,000 men, and in 1861 it should be 58,000 seamen. The number of marines should also be 18,000. These 18,000 men, well drilled, reckon at least two more at the time of embarking than our sailors, and of themselves form a permanent maritime force of considerable value. Many British ships have had their fittings, &c., carried on by detachments of marines, and no captain would complain at being obliged to take marines for two-thirds of his crew. Then the number of men before the end of the current year will reach 84,000, and perhaps England will not stop at that. It is, however, verily a warlike step to take in the face of a nation much inferior in maritime force, and which seems lulled to sleep in her security, as if the sea should preserve the peace to her which she is now enjoying.

There are not persons wanting in France who know where to find the constitutional faults of the army and navy of England, and who can imagine the sword of France penetrating there at the first blow up to the hilt. They point out, for instance, as a source of great weakness the relative difficulty England has of finding men, the number of foreign sailors increasing, and which is now not less than 20,000 in the British fleet. They speak triumphantly also of their defective construction and the inequality of sailing displayed by different English ships, as if we were not suffering from the same imperfections. It is certain that England would feel herself much more powerful if she could adopt our system of maritime inscription. But, happily for us, this excellent plan is impossible for her: this arrangement of her seafaring population would be so opposed to the feelings of the country that to escape it they would emigrate *en masse* to the Americans. Nevertheless, the first attempt consecrated by the English to the renewing of their crews has produced very serious results.

The great resources which Great Britain possesses in her commercial marine are very well known. The number of seamen registered as embarked in this branch does not appear to exceed 228,000; but this does not include coasters and fishermen, no more than it does the seamen of the fleet. It is, in fact, difficult to get an approximation to the number of British seamen. Some estimate them at 322,000 and others at 420,000; the mean, perhaps, or 370,000, may be near the mark. In either case, England has three or four times as many seamen as France, although we may have 15,000 merchant ships to her 26,000. Her larger amount of tonnage and her much larger number of fishermen may account for the difference. The number of seamen employed in the British commercial marine is estimated at 200,000, and she has some of the best foreign seamen in that service; but she loses a certain number by the American shipowners.

In spite, however, of their great resources, the recruiting of men for the fleet is not easy for the Admiralty. The reserve of 60,000

coasting men decreed by Lord Derby in 1848 has not yet been entirely formed. Nevertheless, the fixed and disposable part of the seamen has been considerably increased lately by the simultaneous adoption of concurrent measures. 8,000 men of the customs have been proposed to the Admiralty, and these are choice men. The establishment of schools for boys secures a large number of new hands. In 1857 they had not above 1,898; but in 1860 they had 8,535, and these would prove a good nursery for petty officers. Considerable additions have resulted from enrolment and re-entering.\* Seamen who re-enter receive a high pay, a portion of reserved pay, and have certain exceptional rights to increase, and some thousands of seamen have availed themselves of these advantages. An allowance of £6 has been made to another portion of the reserve seamen who can only be employed on the coasts. All the men of the army and the seamen for the defence of the coast have been confided to superior naval officers, and divided into eleven districts. Each of these officers has under his orders the fixed and floating batteries, the gunners, custom-house men, and militia of his district. He may also order and prepare as required the elements of resistance, and his flag is flying in his stationary ship in the principal port.†

Thanks to the immense sums which she has been laying out for some years, England has been able to protect her arsenals and to make harbours of refuge, at the same time as others of military aggression. Plymouth, Portland, and Portsmouth may be considered as grand entrenched camps equally adapted for organizing an attacking force as for concentrating resistance. A number of secondary ports, such as Falmouth, Dartmouth, Newhaven, and Dover, afford a refuge for merchant vessels. Hollesley, Chatham, Harwich, and the Downs roadsteads afford a well fortified shelter for ships of war. And in advance of all this mixed system of attack and defence, a formidable position has been created, *uniquely offensive*, in the port of Alderney, in communication by electric telegraph with all the other naval ports. From thence Cherbourg is commanded and threatened,—*the only refuge for French ships of war in the channel*. Alderney is able to contain double the number of ships for checking or even attacking Cherbourg.

Such is what England has been organizing for several years. Her offensive and defensive strength has been immoderately increasing. She has divided them into two distinct parts—the active fleet and the reserve: 6,000 officers of the navy are to command them. The base of offensive operations being thus protected, the active fleet will be independent of those operations. Along the English coasts will be found enough of ports, arsenals, depots, and places of refuge. In every distant sea England has found points of support, markets, and

\* The minimum term is three years, and the maximum five years.

† The *Revue Contemporaine* has first shown this system of defence in its number for 28th February, 1859.



fortified asylums. Verily, our neighbours seem to acquire all sorts of privileges at their ease: they can sleep in peace, if they have not, as we are pleased to believe, other than defensive intentions.

How can a people of so much intelligence, and who know so well their own interests, in the midst of this security,—how can they fear invasion? Such a thing could not be possible, but provided that her maritime power had first been checked. If Ireland was in rebellion,—if a new pretender had a number of partisans in either of the islands, it would no doubt be possible for France to renew the unfortunate attempts of Louis XIV and of the Republic. A fleet with some thousands of men, thanks to steam, would have plenty of chances for escaping the enemy's ships and land an auxiliary force on the British shore. But what folly that would be with an inferior fleet to risk to the chances of naval combat an army of 150,000 men and even to land them there if there were even a certainty of being no resistance. What in the end would become of such an army deprived of the means of obtaining supplies? Suppose it was to overrun Great Britain victorious. It would become exhausted by its own victories. The circle of its enemies would be incessantly closing around it, and the first check would infallibly be followed by defeat. But the English united and masters of the Channel are quite free from all invasion. It would be worse than rashness to rush into combat with a great people, without reserve, without a point of support, without a base of operations, without refuge, a people, too, who are not surpassed by any other in bravery, in determination, and patriotism.

The English have good reason for bestowing their attention on Russian progress, which is so rapidly drawing towards the Mediterranean and the Eastern Seas. They are not uneasy without reason when they see American tonnage surpassing theirs, and that actual part of 72 per cent. escaping them gradually which they obtain from their external commerce; for her commercial prosperity is the best guarantee which England has of her power. It is possible also that she may dislike the extension of our coasts and the increase of our mercantile marine. Our million of tons are not to be despised, although we still leave the foreigner to take 43 per cent. of international commerce. But in the present state of things France far from threatening her neighbours across the Channel is rather threatened by them.

Let us then recapitulate the efforts made by the English for six years in foresight of a naval war: A budget increasing from £6,500,000 to £15,000,000; nearly a milliard of expenditure on fixed and floating fortifications; her navy trebled both in men and material; 150,000 armed volunteers; a reserve formed both for land and sea. Such are the various precautions taken by England.

Let us now consider the navy of France, its personnel and materiel, with a view towards those improvements which are desirable and of which it is capable.

*(To be continued.)*

## THE ARMSTRONG GUN.

From time to time we have published in our Magazine exclusive and authentic details of the results of various trials in relation to this great national experiment. Among others we had the pleasure of first giving the particular method of constructing this gun. We feel that our published statements of the various experiments as from time to time reported by us, cannot have failed to have afforded much information to the public and greatly assisted the authorities in forming an unbiassed opinion of the merits and the objections held by those competent to judge of the matter. We therefore feel a great pleasure in adding to the mass of information further details of the interesting and instructive experiments.

Artillery officers high in the service have watched with the liveliest interest the result of the trial of the Armstrong gun in China and elsewhere, and we believe we were the first to call attention to the confidential despatch of Captain Hay, R.N., the officer specially charged with the duty of superintending the use of the Armstrong gun in China, and who was so well calculated by his prior experience with the weapon at Shoeburyness to fulfil the duty assigned.

The pith of his report may be summed up in these words,—“That though the Armstrong gun under the most favourable circumstances, that is, when the efficiency of the shell had not been destroyed by voltaic currents, inevitable from the construction of the shell, gave very accurate shooting, still, the casualties to our outlying riflemen were so serious that the guns were obliged to be withdrawn at the most critical part of the action in which they were engaged. Consequently other batteries armed with the old service gun had to be advanced in their place and that generally the gun was inferior to the French rifle gun for the purpose of actual warfare.”

With this prior knowledge, these practised artillerists naturally asked the question, — “If the gun of which such sanguine expectations were formed broke down in a campaign against the Chinese, what would be the result were our national honour to be sustained in a European conflict wherein the gun would not only have to fulfil the condition of being *fired from*, but subject also to being *fired at and struck* by the enemy's shot and shell.”

Urgent representations were consequently made to the proper authorities, and it was determined that experiments should be conducted by the select committee with the view of ascertaining by experiments what would be the effect on the guns of the Armstrong construction when struck by shot and shell.

On Wednesday the 20th inst. a 12-pounder Armstrong gun was placed in position on its carriage, opposite the proof butt at Woolwich, and a 9-pounder brass gun told off for the purpose of firing at it. The first shot fired at the Armstrong gun was so arranged that the gun fired at should occupy a position of 15° from the axial line of the 9-pounder service gun employed against it. The distance selected

was 100 yards. The first shot struck the Armstrong gun in front of the trunnions. The effect was to completely destroy the gun, breaking through both coils, and causing the muzzle to droop  $12^{\circ}$ . The second shot struck it behind the trunnions; the effect of this shot was to cause the whole of the gun in front of the trunnions to fall on the ground, and to completely break up the gun behind the trunnions. The third shot struck the gun in the thick part of the breech, utterly breaking the gun up in its thickest part, breaking the breech-screw, and proving beyond all cavil that either of the three shots was fatal to the gun, and that it was not calculated for the purposes of European warfare.

Objection was taken that under the same condition the service 9-pounder gun would likewise be destroyed, therefore the committee, in equity, determined to put the matter to a test. A service 9-pounder gun was on Monday last placed in position in front of the proof butt, and was fired at by another 9-pounder gun at the distance of fifty yards. Three shots were fired under precisely the same conditions, striking the gun fairly, one on the chace and two behind the trunnions. As this trial did not destroy nor materially injure the gun for service purposes, it was turned round and three more shots were fired, striking it in the same position on the other side of the gun. After this severe test, the gun remained intact, the only perceptible injury being a slight indentation of the bore on one side in the chace or forepart of the gun.

The conclusions to be derived from these experiments are very important, it shows in the first place that the Armstrong system is not yet perfect or fit for European warfare, it entails the necessity of the condemnation of the field guns on the Armstrong principle yet produced, and it gives rise to grave doubts whether the government has not been too precipitate in giving up the use of bronze as the metal of which our field artillery should be made; we believe we may say that the select committee are in possession of plans by which the whole of the brass guns of the service can be converted into rifled artillery of unsurpassed range and power, and still perfectly efficient when service ammunition is employed.

Let us reason a little further. In our number of the 9th November, 1860, we showed by the tabular statement of the money expended and the number of Armstrong guns produced that each Armstrong gun hitherto delivered into store cost the country at the rate of £2,000. If the Armstrong gun is, in its present form any longer continued in the service, it will entail the necessity, having regard to the result of this experiment, that every vessel armed with these guns must have its armament in triplicate, that is, if the vessel is armed with 30 guns it must have 60 in its hold to meet the contingencies of their destruction by the enemy's shot and shell, and every army in the field must have at least duplicate guns to meet the same contingencies. At the rate of £2,000 per gun, this becomes a grave question.

Now in respect of the 100-pounder gun, we noticed last week its failure at Shoeburyness, and its causes. Of this the talented inventor,

Sir William Armstrong, appears to be perfectly convinced, inasmuch as he himself recommends that for all garrison and siege purposes heavy guns should be constructed not *breech-loaders* at all,—but muzzle-loaders 120-pounders, made of a bore to take the service ammunition (and in this he is right) and to weigh 100 cwt.

What then, let us ask, becomes of his original proposition of light guns and breech-loaders? Let us hope that Sir William Armstrong will devote his great talents to the production of some other form of rifling than the exceedingly objectionable shunting-groove gun, the only object and aim of which appear to be the solving the proposition of—“In how few rounds can it be injured or burst no matter of what material it may be constructed.”

Considering the question in its various bearings, it is a matter of grave doubt whether it is expedient in the present stage of the question to manufacture any more guns on the Armstrong principle until some definite model calculated to meet the various objections to its further use has been produced.—*Mechanic's Magazine*.

---

THE STRENGTH OF IRON SHIPS. *By John Grantham, Esq., Memb. Council I.N.A. Read at the First Meeting of the Opening Session of the Institution of Naval Architects on Thursday, March 1st, 1860.*

(Continued from page 145.)

I feel that many erroneous views have arisen relative to the strength derived from bulkheads in iron ships. In the early examples great mistakes were made in this subject, which led to objections to the system itself, and to its consequent neglect. Nothing, however, can be more important than that all doubts on this point should be cleared up; and this is much impressed on my own mind by the fact that in two cases out of many where I had paid particular attention to this subject, a great many lives were saved by the firmness of the bulkheads. The vessels to which I allude were built when bulkheads were less valued than they now are. One was the well known instance of the *Sarah Sands*, the first of the Auxiliary Ocean Steamers. She caught fire while carrying troops to India, and was entirely burnt as far as the after engine bulkhead; a severe explosion of gunpowder blew out her stern; and there was at one time sixteen feet of water in the hold; and in this state she encountered a gale of ten days' duration. Not a life, however, was lost; and she is now in England, a sound vessel except where damaged by fire;—all this mainly owing, under Providence, to a strong bulkhead.

When bulkheads were first applied to iron ships, those builders who desired to secure them firmly and make them water-tight adopted the plan of riveting a single frame to the shell, the rivets being placed as

close as is usually done in the seams of the plates. In doing this, they punched a row of holes in a direct line round the ship,—thus unconsciously making a partial severance of the whole structure.

Others ran into the opposite error, and attached the bulkheads so lightly to the shell, that when under a great pressure of water they burst, and were useless as a protection against the foundering of the ship; or if they were not thus tried, they frequently did mischief in another way;—when, by the motion of the ship, especially in the ends, a strain was thrown on the bulkheads, the rivets, being too few in number, were broken or worked loose, and thus rendered the ship leaky.

I have elsewhere described the plans now adopted for constructing and securing bulkheads; and both Lloyd's regulations and the regulations of the Board of Trade relate to this important subject. My object, however, in alluding to it here is more with reference to the strength afforded to the whole ship than to enter into the details of their construction.

This discussion is necessary, as some have derived their utility in this respect: in which, however, I am not inclined to agree. I am disposed to think that they should, where possible, be increased in number, on the principle that everything which tends to preserve the correct form of the outer shell is of value. Bulkheads do this in a vertical, as beams and stringers act in a horizontal direction, and in this way carry out what I have advocated as one of the general principles to be observed in iron shipbuilding,—that of arranging one series of plates at right angles to the other.

It will appear quite evident that the more the number of bulkheads is increased and the distance between them decreased, the more valuable they become as a means for the general strength of the whole vessel.

Increasing the number of bulkheads is not so inconvenient as is first supposed; on the contrary, I have frequently seen facilities arise out of it, by requiring a greater number of hatches, which in long ships are easily arranged, and thus increasing the despatch of loading and discharging the ship.

But granting that in some cases inconvenience may arise, the safety derived from well arranged and well made bulkheads is paramount to every other consideration.

No feature of shipbuilding demands more attention than that of securing the various portions to each other. The fastenings, in fact, are the sinews of a ship; without them, large masses of material are worse than useless.

In wooden ships the question is more difficult than in iron ships, and in consequence the system is less perfect. All scientific builders address themselves to this question as a leading object; plans without number have been proposed and adopted: but in general practice the fastenings of a wooden ship bear no proportion to the quantity of the materials used in its construction; large and massive frames and beams are united by long and small bolts, few in number, and frequently

without the means of being tightened, when the yielding material of the ship causes them to become loose.

Now the fastenings of an iron ship are wholly different; the numberless short unyielding rivets which are employed to unite the different parts, which themselves are of the same material, leave comparison out of the question, and give a preeminence to iron ships which can never be attained in wooden ships.

I make no allusion to the absurd practice of adding large masses of timber to iron ships as a means of giving strength, such being wholly exploded in all sound practice. Timber should not be used except for bulwarks, decks, ceilings, and similar portions of the vessel.

Many will have witnessed the peculiarities of the large stages floating in the Mersey off the piers at Liverpool. They are both, in some respects, of similar construction; both are supported on long narrow pontoons placed athwart the tide, and these are united by five deep ties placed across their decks, and longitudinally with the stage. The smaller stage is about six hundred feet long, and the other one thousand feet; the breadth being the same in both cases.

In gales of wind from the northward, when the swell in the river is rather heavy, a remarkable strain is to be observed in these structures; and during a heavy gale in October last, I visited them to observe the effect. The first or smaller stage was bending violently, the deck taking the form of every wave that passed under it, of which about four were represented at one time. I imagine that the hollows thus made were about two feet in depth, though they appeared much more, and gave a sensation of danger lest the whole should break up.

The second, though more exposed, showed but slight tendency to bend; three inches being probably the utmost deflection at any point.

The sole cause for this great difference is to be found in the fact, that the beams or longitudinal ties of the smaller stage are of timber, those of the larger one of iron.

The perfection of a structure such as a ship is to be seen in the scientific disposal of the materials, so as to give the greatest possible strength with the least amount of weight. The effect of experience should be to remove excessive weight from one point and add more weight to another, till the whole is so adjusted that there should be no part where weakness would be habitually shown. In speaking of weakness, allusion is simply made to those strains which occur in the ordinary work of the vessel; it being admitted that no absolute protection can be provided against extraordinary casualties. We look, then, for examples to see where iron ships have most frequently shown weakness. My own observation leads me to the conclusion that at the gunwale and sides, amidships and at the hollow ends below the water-line, these indications are most generally to be observed: the former is indicated by open seams, broken rivets, and fractured stringer-plates; the latter by a continual compression and expansion of the side-plates as the pressure varies, when the ship plunges into or emerges from the sea in bad weather. It will be observed also, that both these evils increase with the prevailing tendency to increase the

length and sharpen the ends of ships. These defects have not passed unobserved, and means have been devised to meet them. I, however, feel that in the rules laid down by Lloyd's Committee these subjects have not been duly provided for; but, on the contrary, in some respects they tend to increase the evils here named. I wish in this place to notice, that as I shall have occasion to make objections to these regulations, I do so with the simple object of clearing up doubtful points, and not to raise needless difficulties. The gentlemen who have framed these regulations I believe to be sincerely desirous to make them as efficient as possible; and I think that co-operation with them, and not opposition, on the part of builders is the wisest course.

(To be concluded in our next.)

---

NOTE on a Method of Reducing the Apparent Distance of the Moon from Sun or Star to the True Distance. By Admiral C. R. D. Bethune.

In the fifth volume of the *Memoirs of the Royal Astronomical Society* will be found a "New method of reducing the apparent distance of the Moon from a Star to the true distance." By Baron Zach, &c.

When Baron Zach published this he was doubtless not aware that the method had been already suggested by others.

It does not appear whether the Baron claims the general arrangement of the method, or the particular artifice of employing the variables increased by half their variations; but in either case he has been forestalled.

The method has been long a favourite with seamen, owing to its presenting no distinction of cases, and is well known as the "Fourth method of Norie." It is, I believe, due to that distinguished navigator, Mendoza de Rios; at any rate I can find no earlier mention of it than in a memoir by him read before the Royal Society in December 1796, and published in their Transactions.

The device of applying half the variations was, I believe, first employed by Legendre, and an application of it will be found in Delambre's *Astronomie*, tom. iii. p. 624; and following it another very neat method which Legendre arrived at by treating the problem in a different manner. More than twenty years ago, I was so taken with the simplicity and symmetrical form of this method, that I calculated tables to facilitate its use, which tables I annex.

As lunar observations should always be the main stay of the traveller both by sea and land, particularly now that the precision of the lunar tables has been so wonderfully increased, no apology need be made for offering an additional method for their reduction, to the many already known.

**TABLE I.**—Quantity depending on moon's altitude and horizontal parallax to be added to moon's altitude.

Alt.	Hor. P. 53'	Add for 10' Par.	Alt.	Hor. P. 53'	Add for 10' Par.	Alt.	Hor. P. 53'	Add for 10' Par.
5	21.4	5'	16	23.8	4.8	50	16.6	3.2
6	22.1	5	18	23.7	4.8	55	14.8	2.9
7	22.6	4.9	20	23.6	4.7	60	13.0	2.5
8	22.9	4.9	25	23.0	4.5	65	11.0	2.1
9	23.2	4.9	30	22.1	4.3	70	8.9	1.7
10	23.4	4.9	35	21.0	4.1	75	6.7	1.3
12	23.7	4.9	40	19.7	3.8	80	4.5	1.0
14	23.8	4.8	45	18.2	3.5	85	2.3	0.4

**TABLE II.**—Quantity depending on sun or star's altitude to be subtracted from sun or star's altitude.

Alt.	Cor.	Alt.	Cor.	Alt.	Cor.
5	4.9	16	1.7	50	0.4
6	4.2	18	1.5	55	0.3
7	3.7	20	1.3	60	0.3
8	3.3	25	1.0	65	0.2
9	2.9	30	0.8	70	0.2
10	2.7	35	0.7	75	0.1
12	2.2	40	0.6	80	0.1
14	1.9	45	0.5	85	0.0

**TABLE III.**—Quantity depending on the moon's altitude and horizontal parallax, to be added to moon's refraction.

Horizontal Parallax.

Alt.	53'	54'	55'	56'	57'	58'	59'	60'	61'
5	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.3	0.2
10	1.4	1.2	1.1	0.9	0.8	0.6	0.4	0.3	0.1
15	2.0	1.8	1.5	1.3	1.0	0.8	0.6	0.3	0.1
20	2.6	2.3	1.9	1.6	1.3	1.0	0.6	0.3	0.0
25	3.3	2.9	2.5	2.1	1.7	1.3	0.9	0.4	0.0
30	4.1	3.6	3.1	2.6	2.1	1.7	1.2	0.7	0.2
35	5.1	4.5	4.0	3.4	2.9	2.3	1.7	1.2	0.6
40	6.3	5.7	5.0	4.4	3.7	3.1	2.5	1.9	1.2
45	7.6	6.9	6.2	5.5	4.8	4.1	3.4	2.7	2.0
50	9.2	8.5	7.7	7.0	6.2	5.5	4.7	4.0	3.2
55	11.1	10.3	9.5	8.6	7.8	7.0	6.2	5.4	4.6
60	13.4	12.5	11.6	10.8	9.9	9.0	8.2	7.3	6.4
65	15.8	14.9	14.0	13.1	12.2	11.3	10.4	9.5	8.6
70	18.6	17.7	16.7	15.8	14.9	13.9	13.0	12.1	11.2
75	21.9	20.9	20.0	19.0	18.1	17.1	16.2	15.2	14.2
80	25.5	24.6	23.6	22.6	21.7	20.7	19.8	18.8	17.8
85	29.8	28.8	27.8	26.8	25.8	24.8	23.9	22.9	21.9
	34.7	33.7	32.7	31.7	30.7	29.7	28.7	27.7	26.7

**TABLE IV.**—Quantity depending on sun or star's altitude to be added to sun or star's refraction.

Alt.	Cor.	Alt.	Cor.	Alt.	Cor.
5	2.2	35	18.4	65	37.3
10	4.9	40	21.2	70	40.9
15	7.5	45	24.2	75	44.9
20	10.1	50	27.2	80	49.0
25	12.9	55	30.5	85	53.5
30	15.6	60	33.7		58.4

**TABLE V.**—Quantity depending on first and second corrections.

5	0.2	30	7.8	50	21.8
10	0.9	35	10.7	55	26.4
15	2.0	40	14.0	60	31.4
20	3.5	45	17.7	65	36.8
25	5.4				



*Rule.*

Add the quantity from Table I. to the moon's altitude.

Subtract the quantity from Table II. from the sun or star's altitude.

Find the half sum and half difference of the corrected altitudes.

Halve the distance.

Find the refractions in altitude from the usual tables, or from VI. and VII.

Add the quantity from Table III. to the moon's refraction, and subtract the sum from the hor. par. Call this A.

Add the quantity from Table IV. to the sun or star's refraction, and from the sum subtract sun or planet's hor. par. Call this B.

Add A and B together,—take their difference.

To the log. cosine of half the sum of the corrected altitudes add the log. sine of half the difference, the log. cotangent of half the distance, and the log. of the sum of A and B.

To the log. sine of half the sum of the corrected altitudes add the log. cosine of half their difference, the log. tangent of half the distance, and the log. of the difference of A and B.

The first sum is the log. of the first correction — when the moon's altitude is the least.

The second sum is the log. of the second correction always —.

To twice the first sum add the constant 4.385 and the log. C. sine of the distance. The sum is the log. of the third correction —.

To twice the second sum add the constant 4.385 and the log. C. sine of the distance. The sum is log. of the fourth correction.

Apply these four corrections with the proper sign to the apparent distance and the true distance is obtained.

*Or,*

Take the algebraical sum of the first and second corrections and apply one fourth part with the proper sign to half the distance, and substitute the log. cotangent and tangent of the corrected half distance for the logs. first used. The resulting sums will give the two corrections including the third and fourth.

*Or,*

Enter Table V. with the first correction, and take on the corresponding quantity —

Do the same with the second correction, take their difference. Enter a traverse table with the distance or its supplement as a "course," and this difference as "departure," the corresponding "distance" is the final correction, to be applied to the approximate distance with the sign of the greater of the quantities from Table V.

Observe that the respective logs. may be taken in pairs, at one opening of the book.

*Note.*—If, instead of common logs., pro. logs. are used, the C. logs. of the sines, &c., must be taken.

*Example.*

	<i>Moon's</i> <i>App. Alt.</i> 28° 11' 0"		<i>Sun's</i> <i>App. Alt.</i> 42° 15' 28"		<i>App. Dist.</i> 106° 14' 52"
Table I.	26·5	Table II.	·5		<u>53 7·4</u>
	<u>20 37·5</u>		<u>42 14·9</u>		
	42 14·9				
Sum	<u>62 52·4</u>	half	31 26·2	Moon's Hor. Par.	59' 8"
Diff.	<u>21 37·4</u>	„	18 48·7	Sun's „	8·6
				Barometer ..	30 inches
				Thermometer	50°

	<i>Moon.</i> Refraction. 2' 37·8"		<i>Sun.</i> 1' 4·2"
Table III.	0·6	Table IV.	22·5
	<u>2 38·2</u>		<u>1 26·7</u>
	59 8		8·6
A	56 29·8	B	1 18·1
B	1 18·1		
	<u>57 47·9</u>	Sum.	
	55 11·7	Diff.	

Half sum corrected alts.	Log. cos.	9·98102	Log. sine	9·71730	
Half difference .....	Log. sine	9·27318	Log. cos.	9·99222	
Half dist.....	Log. cotang	9·87516	Tang.	0·12484	
A + B .....	Log.	3·54006	A - B Log.	3·52005	
First corr. — 6' 56·3"		<u>2·61942</u>	<u>-37' 41·6"</u>	<u>3·35441</u>	
Second corr.—37 41·6					
		3·239	Twice log. above	6·709	
		-44 37·9	4·385	Constant	4·385
		12·4	0·016	Log.C.sine dist	0·016
		<u>-44 25·5</u>	<u>9·640</u>	<u>1·110</u>	
App. dist.		106 14 52·0			
True dist.		<u>105 30 26·5</u>	<u>-0·4"</u>	Third corr.	12·8" Fourth corr.

*Or,*

Sum of first and second corr. -44' 37·9"

One fourth -11·1

Half distance -11·1' = 52° 56·3' log. cotangent 9·87808

Difference from former cot. 292  
 First sum +292 = 2·62234. Second sum -292 = 3·35149

∴ First correction - 6' 59·1

Second " -37 26·4

-44 25·5 as above.

Or,

Table V. gives for 7'	—	0.5"
„	37.7	12.5
		12.0

In traverse Table with course  $75\frac{1}{2}^\circ$ , departure 12.0, distance = 12.4.

$\therefore$  —44 37.9

12.4 final correction.

—44 25.5 as above.

Tables VI. and VII. are slightly altered from very convenient tables arranged by Dr. Brinkley for calculating the refraction in altitude.

In the preceding example—

Table VI.	0.2900		
30.0 log.	1.4770		
	1.7671		1.7671
$42^\circ 15'$ log. cotang.	0.0417	$20^\circ 11'$ log. cot.	0.4346
	1.8088	2' 39.1"	2.2017
Table VII.	0.2		1.5
	1 4.2	Refraction	2 37.6

TABLE VI.

TABLE VII.

Fah. Ther.	Log. T.	Diff. for $1^\circ$	Fah. Ther.	Log. T.	Diff. for $1^\circ$	Alt.	Inches. 8.50	Inches. 30.50	Alt.	
10	0.3283	10.0	50	0.2900	9.2	10	10.5	11.4	18	2.2
15	0.3233	10.0	55	0.2854	9.2	11	8.1	8.9	19	1.9
20	0.3183	9.8	60	0.2809	9.0	12	6.3	6.9	20	1.6
25	0.3134	9.6	65	0.2764	9.0	13	5.1	5.6	25	0.8
30	0.3086	9.4	70	0.2720	8.8	14	4.1	4.5	30	0.5
35	0.3039	9.4	75	0.2677	8.6	15	3.4	3.7	35	0.3
40	0.2992	9.2	80	0.2636	8.4	16	3.0	3.2	40	0.2
45	0.2946	9.2	85	0.2594	8.4	17	2.5	2.6	50	0.1

To log. T from Table VI. depending on height of thermometer, add the log. of height of barometer in inches, and the log. cotangent of the altitudes, the sum is the log. of the approximate refraction. From this subtract the quantity from Table VII., depending on altitude and barometer.

These Tables are only adapted to give the refraction for altitudes above  $10^\circ$ .

*Note.*—The quantities in Tables I. and II. are half the corrections of altitude for refraction and parallax. A and B may be calculated thus:—Let  $a$  = altitude,  $c$  = correction of altitude, then  $A$  and  $B$  =

$$\frac{c}{\text{Cosine } a + \frac{c}{2}}$$

C. R. D. BETHUNE, *Rear-Admiral.*

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XVII.—  
*The Late Duchess of Kent—The Report on Lights, Buoys, &c.—  
 Refuge Harbours—The Lifeboat Institution—Dreadnought  
 Hospital—Russian Treaty with China.*

In opening their proceedings the Chairman observed he had a painful duty to perform in relation to an event with which the Club were acquainted. The *Gazette* of the 16th of March had announced that about half past nine on that morning the Duchess of Kent departed this life at Frogmore House, to the great grief of her Majesty and all the royal family, after long suffering, which she bore with exemplary patience. He was sure that there was but one feeling of sorrow throughout this land at this event, in which they all participated. In the words of Lord Derby he might truly say,—

Her Majesty has, during her happy reign, so entirely identified herself with the interests of the people, and has so completely interwoven feelings of loyalty into the minds of all her subjects, has made their wants and wishes so much her guidance, that it would be impossible for any event which interests her Majesty in the slightest degree to occur without calling forth the warm and heartfelt sympathies of the whole people. We rejoice in any circumstance that adds to her Majesty's domestic happiness, and grieve if even a single cloud overshadows its brightness.

Her Royal Mother, for whom she now grieves, was ever received by the people of England with marked respect wherever she appeared, and she must have been almost tired at hearing for many years before her death that that respect was offered as her due for the boon she had conferred on the nation in the manifold virtues of her daughter. He would add no more to this just tribute to departed worth and sympathy with poignant sorrow, but would propose that these sentiments should be recorded as those of the Club,—a proposal which was unanimously adopted.

There were several subjects, continued the Chairman, to which he had to allude, but that which he considered would most interest the nautical world was the recent report of the Royal Commissioners on the management of the Lights, Buoys, and Beacons of the United King-

dom, which had just been made to the Government. It was by no means a lengthy document, but as the most suitable general view of it for their papers he proposed that that given by *Mitchell's Maritime Register* should be adopted by them. It appears that—

The Commission under which this lengthened investigation was opened, is dated the 8th of December, 1858. The first meeting of the Commissioners was held the following month, so that they have had, it will be generally admitted, abundant time for the prosecution of their labours, and the conscientious performance of the task confided to them. The inquiry on which the Commissioners entered was marked off, by the instructions, into two distinct divisions, embracing (1) the Lights, Buoys, and Beacons of the United Kingdom, and (2) certain Colonial Lights under the management of her Majesty's Government; and in order to facilitate the proposed inquiry, a further arrangement was laid down for ascertaining the number of lights, &c., their position, quality, sufficiency, expences of maintenance, and construction, together with the system of control, both here and in other countries. The Commissioners commenced their work by the issue of circulars, containing questions pertinent to the proposed inquiry, addressed to shipowners, merchants, &c., to mariners, to scientific men, and the manufacturers of illuminating apparatus, to steam companies engaged in the colonial trade, and, lastly, to foreign Governments; and having thus prepared and set in motion a machinery for the collection of information, to be followed by *visâ voce* evidence, the Commissioners proceeded on a tour of personal inspection, in the course of which they visited no less than 200 lighthouses, on the coasts of the United Kingdom, the Channel Islands, France, and the northern coast of Spain.

The result of this inspection, aided by information obtained otherwise, has led the Commissioners to the conclusion that, while the French system of coast lights is greatly superior to ours, both as regards number and efficiency of lights, our system is inferior, in point of scientific management, to that of France, America, Spain, Russia, and Austria.

The number of lights in the United Kingdom are put down at 404, that is, 357 shore and 47 floating lights. Of these 197 are under general, and 160 under local authority. A great deal of valuable information has been collected on the subject of the quality of the lights exhibited, the character of the source of light, apparatus, &c. The defects are carefully summarised in the report, and the Commissioners recommend (1) the adoption of more red lights; (2) that red and white lights be made revolving; (3) that the system of two lights, to form a distinction, is objectionable; (4) that lighthouses should be coloured with reference to the background; (5) that fog signals should be more extensively used than they are; and (6) that storm signalling by lighthouses is possible, and would be a valuable addition to utility as guides to navigation.

Passing from the subject of a comparison of the quality of British

with foreign lights, the report enters minutely into the questions of the expence of construction and of maintenance of lighthouses, and the Commissioners find that, notwithstanding the heavy expenditure upon these structures, "the outlay of foreign Governments in the construction of lighthouses, making every allowance for the advantages which a more centralised system gives in such a comparison, appears to be rather greater than the outlay incurred by the English Board;" while, as regards the cost of maintenance, the average annual expenditure for each light appears to be:—

For England (dioptric light) . . . . .	£265	5	1
Ditto (catoptric) . . . . .	340	5	0
Scotland (dioptric) . . . . .	380	9	6 .
Ditto (catoptric) . . . . .	385	12	7
Ireland (dioptric) . . . . .	405	9	5
Ditto (catoptric) . . . . .	485	11	3
France . . . . .	320	0	0
Spain . . . . .	340	0	0
Denmark . . . . .	274	17	11

As regards our Floating Lights, the Commissioners depose to their general efficiency, but recommend improvement in the illuminating apparatus employed in these ships, the adoption of red revolving lights, and fog signals. For the rest the report says,—“there is little room for comparison between the floating lights in England and those in any other country. France has only two, and Spain has not established any.” The United States, it appears, are better provided, having forty-eight,—“but they were confessedly in a very inefficient condition till recently, when those of England were copied, possibly with some improvements.” As it regards buoys and beacons, the Commissioners have little to say, beyond recommending that a uniform system of dark colouring should be adopted for both, and that the number of buoys, and the number and quality of beacons, might be increased and improved with very good results.

By far the most important portion of this report relates to the existing system of lighthouse government, and to the changes in that system proposed by the Commissioners. Illustrations of the working of the system are given, and the objections which they suggest are fairly stated. The government of the public lights of the United Kingdom is at present intrusted to four bodies, viz., the Board of Trade, the Trinity House, the Commissioners of Northern Lights, and the Dublin Ballast Board, all and each of them bodies differently constituted, composed, as the report truly says, “of gentlemen of various employments, none of which necessarily afford them an opportunity of acquiring a knowledge of those branches of science which bear upon lighthouse illumination.” The constitution of these boards differs in this latter respect from that of lighthouse boards in almost every foreign country, and notably in France, where the “Commission des Phares” numbers professional men and others distinguished for their attainments in the department of applied science connected with coast illumination. But this is not all. The local control over our 402

lighthouses, and many of our buoys and beacons, is established by no less than 174 Acts of Parliament. These vested interests are subordinated, it is true, to the general administration confided to the four bodies above named; but every one must see that, apart from other defects, the machinery by which our lighthouses is worked, is cumbersome and ill adapted to the desired end, and the wonder is, not that we have not as efficient a system as we might have, but that, with so much to embarrass its working, it is not very much more inefficient than it is proved to be.

The Commissioners, taking all these matters into consideration, concur in the belief that uniformity is indispensable to the efficient working of our lights system, and they recommend the constitution of a central authority, to be denominated the "Trinity Commissioners for Lights," to include, as *ex officio* members, the Astronomer-Royal, the Hydrographer to the Admiralty, and the Comptroller-General of Coastguard. This new Board is to supersede the Board of Trade, the Trinity-House, the Commission of Northern Lights, and the Dublin Ballast Board, and to discharge henceforth the functions of those four bodies. And they further recommend that the expenditure by this "central authority" be annually submitted to Parliament.

On the question of Light Dues and their incidence on shipping, the Commissioners decline to offer a decided opinion, as being beyond their province; but, "bearing in mind the possibility or probability of a change, they have so arranged the proposed scheme of government that it is equally well adapted—1st, to the present system of levying tolls on the passing trade; 2ndly, to a system which has occasionally been suggested—viz., a Tonnage Rate, which promises some advantages, and, in addition to that of simplicity, a great economy, both of labour and expense, in collection; and 3rdly, to that system which has been recommended to the Legislature by the four Special Committees that have been authorised to treat directly this important portion of the subject—viz., *that the expense of erecting and maintaining our lighthouses should be defrayed out of the public revenue.*"

There is much to be said, observed the Chairman, in reference to the present most unsatisfactory condition in the control of the lights generally, which no doubt required change; but in establishing another source of control the Commissioners seem to have lost sight of the important fact that the new *ex officio* members of the Board named by them—the Astronomer-Royal, the Hydrographer, and the Comptroller of the Coastguard—have already a full quota of duty on their hands, and cannot really devote their time to this new Board without sacrificing other important duties. There is abundant proof in the Report of the bad management by the Board of Trade; but if what is wanted be really competency for the controlling Board, surely men who could give their whole time to these duties might be found.

But he would pass on to the Report of the Royal Commission on Refuge Harbours, that recommended the sum of above two millions to be expended on the improvement and formation of these harbours

on our coasts, appears to have been at length disposed of by a proposal of the Public Works Loan Commissioners to advance an annual sum of £360,000 in aid of existing and the formation of new ones, the repayment of these advances to be spread over fifty years. But the abolition of passing tolls for harbours would appear to be decided, saving the rights of existing interests, and also the abolition of dues on shipping by certain corporations for charitable purposes, as well as certain differential dues on foreign shipping. Much disappointment, he feared, would arise, and the appointment of a Royal Commission seemed hardly necessary if such was to be the result of it. Few harbours, he ventured to believe, would owe their origin, after all, to this much vaunted measure; and as our coasters were still to be denied those places of security that were so much needed, there was much satisfaction to be derived from the important proceedings of our excellent Lifeboat Institution, which year by year was extending the field of its operations; its life-saving fleet had also been increased, and the greater in proportion to the number of wrecks on our coasts had been the number of lives that have been saved from premature death through its instrumentality. By its charter of incorporation the institution was now legally entitled, by the bequests of deceased persons, to possess landed property to the extent of £2,000 per annum. Her Majesty the Queen, who since 1837 had been the patroness of the society, had, in appreciation of the important and national character of the work of the institution, become an annual subscriber of £50, and we all know the value of such exalted patronage.

During the past year it had established seventeen new life-boats on the coast, and others were in course of construction for several other places. The institution now possesses no less than 110 life-boats. Some of them had been directly instrumental in saving 210 lives from 34 vessels during the preceding year. Since the 1st of January last, the life-boats of the society had also saved no fewer than 162 persons. The committee had taken steps to provide the life-boat stations of the institution, wherever desirable, with standard barometers, properly fitted up, and the daily indications of which would be registered on a chart or diagram by the side of the instrument.

The total number of wrecks on the coasts of the United Kingdom during the past year was 1,379,—the average of the last seven years being 1,184; whilst the total loss of lives in 1860 was 536,—the average for the last seven years being 800. The number of lives saved during the year 1860, by the life-boats of the institution, the rocket apparatus, and other means, was 3,697. The total number of persons saved from shipwreck, from the establishment of the institution to the end of the year 1860, either by its life-boats, or for which it had granted rewards, is 11,856. During the past year, the institution had granted 16 silver medals, 14 votes of thanks inscribed on vellum, and the sum of £1,111 12s. 4d. in pecuniary rewards, for saving 455 shipwrecked persons.

The operations of the institution may be thus briefly stated:—Since its formation, it has expended on life-boat establishments, £46,350 8s.



3d., and has voted 82 gold and 673 silver medals for distinguished services for saving life, besides pecuniary awards, amounting together to £14,015 19s. 11d. Its medals and other honorary awards were much coveted by the coast boatmen and men of the coastguard service, and the amount and prompt payment of its pecuniary rewards, afforded general satisfaction. Its medals were not unfrequently presented at public meetings.

The total receipts during the year 1860 amounted to £14,027 11s. 2d.: of this sum no less than £2,721 had been given by benevolent persons to defray the cost of *fourteen* life-boats. Legacies had also been left to the institution during the past year by several benevolent persons. The expenditure during the same period had been £13,085 8s. 11d., of which sum £6,834 17s. 4d. was expended on additional life-boats, carriages, boat-houses, and necessary gear; and £3,056 3s. on the necessary expenses of repairs, painting, and refitting; £1,266 15s. 10s. in rewards for services to shipwrecked crews; and £1,665 6s. 2d. on coxswains' salaries, and for the quarterly practice of the boats' crews.

The institution had incurred further liabilities amounting to £4,419 for various life-boat establishments, &c. Whilst the committee very justly say, while happily they were able to report so favourable and encouraging a state of the financial department of the institution, they felt that, looking at the vicissitudes of the future, and the unforeseen magnitude which the operations of the society had assumed, they must not for a moment relax their endeavours to enlist that co-operation and pecuniary assistance of all classes of their countrymen, which can alone secure the permanent efficiency of the important work which they had undertaken to superintend. They therefore appealed to the country at large to assist them to maintain, in a state of thorough efficiency, their numerous life-boat establishments, and he cordially wished them success.

Referring to the subject of refuge harbours, observed Albert, there is an argument made use of against the much vaunted measure, as their Chairman had termed it, that in his opinion was not a very weighty one. One of the speakers said that the government was bound to take care of the defence of the country, but the government was not bound to protect the mercantile marine against storms and dangers of the sea, which were the act of God, any more than it was bound to protect the agricultural interest against damage by hailstorms. He believed that colliers were often lost because they were not sufficiently manned or properly equipped.

The latter part of this argument was certainly most true; but are sailors' lives, he would ask, to be considered equivalent to the agricultural interest. It was admitted that it is the duty of the government to take care of our defences, and he would like to know whether our seamen did not form our very first defence against the enemy? Of what use our iron, or even our wooden walls,—nay, even those leading fortresses into our first harbours, that were to be so conveniently placed, and that Captain Coles seems to have retarded,—of what use

all these without seamen to man them and those fleets of Great Britain which in former days were ferreting out the enemy? England, he maintained, as her main strength for protection against the enemy, depended on her seamen! To make seamen the navigation of her shores must be as it used to be—a principal nursery, and if the ships in which they were obliged to make their voyages were, from any cause, such as could not keep the sea without foundering, harbours they should have in reason to run to, so that their lives should not be wasted as they are,—thrown away annually by hundreds—aye, thousands! The French well know this is the weak point of our maritime power. Of what use our agricultural interest, he would ask, if we found ourselves at the sudden breaking out of a war without seamen? Farmers and ploughmen would make poor sailors! Then, indeed, we might make stationary forts of our ships and man them with soldiers, perhaps formed from the agricultural interest! Farewell then to the safety of England, when her fleet comes to this.

Rodmond would not take up the thread of those remarks of his friend Albert, for he was sure the whole Club agreed in the justice of them. Proper harbours should be made, and he trusted that the enterprising spirit of Englishmen would gradually make them. It was gratifying to Englishmen that if they could not make harbours on their shores so readily, they could not only point to their life-boats for saving seamen, but to their favourite ship, the Dreadnought Hospital, for them in the Thames, as entirely of their own supporting. At the last meeting for the annual revival of their funds an interesting account was given by the chairman of that establishment, from which he would read an extract. In the course of his remarks the chairman, Admiral Bowles, said:—

“A generation had passed away since its foundation, and but a very few of those whom he was now addressing would recollect the great calamity which gave rise to this institution. It was at the conclusion of the great war that on the sudden breaking up of our naval establishments above 100,000 seamen were at once paid off and thrown on the wide world. A great proportion of these poor men, being without homes, or friends, or parishes, flocked in large numbers to London in hopes of employment, but our mercantile marine was of course unable to absorb them, and their misery and sufferings excited general compassion and commiseration. But it was one of the most beautiful and merciful amongst the dispensations of Providence that the heavier the calamity the greater was the tendency towards its working out its own cure, and this was most remarkably verified on the occasion to which he alluded, as all those charitable men who had been foremost in alleviating the miseries and sufferings of the poor seamen on this occasion were led to consider by what means such a calamity might in future be provided against, and the result was the establishment of a Seamen's Hospital on the Thames, with sufficient accommodation not only for our own men, but for all those “whose business is on the great waters,” and who like all others following the same vocation were more particularly exposed to the diseases arising from exposure

to weather, sudden changes of climate, and all those other hardships which were inseparable from a sailor's life. This hospital had now been in existence about forty years, and continued to perform admirably all the functions for which it was instituted. Its central situation and facility of access were great advantages, the accommodation afforded was excellent, the number of patients discharged cured was fully equal to that of any hospital on shore; and, while all the temporal wants of the inmates were carefully attended to, the management had not been unmindful that it was equally their duty to instil into the hearts, softened and prepared by sickness and affliction, spiritual instruction, which they trusted might thereafter bring forth good fruits. It was, however, necessary to observe that efforts of this description could not be successful without a liberal expenditure; and, although they had received some large donations, and were therefore no longer struggling with those pecuniary difficulties which, in his own memory, almost endangered the existence of the institution, they were still earnestly desirous not to break in on their capital, and relied therefore on the kind and liberal support of the public—a support which had never been solicited in vain, and which he was sure would not be now withheld. The committee of management were very anxious that those amongst their friends and supporters who had not yet visited the hospital would do so in the course of the ensuing summer, and they were sure that those who went would be satisfied with the good arrangements, the comfort, and the cleanliness they would observe."

It was gratifying, continued Albert, to find a British Admiral advocating thus a charity of this noble and disinterested kind—one which had the benefit of all maritime countries at heart, and it was no less gratifying to see his exertions well supported.

The conversation then turned on electric cables, and it was stated that, although at present in a discouraging condition, submarine electric communication was active in the Mediterranean, and that the Americans were going to try their hands at it in the Pacific, in connecting their western shores with Japan and China; in which Russia would also be interested, to connect her new territory, obtained from the Chinese by a treaty signed at Peking on the 14th of November last, five days after Lord Elgin left the city. The signing parties were Prince Kung and Count Ignatieff. By this treaty China cedes to Russia all the seaboard from the mouth of the Amoor, in 141° E., to the mouth of the Tumen, in 131° E. This valuable strip of land is stated to be fully 900 miles long by from 100 to 200 miles in breadth, and may be considered as advancing Russia's facilities for operating either for or against China.

It would seem by this that while the Anglo-Saxon race would divide the Northern Pacific with the Russians and Japanese, we shall have a tolerably good share of it in the South.

*Secretary's Memos.*

M. G. de la Tour, of the Corps Legislatif, states in his Report on the French Imperial Navy, that 600,000 soldiers and 100,000 seamen should be always the normal force of France.

To be depended on.

**Nautical Notices.****PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.**

(Continued from page 165.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
5. Senequet Rock	France, N. coast	49° 5-5' N., 1° 30-8' W.	F.	55	10	Est. 20th Feb., '61.
Biarritz	France, W. coast	43° 29-6' N., 1° 33-6' W.	..	..	22	Change of interval from 30 to 20 seconds, and to alternate red and white lights.
Cette Port	France, S. coast	43° 23-8' N., 3° 42' E.	F.	105	15	Change of position. See last number, page 166.
6. Esquimalt	British Columbia	48° 25-6' N., 123° 27-2' W.	F.	70	10	Est. 19th Nov., '60. (a.)
7. Race Rocks	Vancouver Island	48° 17-5' N., 123° 32-2' W.	Fil.	118	18	Est. 1st Jan., '61. On S.E. extreme of island. Flash every 10 seconds.
8. Glenelg	S. Australia	34° 59-5' S., 138° 33' E.	F.	29	6	Est. 1st Dec., '60. The light is green.
9. Whidby Isld.	Juan de Fuca	48° 9-4' N., 122° 40-1' W.	F.	119	17	
10. Perim Island	Red Sea	12° 40-3' N., 43° 28-2' E.	R.	241	22	Est. 1st April, '61. Revolves every 4 minutes On N.E. point of island.
11. Slanes Estuary	Spain, North coast	43° 26-7' N., 4° 45-5' W.	F.	64	9	Est. 30th Sept., '61. On Point San Antonio.
12. Cape Tortosa	Spain, South coast	40° 43' N., 0° 56-9' E.	F.	34	11	Est. 15th Sept., '61. Visible bearing from N.E. by E. $\frac{1}{2}$ E. to S.S.E. $\frac{1}{2}$ E. Mouth of the Ebro.
13. Cartaya	Spain, S.W. coast	37° 11-1' N., 6° 58-4' W.	Fil.	79	14	Est. 1st April, '61. Flash every 4 minutes.
14. Canela Island	Spain, South coast	37° 10-5' N., 7° 16-6' W.	F.	22	8	Est. 1st March, '61. Two red lights. On left bank. For crossing bar of Agamonte.
Cristina Isld.	Spain, South coast	37° 10-7' N., 7° 13-7' W.	F.	26	7	Est. 1st March, '61. Two green lights.
Huelva	Spain, S.W. coast	37° 7-5' N., 6° 47-4' W.	F.	27	8	Est. 1st March, '61. Two white lights.
15. Cape Kata-kolo	Greece, West coast	37° 41-5' N., 21° 24-9' E.	F.	33	4	Est. 6th Feb., '61. On jetty. East side of bay. Red light.

F. Fixed. Fil. Fixed and Flashing. R. Revolving. I. Intermitting. Est. Established.

(a.) 6.—*Directions for Esquimalt and Victoria Harbours,—By Captain Richards, R.N.*

The Race Rocks Tower is visible distant 12 miles, and should be rounded from half a mile to a mile; the outermost danger, of 5 feet, is S.E. by E. 3 or 4 cables from the Great Race.

On rounding the Race Islands, Figgard Island fixed light will be seen, and

should be steered for, N.  $\frac{1}{2}$  W., to clear the reef off Albert Head. Keep the bright light in view; if a vessel be too far westward it will first become dim, then shaded or green, when she should immediately steer eastward to brighten it.

This precaution is required by the tides, which in springs run 6 knots near the Race Rocks; the ebb runs almost direct from Haro Strait to them, and between them and the shore; there are also tide-races near them, dangerous to boats.

A vessel northward of Albert Head and making for Royal Roadstead should bring Fisgard Island light N. b. W., when she will have 10 fathoms good holding ground, or she may stand westward until the light becomes shaded green, then anchor *immediately*.

Entering Esquimalt Harbour from sea, leave the light one to two cables' lengths on port hand, when it bears S. b. W. a ship may anchor in 7 fathoms, or stand into Constance Cove. When it bears N. W. b. W. it becomes red, which it shows in the harbour.

Entering Esquimalt from the eastward, as soon as the light shows bright steer for it, and you will clear Brochy Ledge and the Scrogg Rocks; when it changes from red to bright, it leads about half a cable clear of those rocks.

The course for Victoria Harbour after rounding the Race light is N.  $\frac{1}{2}$  E. (allowing for tides), and when Fisgard light changes from bright to red a vessel will be scarcely a mile from the shore.

Those ships only, or coasters, acquainted with the neighbourhood should run for Victoria Harbour at night; others should anchor in Royal Roadstead for daylight. With S. E. winds and stormy weather a ship should invariably run into Esquimalt Harbour, which she can easily do by means of Fisgard light.

The bearings are magnetic. Variation,  $22^{\circ} 4'$  in 1861.

---

#### ISLAND VIGIAS OF THE PACIFIC OCEAN.

We continue our usual gleanings of these notices to our maritime readers, that enables them to keep their charts corrected by these fugitive but useful remarks; and the first we shall refer to relates to that of the Pacific Ocean, to the S. W. of the Sandwich Islands, being a useful report from the brig *Josephine*; and we are much inclined to agree that the islands alluded to are unworthy of retaining their positions on the chart. At any rate such evidence of their non-existence is valuable.

September 17th.—Sailed from Honolulu. Ran for an island laid down, as per chart, in long.  $163^{\circ} 58' W.$ , lat.  $11^{\circ} 30' N.$ , with a look-out aloft, on a parallel of lat.  $11^{\circ} 30'$  from long.  $163^{\circ} 37'$  to  $164^{\circ} 25'$ , thus sailing over the position of the island at mid-day and in clear weather; saw but two birds. That island is not in existence.

Thence steered for Paltroun Island, laid down as per chart in long.  $164^{\circ} 38' W.$ , lat.  $10^{\circ} 25' N.$ , with a look-out aloft and with good observations, sailed on the parallel of lat.  $10^{\circ} 25'$  from long.  $163^{\circ} 55'$  to  $165^{\circ} 20'$ , and saw less than a dozen birds. Was around the position of this island for two days, and had good observations. From long.  $165^{\circ} 25'$  to  $165^{\circ} 41' W.$ , and lat.  $8^{\circ} 55'$  to  $6^{\circ} 48'$  was five days, calms and light winds prevailing, with a current setting E. N. E. at the rate

of three miles per hour, accompanied with heavy squalls of wind and rain.

28th.—Ran for an island laid down in the chart in long.  $166^{\circ} 2'$  W., lat.  $6^{\circ} 38'$  N. Sailed over the position of this island at mid-day, with good observations: saw some large flocks of birds, and many of them land birds. Believe that there is an island in existence thereabouts, but not within sixty miles of its position on the chart. For three days had the wind S.S.W., with a current setting N.E. at the rate of  $2\frac{1}{2}$  miles per hour.

30th.—Ran for four islands laid down as occupying a space of five or six miles; position on chart, long.  $169^{\circ} 32'$  W., lat.  $4^{\circ} 32'$  N. Sailed over the position of these islands several times at mid-day, clear weather, good observations, and a look-out aloft and on deck day and night. Looked for these islands for three days; saw many birds, and the most of them land birds. Believe that there is one or more islands in this vicinity, but not within sixty or a hundred miles of the position of these islands, as per chart and the latest survey to be had there.

As these seven islands which I have searched for are more or less in the track of ships bound from San Francisco or Honolulu to Baker Island, I would say that ship-masters need not fear them in the positions which I have given, and may run in search of them with safety, either by day or by night, with the ordinary look-out. I would here say that I have E. and G. W. Blunt's charts of date 1849, with additions to 1858.

---

#### THE VIPER SHOAL,—China Sea.

A friend has considerably sent us the *Straits Times* of Singapore, in which we find the following:—

The subjoined extract from the log-book of the steamship *Ottawa* has been received from the Superintendent of the Peninsular and Oriental Steam Navigation Company, and is published for general information. It denotes the position of a shoal in the Palawan Passage which is not laid down in the chart. Captain Gribble, of the *Ottawa*, is of opinion that this is the Viper Shoal, the position of which is marked in the chart as doubtful.

"6th December, 1860.—2.45 p.m. sighted from the mast-head broken water on the port bow, having every appearance of being a shoal about half a cable's length in extent from East to West, with no indication of shoal water near it. When abeam at 3h. p.m. it was two or three miles distant from the ship, and was then just visible from the deck.

"Position of ship at 3h. p.m., lat.  $7^{\circ} 14'$  N., long.  $115^{\circ} 7' 15''$  E. Position of shoal, lat.  $7^{\circ} 16'$  N., long.  $115^{\circ} 5'$  E."

We accept the foregoing as the real position of the Viper Shoal, as that in the chart is marked "doubtful,"—and consider it a very important contribution towards obtaining a correct chart of the China Sea.

AUSTRALIA,—*North-East and North Coasts.*

The following information on the Great Barrier and outlying reefs on the N.E. coast of Australia, and the passage through Torres Strait by Raine Island, is from remarks by Captain Denham, of H.M. surveying ship *Herald*, from August to November 1860.

The Great Barrier Reef was traced from the *Herald's* former position of 1859, in lat.  $20^{\circ} 50'$  S., long.  $152^{\circ} 1' 20''$  E., to Flinders Passage in lat.  $18^{\circ} 53'$  S., long.  $148^{\circ} 13' 0''$  E. The outer margin was found to trend in a W.N.W. direction for 245 miles, with an average depth of 100 fathoms within three to six miles of the reefs.

The position of Flinders reefs was determined as follows;—The South extreme in lat.  $17^{\circ} 53' 30''$  S., long.  $148^{\circ} 27' 50''$  E.; the eastern elbow, in lat.  $17^{\circ} 39' 50''$  S., long.  $148^{\circ} 34'$  E. To the northward of these reefs a dangerous breaker, which nearly occasioned the loss of the *Herald*, was discovered in lat.  $17^{\circ} 21' 18''$  S., long.  $148^{\circ} 28' 50''$  E., and was named the Heralds Surprise. Captain Denham in pursuing his route to the northward determined the extent and position of the Holmes Reefs; the South extreme of the western of these reefs is in lat.  $16^{\circ} 30'$  S., long.  $147^{\circ} 47' 41''$  E., from whence they extend thirteen miles eastward and seven miles northward.

A reported sounding of 17 fathoms in lat.  $11^{\circ} 49'$  S., long.  $145^{\circ} 49'$  E., by the brig *Dragon*, in the fairway track to Raine Island Passage, was ascertained not to exist in the position assigned it.

In the passage from Raine Island to the westward for Torres Strait, the Tynemouth Shoal, as laid down in the charts with the West sand of the middle banks bearing E.  $\frac{1}{4}$  N., and Sir Charles Hardy North Island S.S.W.  $\frac{1}{2}$  W., (the reported bearings,) was not seen by Captain Denham. It is therefore recommended that mariners keep a vigilant look out from aloft in this part of the route.

The *Herald* found good anchorage out of the strength of the tide in the small bay on the N.W. side of Hammond Island, Prince of Wales Channel. The longitude of this bay, as given in the charts, was verified in  $142^{\circ} 11' 40''$  E., and navigators in passing this locality, but more especially at Booby Island in lat.  $10^{\circ} 36'$  S., long.  $141^{\circ} 54' 45''$  E., may test the rates of their chronometers from the time of leaving Sydney or other port in New South Wales.

As several vessels of late years have passed with safety through the Great North-east Channel of Torres Strait, navigators are not to assume from this or any foregoing notice that the Raine Island Passage is recommended in preference; nor, in navigating the Coral Sea towards Torres Strait, should any ship notwithstanding the now accurate delineation of the Barrier and outlying reefs, pass westward of the reefs forming the western boundary dangers of the fairway track, unless compelled to do so by unfavourable winds.

After seeing that Booby Island was well provisioned for distressed ships' crews, the *Herald* proceeded to the North-western dangers of Torres Strait, which are out of sight of Booby Island; the southern and most in the way is the Proudfoot, a coral shoal with nine feet of

water over it, lying W.  $\frac{1}{2}$  N. twenty-six and a half miles from Booby Island. It will be avoided by keeping on the parallel of  $10^{\circ} 36'$  S., being that of Booby Island, or by not going into a less depth than 11 fathoms. A shoal marked in the charts as seen by the ship *Aurora* in this parallel, was not observed by the *Herald*; its position, therefore, if not its existence, must be considered doubtful.

In proceeding to the westward on the same parallel for 500 miles, Captain Denham carried regular soundings over muddy bottom of not less than 50 fathoms, and free from current; but from the meridian of Cape Van Diemen the soundings were most irregular, varying from 12 to 250 fathoms within a distance of three miles; the shoal soundings denoting coral cones or ridges.

The bearings are magnetic. Variation at Raine Island  $5^{\circ}$  East in 1861.

---

#### THE PAUMBUN PASS.

In several of our former volumes will be found some accounts of this channel. The following is from a recent number of the *Moniteur de la Flotte*:—

In the strait which separates Ceylon from the Indian continent a work has been for some time going forward which will afford considerable facility to certain vessels which would otherwise pass round Cape Comorin. The channel of the Paumbun Pass had formerly only five feet of water in it at high water, so difficult and tortuous that dhonies (flat country boats) could only pass through it, and that not without landing a large part of their cargo. This channel has been deepened and cleared. Its depth, which is to be carried to thirteen feet by subsequent works, is not yet more than ten feet. Such as it is it has already rendered immense service to navigation in saving some ships a distance of 360 miles, and an expense of five per cent. per ton for every one of those miles.

It will be most desirable that the width of the channel be carried to 900 feet, as the N.E. and S.W. monsoons are very violent, blowing directly across it. The current runs there, besides, six miles an hour; and, as in both seasons violent squalls are met there sufficient to oblige a ship to anchor, it would be as well if there was sufficient room for this, that a ship may be able to veer sufficient to hold on by.

As warping against the current in a very narrow channel is difficult, and even sometimes dangerous, it would be necessary that both sides of the channel should have dykes, and that the banks should be elevated six feet above the level of high water, and built sufficiently solid to hold pollards and rings for hauling by. It would also be necessary that it should be buoyed in the middle for vessels to warp by, the anchors by which they are moored having twenty-four feet over them; and wherever there is an elbow in the channel it would be de-



sirable that the channel should have the addition of a creek of about 150 feet, to give room for turning. The two entrances of the channel should be considerably widened, so as to give room for the free ingress and egress of vessels.

The works of the Paumbun Pass have been going on for the last sixteen years, but are not yet completed, owing to an insufficiency of funds to meet the expense. The total expense incurred has reached £35,000. About 38,000 cubic yards of soil have been removed, 20,682 of coral, and 26,278 of sand,—making altogether 84,260 cubic yards.

The Paumbun Pass is approached by the narrow channels and dangerous banks of Palk Strait, on which the report of Captain Bidel, in the *Annales Hydrographiques* of 1860, may be consulted for some important information on its navigation.

---

### New Books.

COOK'S VOYAGES. Edited by John Barrow, Esq. Adam Black & Co., Edinburgh.

Despite all our former prejudices for quarto volumes for the voyages of our circumnavigators, and the standard classical nautical lore of our fore fathers on the sea, we could not help welcoming at a glance this little pocket edition of Cook's Voyages, for we well remember the difficulty of reaching such out of the way books in our boyish days; and with ready zest for another "*Boy's Own Book*," we were not long in concluding that a good edition of the veritable voyages of Cook, being a familiar narrative (as the style is) of those interesting scenes in which he took a leading part, and describing his numerous escapes from wreck, pestilence, and treachery, with a concise and engaging description of his discoveries, free from all stiff and forbidding professional formalities of any kind;—such a narrative, rich, warm, and winning, as would flow easily from the reader, and make him be supposed by his listeners, to be telling them what he himself saw,—in fact, impressing them through his story with the feeling that he was almost one of the circumnavigators himself: Such a work, we said, would be most captivating to the juvenile mind, and turn the head of many a lad for the sea. Nay, even in our imagination we could see a collection of little fellows with bright and eager eyes watching their companion holding forth to them, and now and then turning with him in their anxiety to the chart, to see whereabouts in the world this adventurous wonderful navigator was, and the extraordinary places to which he went, both above and "underneath the world." All this, and much more besides, we had fondly anticipated,—but when we came to open this enticing little volume, of so engaging an exterior, what disappointment met us; we had better have left it a sealed book, excluded from our prying eyes, as that graceless figure in Waterloo Place should have remained unseen and covered up, for, alas, the book of Cook's Voyages was destitute of a chart! He must be a venturesome publisher who would make even one voyage without a chart; but here are no less than three, and sea places enough to interest all the little eyes that are so quick in ferreting out those places that have been rendered interesting to Englishmen as having been frequented by the great Captain Cook. Of what use for any one to relate an interesting tale of his

voyage if he has no chart to show where he has been! Further we had not the heart to look,—and laid our treasure aside in hopes that we should some day hereafter see our first circumnavigator's legacy to his countrymen presented to them in a manner befitting his great name, his great discoveries, and the great importance of those discoveries! how immeasurably important, let the world itself say, and Australia and New Zealand will confirm it.

---

*JOURNAAL VAN DE REIS naar het Oubckende Zuidland, inden jare 1642 door Abel Jansz Tasman, &c. Amsterdam, 1860.*

Mr. Jacob Swaart has with much pains presented to the nautical world the hitherto sealed voyage of the celebrated early discoverer Tasman, whose voyages from Batavia obtained for the western part of Australia the general title of New Holland, and left so many Dutch names on that land, as well as that of his leading star, the daughter of the Governor of Batavia, Maria Van Diemen, on the north-western cape of New Zealand. The chart which illustrates the voyage is a highly interesting document, and just one of those benighted productions of a benighted age that the monarchs of Portugal forbade, on pain of death, their navigators bringing with them to Europe, and the Dutch seamen were equally compelled to leave at the Cape. Happily those days of wretched deeds of darkness are passed away, and the light of geography has dissipated all this gloom, to which British liberality has in no small degree contributed.

The voyage before us, a neat octavo volume of some 200 pages, will, however be of little service to the English reader until some enterprising publisher gives it to him in English; a course which he might well be encouraged to do, since we have as yet no English account of Tasman's discoveries. For the sake of their own navigator, the Dutch publishers should themselves undertake to present us with this boon.

---

The Report of the Commissioners appointed to inquire into the condition and management of Lights, Buoys, and Beacons with which we have been presented, is one of the most valuable documents that have ever proceeded from a Royal Commission. These important subjects are considered under all their different points of view in this report with reference to their positions, qualities, economy, management, and many others, compared with those of foreign countries, imperfections and anomalies pointed out and remedies proposed. And it would appear from the report that the subject of lights in this country seems to be like that where there are too many cooks,—or as the fable says,—

The child who many fathers share,  
Hath seldom known a father's care,

and that care in this case has been indeed to kill it before it was born; with the blessings of circumlocution, ignorance, and consequent mismanagement. But we purpose in our next to go further into some of the curiosities presented by this report, and meanwhile congratulate the nautical world that the Commissioners have not flinched from their laborious task in laying bare our lighthouse system, and are well deserving of the thanks of their country.

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle.

---

MAY, 1861.

---

WRONGS OF THE MERCHANT SERVICE AFLOAT.

Sir,—Having been many years a subscriber to your magazine, I have had frequent opportunities of reading articles on the incompetency of the masters and officers of the merchant service, the absence of all discipline on board the ships, and the dearth of good officers and able seamen that now exists. The reason that there are so few good officers and seamen is shown by an answer that Mr. Duncan Dunbar is reported to have made to the Committee on Shipping affairs. He says boys are of no use on board ships, that they are a nuisance, and that he will not carry any in his ships. The large steam-ship companies think with Mr. Dunbar, and officer their ships (with the choice of the officers) through the inducements of good pay and constant employment.

If the master tradesmen of London will only take a hint from the shipowners and not have any more apprentices, the Strike Committee will not be long in requisition. While many of your correspondents expose the ignorance, &c., I do not see that any of them point out a remedy; nor yet mention some of the principle causes of the incompetency, &c., of the officers.

No one can deny that during the last twenty-five years many incompetent masters have been found in charge of ships navigating the seas to the eastward of the Cape of Good Hope. But it ought to be remembered that during that period a very great change has taken

place in the employment of our ships, and that a vast number of officers have been employed in voyages of a totally different character to those in which they had been brought up. The throwing open the trade to India and China, taking place nearly at the same time as the falling off in the West India trade, on account of the abolition of slavery, had much to do with this. But the demand for coals for steamers is the thing that has introduced a different class of masters and officers (of a much lower order) in all foreign ports, especially in India, to any that were ever seen there before.

I assert without fear of contradiction that the masters and officers of the "free traders" were not inferior to any class of officers in the world. The same officers are to be found now in the same class of ships out of London; but many of them are in the large steam company's vessels. Young officers of the present day have not the same facilities for learning the practical part of their profession that the last generation had. The system\* of employing riggers and lumpers to do everything on board the ships in London has done more to injure the officers and men of the merchant service than nearly everything else that has happened these thirty years, unless it is the abolition of the apprenticeship system. The officers and men in the merchant service now are mere "runners." They join the ship when she is ready for sea and make the passage to her port of discharge, where in most instances a large portion of the crew leave, and in few ships do the whole crew make the voyage. Upon the ship's return, officers and men are discharged. A ship-keeper takes charge of the ship, and long shore men prepare her for sea again. The last part of the outfit are the officers and crew: they are picked up at the shipping-office. In most of the respectable London firms the chief-mate is kept on pay while the ship is in dock, but he must find his own food and lodging; he is, in fact, a kind of day watchman, and takes an account of the cargo.

In very few employs are the junior officers kept by the ship. Consequently, they seldom sail two voyages in the same vessel; they are always strange to the master, and by this roving life they acquire that spirit of careless don't-care-a-damn-tiveness so much complained of. A parsimonious spirit among owners in discharging everybody from the ship upon her return, and looking for fresh people when she is ready for sea, is now reacting upon themselves in the manner described by your correspondents, one of whom classes the shipmaster below the London cab driver or omnibus conductor.

If such is the case it would be well to attempt to improve the condition of the boys who are now apprentices, and many of whom will become officers and masters. Every ship should carry apprentices. If the emigration officers and those who charter ships for troops and

\* This system has been ably exposed in our volume for 1857 by Captain Maclean, in the account of his last voyage to St. Lucia, written with sound discrimination and the warm generous heart of the accomplished British seaman.—Ed.

stores made it imperative for those ships to carry a stated number, the practice would again become general.

Much is said about schools to educate boys for the sea service. I can only say that most of the boys I have had with me of late years have been better educated when they were bound apprentice than I was. It is not the school that is required before they go on board ship, it is the keeping up their education while they are serving their time. The boys should be obliged to work the ship's day's-work, with all observations, chronometers, lunars, amplitudes, &c., every day, and show it to the master; also keep a journal, that they may improve their writing as well as learn navigation.

To bring up boys properly they should have a berth aft, away from the men; and if in a large ship the third-mate should have charge of their mess; if in a small one, the second-mate and carpenter be with them. A small cabin abreast of the after hatchway, eight feet by eight, would be large enough for five boys and the third-mate. If the boys' berth was aft, the master could occasionally step in to see how they were occupied while below, what kind of books they were reading, what kind of pictures were pasted up in the berth, and whether their clothes and bedding were in order.

The elder boys would derive much benefit from being made to copy the cargo-book, placing all the packages of each mark together, for the convenience of the chief-mate in discharging. It teaches them how a cargo-book ought to be kept, and improves their writing.

All officers who have a certificate should be obliged to keep the ship's way, and to keep a journal of the voyage. If this were done, owners would not require characters with the officers,—the journals would show the character.

It is said that the examination of officers and granting certificates has raised their character. I doubt it very much. The examination is no test of ability,—it is a *sham*: a few hours at a "grinder's" and any one can pass. I am acquainted with one of the best shipmasters out of London. He is a good practical navigator and a good observer of lunars, yet he could only obtain a third-class certificate, and was sent back once before he got that. I passed at the Trinity House before it was compulsory to have a certificate, and I have five apprentices now with me, all of whom, I am sure, could pass an examination and get first-class certificates, if they had a little grinding on stowage of holds, dunnage, lights, &c.

Some time ago a person required not only a good character, but a considerable amount of interest to obtain a chief mate's berth. Now, the only question asked is—"Have you a certificate?" One of my brothers commanded a ship in an employ where the owners had a rule (before the law made it compulsory) that all their officers should pass an examination. My brother had a man who had been two voyages with him as mate, and three years as second-mate, but he was afraid to try the examination (he was a good chief-mate of a West Indiaman, and as sober, steady, and careful a seaman as ever walked a deck), so he was discharged. The young man who succeeded him

had a certificate from some port in Wales. The ship sailed the day after he was shipped. When they were at sea it turned out that he was not a sailor, and had never been to sea. His father was owner of some coasters, and he had made a few passages to London and other places on the coast as the owner's son; and on the strength of this he passed his examination. The ship on that voyage fell in with a hurricane on the passage home, lost her rudder, and was very near foundering. The hardy seaman who was unshipped for that bit of parchment would have been worth his weight in gold when the ship was lying on her beam ends, with the lee sea battering in her hatches and skylights, if he could then have taken the place of the poor sea-sick young fellow that succeeded him.

In my opinion a chief-mate's log-book and cargo-book for a six months' voyage would give a practical man a better knowledge of his qualifications as an officer than half a dozen examinations, when fresh from the "grinder's" and just got up for the occasion. Times are very bad with the shipping interest, and there is a dearth of good officers and able seamen; and before the case will be altered there must be some common feeling between owners, masters, officers, and crews. Is such the case now? No, they are all pulling in different directions. As long as this system lasts the merchant service will not be better. They may get up Mercantile Marine Associations, and have a charter, and M.P.s to make long speeches, but they will do as much good to the service as Mr. Potter's Paviours' Arms' Committee does for the London journeymen on strike.

If shipowners want officers and seamen they must do as their grandfathers did, viz., carry apprentices in their ships, and work up the raw material to any shape they require it. It may not be pleasant perhaps to those who are in the habit of making a clear ship upon her return; nor to those who make young gentlemen *sailors* for a premium of £60 the first year and £30 for the two following. It would be much less profitable to the latter to carry apprentices and pay them than to have ten midshipmen at an average premium of £50 each. But both must come to it, nevertheless, if we are again to have officers and sailors. They will not spring up like mushrooms. The evils exist, and shipowners must look them in the face and find a remedy, unless they wish to be run out of the market altogether by Americans and foreigners.

The things that swell up a ship's disbursements, and prevent what ought to be a successful voyage from paying, are claims for damaged cargo; short delivery, through plunder or a bad check taking in or discharging; extra wages paid for substitutes for deserters or men left in jail, hospital, or discharged; lumpers and labourers taking in and discharging cargoes at home and abroad. To this put the loss of sails and spars through *incompetent* officers carrying sail too long, or not knowing how to take it in, and the loss of stores through carelessness of stewards and junior officers.

Most of these losses might be prevented if a staff of apprentices and officers were brought up in the employ and kept by the ships, as they

are now in a few employs. There are a few owners who have throughout kept up the old system, and there is a wonderful difference between those ships and others when you meet them in Australian ports. "Trident's" remarks in your magazine for December, 1858, are true. Underpaid officers, half-manned ships, and half-starved crews (of stokers and landsmen) are the causes of much of the insubordination and many of the accidents that are frequently occurring in the merchant service.

General observations do not give so clear an idea of things as a statement of facts. I will give an instance of one of a class of ships that do very much more injury to the merchant service and to the respectable firms of shipowners than all the competition of foreigners complained of. There are other ships where the masters are worse paid and the crews are smaller in comparison to the cargo carried. Three or four years ago I became acquainted with the master of a ship loading in an Indian port at £4 10s. per ton. She had discharged 660 tons of coals at Aden, her outward freight having been £3 per ton. She took in 650 tons of homeward cargo; which she landed in London in less than eleven months from the time of signing articles. She was manned with fifteen hands, all told, viz. :—

Master .....	£9	0s.	0d.
First-Mate .....	5	0	0
Second-Mate .....	8	10	0
Carpenter .....	4	15	0
Six A.B.s, at £3 .....	18	0	0
Steward .....	1	15	0
Two Ordinary Seamen, at £1 10s. ..	8	0	0
Two Boys, at 10s. ....	1	0	0
Total per Month ....	£46	0	0

The master was not allowed one shilling to find the cabin, nor had he any other remuneration besides his wages. His allowance of food was the same as the crew, viz., the scale, as published by authority of the Shipowners' Society. The master told me that his crew were suffering from diarrhœa. I found that their daily ration was 1½lb. of meat per man (and as they could not eat the beef they had pork), and one shilling's worth daily (among all hands) of the trash that in that port are called vegetables, for soup. They had not had while in harbour either flour, yams, potatoes, rice, or anything, save meat and biscuit. I advised the master to give his crew the same daily allowance that I served out to mine, and which was the same that two ships, belonging to two other respectable London firms, were giving to their crews. He said that he dare not,—that he had already expended 70lbs. more flour than ought to have been issued as per scale on the articles; and that as to grog, it was impossible to give any, as his owner was very much against giving spirits to sailors: it had a demoralizing effect, he said. What would Lord Nelson have said of such a fellow? I have since heard that the owner of that ship is a most ostentatiously pious man.

I ask you, Mr. Editor, is it possible for shipowners who are liberal in storing their ships, in manning them, and in paying their officers, to compete with such vampires as the above. The monthly expenses of a London ship of the same carrying capacity would be more than double that of the one I have mentioned.

I find that my letter is much too long, and the subject is very disagreeable, or I could give you some details of a different class of vessels that are now found navigating the eastern seas, and the way the officers of them are paid; which would show you that your correspondent was not far wrong in saying that the shipmaster was not better off than the London cabman.

The scale of provisions, as published by authority of the Shipowners' Society, is not sufficient to keep men in health. They can exist on it to the nearest port. I should like much to put the chairman of the Shipowners' Society on an allowance of  $\frac{1}{2}$ oz. of tea per day, and not give him any other drink except water, for a month, and I am sure he would then agree with me that  $\frac{1}{2}$ oz. of coffee and  $\frac{1}{2}$ oz. tea was not too much for breakfast and tea.

I ask why a man-of-war's-man requires  $1\frac{1}{2}$ oz. of cocoa and  $\frac{1}{2}$ oz. of tea per day, and the merchant sailor, who is more exposed, is only to have the  $\frac{1}{2}$ oz. tea? It is very well to put the said scale on the articles, to pay short allowance money on, but not to stint the crew to the bare allowance. It is a very poor answer to a man who complains to the master that he has had no breakfast, to tell him that if he had kept half his dinner the previous day, instead of eating it, he would have had some.

If the apprenticeship system again became general, and lumpers, riggers, and long-shore men were kept out of the ships as much as possible, and the officers and crews took in and stowed the ships' cargoes,—so that they were kept by their ships, and made two or three voyages with the same masters and officers,—there would soon be a vast difference in the merchant service. I can speak from experience, having tried it, that a ship's company and their officers can do the work cheaper and better than the long-shore men do.

If the apprenticeship system again existed, both services would benefit much if the lads could be induced to serve the last year of their time in a frigate or sloop of war. Twelve or eighteen months in a ship of war would do much good to every young man who is to be an officer in the merchant service. He would there see the value of method and discipline, also of a division of labour, and how easy it is to have stores and provisions stowed in such a manner as to have some of each sort constantly handy. In short, they would learn many things that cannot be learned in a merchant ship. I speak from experience on this subject also, for I have served a considerable time in the royal navy, in ships of nearly every rate, as well as thirty years in the merchant service.

I will merely add that I have now sailing with me two men who have been constantly sailing with me since 1852; two more who have been with me since 1855; three more who have made three Indian or



Australian voyages, besides the officers and apprentices. I mention this to show that it is not impossible to keep men together in a ship even now, if people are disposed to do so, and to employ them instead of long-shore men when the ship is at home.

I am, &c.,

A MASTER.

*To the Editor of the Nautical Magazine.*

P.S.—I do not say that an examination of officers is not required; but I assert that the present examination is not a test of ability, and many incompetent persons do pass.

#### WATERS OF THE AMAZONS.

According to information obtained at Para from mariners who have ascended the Amazons as far as the Rio Negro, and from my own observations, says M. Lartigue, it would appear that the waters of this river rise for six months, and that having attained their maximum height, they fall during the other six months.

November is the time when they commence rising, and the inundations take place in January, February, March, April, and May. The people of the country attribute these to the heavy rains which fall during this season in the country through which the river flows. It appears, however, that these rains are not the only cause: the N.E. winds which prevail then and blow strong into the mouth of the river, arrest the current and contribute much to these inundations. In fact, very little rain fell in 1824 and 1825, and yet the same inundations took place: but certainly the waters were not so high as in previous years.

From our observations on the tides it has been ascertained to a certainty that a difference of level does take place; for during the rainy season when the ebb ought to be the stronger, on the contrary the flood was the most violent. This is what takes place. The flood tide from the mouth to thirty or forty leagues from it up the river, in December was stronger than the ebb. In the months of January, February, March, and April, the flood stream to the North Cape, Cabo do Norte, runs eight miles an hour at springs; but the strength of the ebb is about two to four miles. It is in the month of May that the stream of ebb is as strong as that of flood; but after that month the ebb begins to gain strength and that of the flood becomes weaker.

In the months of August and September the stream of flood is weak while that of the ebb runs five or six miles the hour; but in October it gradually becomes weaker, and in November, when the N.E. Trade wind commences to blow, its strength is the same as that of the flood, which, as before observed, in December becomes the

stronger. One can easily imagine that the level of the sea is higher than that of the river whenever the current of flood is stronger than that of the ebb; that is, in the months from December to April inclusive, the period when the N.E. winds have their greatest strength. And we may as readily suppose that the waters of the sea are lower than those of the river, or at least are on the same level, when the stream of ebb is stronger than that of the flood, which happens in June, July, August, September, and October, when the E.S.E. winds prevail instead of those from N.E.

On the 28th of August, 1743, the tide reached Panais, situated 200 leagues from the mouth of the river. It is true that the stream continued to run down, but the level of the water rose. M. Condamine has not told us that the tide has reached higher than Panais.

The height of the tide at the mouth of the Amazons may doubtless be attributed to the strength of the wind. We may also observe that these winds occasion the water to rise on the coast of Guiana, and it is natural to conclude that the same effect is produced at the mouth of the Amazons, where it blows with the same force. Nevertheless, it may be remarked, that as the mouth of the Amazons has the form of a funnel, and narrows tolerably soon, the same cause must here produce a greater effect, and the elevation becomes greater. The N.E. wind does not always blow with the same strength, when the waters cannot attain the same elevation, since their escape is then easier, and the more so as the N.E. wind becomes lighter, since they are kept in the more the stronger this wind prevails. These variations of level have, in fact, operated to prevent correct notions of the mean level of the river from being obtained in its ordinary condition, and probably this level may be different in different years.

The difference of level between the water at the mouth of the river and in different parts of the interior, gives a peculiar character to the inundations which take place totally different from any other.

Buffon says, that when a river is swelling, the strength of the current increases until it overflows its banks, from which time the current diminishes. The contrary to this takes place in the Amazons. In proportion as its waters increase the current becomes weaker up to the period when it overflows its banks. Then the small strength of the stream remains the same for some time, and does not gain strength until the level begins to fall. This slackening of the discharge of the waters at the very time of their fulness making the river swell, can have no other result than that of producing an ebb at the entrance, arising from no other cause than the higher elevation of the river at the parts where it was observed to rise from the continual action of the N.E. winds. So soon as the waters in rising overflow their banks, the equality is established between those which arrive in the bed of the river and those which are leaving it. And the current throughout the whole course of the river preserves the same velocity during the time when this equality continues. It seems that the equilibrium is disturbed at the period when the N.E. winds lose their strength, and when in consequence the level of the river by lowering

facilitates the ebbing of the river water, the level of which in its turn also becomes lower. One may imagine that the stream should commence at the same time that the water falls, because nothing opposes its running out at the river's mouth.

The country of Brazil being generally more elevated than that of Guaiana, which forms the left bank of the river, the waters as they overflow from the Amazons are spread over the latter, where they are increased by those which proceed from the rains and the overflowings of other rivers. Thus the immense plains of Guaiana become nearly entirely covered, and it is not surprising that a communication by water should be then found between the Amazons and most of the rivers of those vast countries. This confirms what we have learnt at Para, where we have been assured that the Portuguese government has sent a great many expeditions into the interior of Guaiana, and that persons who had been sent had gone up the country by the River Negro, and had returned with their boats on the Orinoco and Esse-quito.

The difficulty of finding the source of some of the rivers of Guaiana has led to the conclusion that those which are nearest to the river are no more than branches of communication filled during the winter by the overflowings and rains. It is even considered that a part of the waters of the Amazons enter the sea by channels which they have made for themselves on the coast of Guaiana.

M. Condamine says that between Macapa and the North Cape, where the great channel of the river is enclosed by islands, and especially opposite the great mouth of the Arawary, that joins the Amazons on its northern side, the sea presents a very singular phenomenon. During three days at new and full moon, when the spring tides take place, the sea, instead of taking six hours to rise, attains its greatest height in a few minutes. It may well be supposed that such a phenomenon does not pass tranquilly; in fact, the noise that it makes may be heard at the distance of two leagues, and is called by the natives the *pororoca*: as it approaches the noise becomes louder, and shortly is seen a huge ridge of water, from 12 to 15 feet high; then another; then a third, and sometimes a fourth, which follow each other rapidly, and generally occupy the whole of the channel. This wave passes along with considerable rapidity, and breaks and carries everything before it. Sometimes a whole mass of ground may be seen carried along by the influence of the *pororoca*,—large trees torn up by the roots, for it makes all kinds of ravages. M. Condamine observes, this only takes place on the flood, when it enters a narrow channel and encounters a bank in its progress, forming an obstacle to it where it commences this impetuous motion, which ceases when the bank is passed or when the channel becomes wider or deeper. Our experience on the coasts of Brazil and Guaiana will throw some light on the explanation of this phenomenon.

On the coasts of Guaiana the tide rises more in the first hour of flood than it does in any other. It is also known that when the cur-

rent is strong the commencement of the stream of flood as well as that of rising of the level, is slow in proportion, and that in this case the sea rises much during the first hour. Then the current of flood follows immediately after the ebb, and rapidly acquires strength. For instance, at Cayenne, when the stream of tide is strong the sea rises in the two first hours of flood more than in the four hours afterwards, but then the flood has commenced rather late.

In the month of May, 1825, at the southern branch of the mouth of the Amazons, where the stream of flood runs three to four miles an hour, the sea has been observed to rise almost suddenly as much as 3 feet; the ebb stream has scarcely ceased when that of the flood has set in. We have observed a similar phenomenon in the course of the first fifteen days that we were anchored off Para. There as well as at Cayenne a sudden noise occasioned by the shock of the sea announced the meeting of the two currents, in fact, the change of the tide.

It appears that on the coast of Guaiana the ebb stream detains for some time the waters brought by the flood, the result of which is that in some parts an accumulation takes place until the ebb stream having lost its strength the flood becomes established. The rapidity of the flood tide, as soon as it is in motion, must be greater, since the waters are retained longer and their rising is tolerably quick, for the sea appears to rise suddenly. These effects, which are observed on the coast of Guaiana, are also found at the mouth of the Amazons, but in a much greater degree, because the currents there are much stronger. Moreover, when the embouchure of a river like the Amazons is extensive, and then narrows suddenly, the large quantity of water which the flood brings in a given time penetrates more slowly into the interior of the river, and produces a considerable elevation of level. We consider this elevation of the level produced by the narrowing of the river banks may serve to explain the same phenomenon as is found at the mouth of this large river and in a portion of its course with much more intensity than on the adjacent coasts.

The same river presents other phenomena, which prove that the waters have not always the same level even in places not far from each other, being affected by different circumstances. A boatman was sent to observe the time of high water on shore, and the rise at the same time was observed on board. On his return he reported that the water had commenced falling by the shore up to the conclusion of his observations; nevertheless the water continued to rise at our anchorage in the stream of the river about two cables' length from the place. This excited my attention, and induced me to repeat the observation myself, taking all the precautions in my power to secure accuracy. The result was that at the time of new moon on the 16th June, 1825, it was high water on shore at 10h. in the morning, and at the anchorage it continued to rise until noon, and rose in those two hours two feet, while at the same time it fell three feet by the shore. At the time of neaps one hour only was found as the difference between high water by the shore and in the stream.

Buffon gives the following explanation of this phenomenon:—The motion of the water, he says, in rivers is very different from the theory that has been laid down by authors on this subject: not only has the surface of a running stream different levels in the middle and on either shore, but even according to circumstances the level of the stream in the middle is either much higher or much lower than that of the water on either bank. When a river becomes suddenly swollen by the melting of snow or from any other cause, the strength of the current rapidly increases if the course of that river be straight, and the middle of the stream becomes higher and the surface forms a kind of convex curve, the highest part being in the middle of it, and this will amount sometimes to several feet. In fact, it is what should always take place when the stream is rapid; the rapidity with which it is flowing tending to diminish its weight, and changing the relation between the water in the middle and that on either side. On the other hand, when the water approaches the embouchure it generally happens that the part next to the shores is higher than that in the stream, although the current may be rapid, and the surface of the river then forms a concave curve, the lowest part of which is in the middle. This always happens when a river is open to the action of the tide.

On reconsidering the foregoing causes which affect the level of a river in different parts of it, we may come to the following conclusions as to the cause of that phenomenon called the *pororoca*.

As soon as the flood tide makes, the water rises suddenly near Isle Marajo. It generally rises 16 feet at spring tides of winter, and rises as much in the two first hours of flood as it does in the rest of the tide. Off Isle Marajo the stream of flood at springs in the winter runs about six miles an hour; it attains a rate of eight to ten miles an hour between Macapo and Cape Nord. In fact, it is so violent that a vessel cannot hold on at her anchorage against it.

These currents of the tide being very much stronger on the coast northward of the mouth of the Amazons than in other parts, the flood tide should commence there later. It follows, that off Marajo, where the flood is felt while the ebb is still running on the coast to the northward, the sea level should be higher than it is there. From the moment that the strength of the ebb is exhausted on the North coast, and the flood coming from the offing gets the upper hand, the waters heap up about Isle Marajo and run with great rapidity towards the coast North of the embouchure to gain their level. In the mean time the principal current, which comes from the N.E., brings a considerable mass of waters, and these two causes produce a sudden rising of the river water, which establishes itself generally without producing much agitation. But as soon as any obstacle becomes opposed to the flow of the waters, it occasions the *pororoca*, which is the more formidable as the wind is stronger, and thus it is that in the winter months the *pororoca* is most dangerous.

M. Condamine says that the sea sometimes rises suddenly to the height of 15 feet. The captain of a vessel which was wrecked in the

year 1825 near Cape Nord states that he found a depth of 80 feet water in a part which is dry before the flood tide covers it, a difference which perhaps shows that all the observations were not made at the same time of the year. M. Condamine was at the mouth of the Amazons in the beginning of January, a period when the waters first commence to rise, and the vessel abovementioned was lost in April, at which time the waters gain their highest level.

Books of Sailing Directions give the time of high water at full and change of the moon for different places at the mouth of the Amazons. But these are very erroneous in many places, being in direct contradiction of the phenomena abovementioned. Our observations show that the time of high water at full and change is not the same, and differs very much in places not distant from each other; and the time of high water given in certain books cannot be correct but for places within a very limited district. For instance, the directions for Paray say very truly that the establishment is ten hours, nevertheless the tide continues to rise at a few cables' length off Paray until noon.

---

#### BIRD-CATCHING ON THE SOUTH ANAN ISLANDS.

On the 14th of June we sailed from Killraby Bay, and anchored in Port Mary, on the North side of Tuishmore. It is by no means a safe anchorage, unless the weather be fine, as it is open from N.N.W. to East, and the swell raised by westerly winds prevails in the bay. This indentation of the land at Port Mary is part of that depression which continues across the island, dividing it into two elevated portions, which seen at sea from a distance, appear like two islands, with a passage between them. From this false appearance it is termed by seamen "the Blind Sound." The opposite shores of this isthmus approach each other to half a mile. The North shore except at its western termination is low, and the land rises by a succession of steep terraces, attaining an elevation of 413 feet in the eastern and of 354 in the western division. From thence to the South the descent is comparatively small and gradual, terminating in abrupt and magnificent cliffs along its whole extent, thus presenting an inaccessible boundary and formidable bulwark to the ponderous billows of the wide Atlantic, which are slowly but very perceptibly advancing, breaking down immense fragments, and loosening and widening the seams of the limestone preparatory to its fall. Here, however, the hardy cliffmen pursue their dangerous employment in taking the puffins and their eggs from the ledges or galleries formed by nature on the face of these precipices.

I was fortunate in witnessing the manner in which these hazardous undertakings are conducted: and certainly it appears to the uniniti-

ated a most nervous operation. In the summer months, when these sea birds are hatching and rearing their young, they become the permanent occupants of the cliffs, and are easily taken by those who have the temerity to invade their haunts. About the month of November they take their departure for other climes; but the dark nights of each lunation are always chosen for the destruction of the unwary birds. The cliffmen are divided into gangs, who provide the rope and share the toils as well as their spoils. Those who descend the cliff to take the birds or eggs, have two shares each, the rest but one. The rope used by them is about three inches in circumference, and in length suited to the height of the cliff, or about 100 yards. Besides this, small lines are provided as guys to assist in landing the men on the ledges of the cliffs. They commence their operations after the birds have settled to roost, and when the tide is sufficiently out, so as to leave the rocks dry at the base of the cliffs.

The cliffmen and assistants are then lowered down the face of the rocks, and he whose office it is to take the birds is then hoisted up to the level of the ledge where he is to take his station, having a small rope fastened to him, the other end of which is held by those below, and by which they swing him towards the ledge, while he endeavours with a staff provided with a hook to obtain a hold. This is a difficult operation, and is seldom accomplished until after repeated efforts and many disappointments. When he feels that he has a secure hold he draws himself in and takes up his station ready to begin his work of destruction.

There are generally two persons engaged in this work, who each portions out the limits of the ledge for his own work, one going to the right and the other to the left. The birds seem to be ranged like a file of soldiers in regular close order, and the men are obliged to carry on their work of destruction as silently as possible, so as not to disturb the roost in their murderous process, which is this. The nearest bird is seized by the neck and strangled by a swinging whirl, and then quickly laid by the destroyer on the ledge of rock behind him, who then passes on to the next bird, which he serves in the same manner, until the whole rank is taken.

The breadth of the gallery on which they are thus arranged is generally three or four feet, sometimes not more than one, so that great caution and strong nerves are required in the operation.

This done, the bird killers return home, and on the next morning resort to the scene of operations to collect the spoils of the preceding day. The birds are then thrown down to the rocks below, and a man is lowered down from the summit to make them up in parcels and fasten them to the rope, by which they are drawn up to the summit of the cliff. When this is done, the small line which the bird-catchers had kept on the summit is thrown down, and then comes the last part of this dangerous operation, to haul up the bird-catcher, who secured himself to the line in readiness for it.

The process of hauling him up then commences. As the summits

of the cliffs project considerably over the lower parts, those who are attending the rope cannot see anything going on below, but are guided by signals from others, who are stationed in a commanding position. It was some time before I could discover where this man was perched, the ledge not being visible from the summit in consequence of its projection; but by tracing the course of the small line before mentioned with the assistance of a spyglass the place was discovered, when it disappeared and soon afterwards the legs of the man protruded. Now was the moment of excitement. The rope was drawn tight by those above, and directly afterwards the bird-slayer was seen vibrating in the air over the sea. Then he swung back to the cliff, against which he appeared to be dashed helplessly, as if his very bones would be smashed to atoms,—and again he appeared over the surging sea, swinging his legs about to steady him and assist him in regaining a perpendicular position, while at the same time he is gradually nearing the summit by the aid of those above.

This indeed is the dangerous part of the whole process, and worse still was it when the suspended individual came up to the edge of the projecting rock, swinging helplessly about just beneath it. In the present case, although it seemed that his head would be dashed against the rock, yet his only injury was a scratched nose. It is in ascending thus that individual skill is displayed, and although the person before us had been in the business for thirty years, he had not yet acquired the difficult part of his profession, that of ascending the summit readily, clever as he was at taking birds, of which with the assistance of two boys he had now obtained 130.

There was a time when this pursuit was followed for the sake of obtaining feathers. In some of the small rocky islands near the Orkneys it forms the precarious subsistence of the natives. Here the birds were once held to be private property; but this kind of self-appropriation having been referred to a court of law, has been set aside. And yet the reasoning was special and peculiar. They were to be held in the same category as the fish of the sea, as not belonging to the land, for like the puffins they never fly over it, and even if placed on the ground they could not raise themselves from it.

---

#### THE LIGHTHOUSE REPORT.

In our last number a general view of the Report of the Commissioners on Lights, Buoys, and Beacons appeared among the "Club Papers," as adopted by our "Nauticals" from a periodical. But as this view seems to have been taken without other assistance, being, in fact no more than it professes to be, and the old proverb *audi alte-*



*ram partem* being as applicable to the report as it is to all other cases where blame is distributed, we shall now proceed to give it to our readers with that additional information which it requires. It is somewhat remarkable, notwithstanding the great mass of information that has been collected by the commissioners, and the time employed in obtaining it, that where it was fully as attainable (where required) as all the rest with which the report abounds, this should be deficient on certain points to which we shall allude. It is not to be expected that every one should be pleased with a document of such a nature as this, and in comparisons no doubt weaknesses may become evident. Still, these again are to be accounted for very readily, and their explanations would always be forthcoming if sought for;— and these weaknesses would then appear as so many points of strength. At the same time we accept the report as a document highly creditable to the commissioners, although it would certainly have been much more so had it not been open to the severe comments on it by the two principal corporations whose proceedings it impugns; and we shall, therefore, now follow each branch of it with information derived from the printed statements in which those charges are embodied, and which the report does not supply.

The Commissioners are very methodical both in the arrangement of their report and the evidence on which it is founded, as well as in their mode of obtaining that evidence. They explain the arrangement of these thoroughly, but we shall commence at once with the number given by it of our

#### *Lighthouses.*

The following Table shows the number and the nature of the lights in the United Kingdom, as taken from the *Admiralty List*:—

Country.	Lights on Shore.			Floating Lights.	Total.
	General Authority.	Local Authority.	Total.		
England .....	82	89	171	41	212
Scotland .....	46	67	113	1	114
Ireland ..	69	4	73	5	78
Total ....	197	160	357	47	404

“Of all the lights under the general authorities, and about half of those under the local authorities, your commissioners have obtained full returns, which will be found at length in the second volume. The lights on shore, for which returns have been received, are classified in the following Table:—

Authority.	Lighthouses.	Catoptric.	Dioptric or Cata-dioptric.	Apparatus not stated.	Order of Dioptric Apparatus.					
					1st.	2nd.	3rd.	4th.	5th.	6th.
England—Trinity Ho.	82	51	31	..	20	8	..	1	..	2
„ Local . . . .	49	35	14	..	1	1	3	4	2	2
Scotland—Commis. of Northern Lights ..	46	14	32	..	16	4	..	9	..	..
Scotland—Local . . . .	24	13	3	8	..	..	..	..	..	..
Ireland—Ballast Board	69	51	18	..	10	1	4	3	..	..
„ Local . . . . .	6	..	3	3	..	..	..	..	..	..

“The index map shows the *position* of the lighthouses in the United Kingdom, and on a portion of the French, Belgian, Dutch, and Norwegian coasts. Very few complaints are made as to the position of lighthouses by mariners, or the agents of Lloyd’s, and those which are made are generally confined to three or four sites.

“It will be seen, by looking at the map, that the number is sometimes *insufficient*, because vessels might be within a very short distance of some parts of the coast, and beyond the estimated range of any lighthouse, even in clear weather; for instance, at Great Orme Head on the approach to Liverpool.

“The circles of light on the index map are taken from the map published by the Board of Trade, and represent the column in the Admiralty list of lights headed “*Miles seen in clear weather* ;” but from the evidence before us, and from our own observations, the lights are not uncommonly seen at much greater distances. Any attempt to make lights so brilliant or so numerous as that one at least should be visible in fogs which are dense enough to obscure the sun, would necessarily fail; but any increase in the brilliancy of the lights will increase their range in hazy weather, and make them more efficient; and their number ought to be such as to ensure that one or more may always be within sight of a ship approaching a danger in ordinary weather.

“The West coasts of Scotland and Ireland are still *insufficiently* illuminated; and the Channel Islands lying near the track of ships bound up Channel, and surrounded by rapid tides, have been left in a state of culpable darkness, although a light is now being erected on the Hanois Rocks, on the West coast of Guernsey. A reference to the index map will best show the *positions* where the *number* of lights is *sufficient* or *insufficient*.

“It will be observed, as respects *number* and *position* of lights, that the British coasts are *not* so well guarded as the French, for the lights are purposely so placed on the coasts of France as to “cross their fire.”

“This may also be tested by comparing the proportion between the number of lights and the amount of coast line in England, Scotland,

and Ireland, with the proportion between the number of lights and the coast line in France. The measurement of the coast line and of the islands in the respective countries is given in a table in vol. ii.; the number of lighthouses is taken, as before, from the Admiralty list. From these data the following table is constructed:—

Country.	Number of Lighthouses on shore.	Coast Line	Proportion.
		Naut. miles.	
England .....	171	2405	1 for 14·0 miles.
Scotland .....	113	4469	1 „ 39·5 „
Ireland .....	73	2518	1 „ 34·5 „
France .....	224	2763	1 „ 12·3 „

“Hence it appears that the lighthouses in France are more than three times as numerous, compared with the amount of coast, as in Scotland; but a considerable allowance must be made for the very large amount of mileage afforded by the Scottish islands and the bays on the Irish coast, which do not require a commensurate amount of lighting, as a light on an island or on one side of a channel will often obviate the necessity of a light on the main land, or on the other side. The lights in France appear to be nearly three times as numerous, comparatively speaking, as those in Ireland; but if to the seventy-three Irish lighthouses be added the five floating lights, the discrepancy is somewhat reduced. In England, too, there seems at first sight to be a somewhat smaller provision made for illuminating the coasts than in France, yet if the forty-one English floating lights be added to the 171 lighthouses, as indeed justice requires, England will be found to provide a light for every 11·37 nautical miles of coast, while France furnishes one for only every 12·3 miles.

“As to the *position* of lights in France and in England, there is this notable difference: the English lights have been steadily and gradually increasing in *number* during the last two centuries and a half, additional lights having been placed, from time to time, wherever the interests of commerce demanded, and a sufficient pressure was exerted; while, on the contrary, the French lights were very few till 1825, when a grand comprehensive plan was undertaken of erecting a large *number* of additional lights, on what were considered the best *positions*, and of remodelling the whole system.

“The coasts of the United Kingdom are better guarded than those of Holland, Norway, or perhaps any other country, excepting France.”

The Trinity House of London naturally feel the charge of extravagance which seems to have been urged against them, and we find their reply opening with the following answer to the charge; and, as forming a very important part of the subject, we shall take it as it stands at the head of their replies. They say—

*“1stly. As regards the popular impression of Extravagance, as expressed by Lord Clarence Paget, at whose instigation the Commission was appointed.*

“In despite of repeated exoneration from this accusation by Committees of the House of Commons, and of the concession of the Trinity House, for many years past, of annually rendering their accounts of revenue and expenditure to Parliament, and in despite also of the obligations imposed upon them by the ‘Merchant Shipping Act,’ which absolutely controls the minutest details of their expenditure, this impression of extravagance appears to have taken a hold on some minds to an extent that no evidence or public audit can dispel. To charge persons expressing these views with wilful or malicious misrepresentation, would, probably, be unbecoming; but where free access can be had to the Board of Trade or the Trinity House for information upon all points connected with the public duties of the latter Board, such assertions are inexcusable, unless capable of substantiation. The publication of this report should set such accusations at rest for ever. It is true the Commissioners, after constructing a comparative table, (at page 33,)—in which some of the most important elements of comparison are wanting,—express (at page 34) a vague wonder at an item of expense which they do not appear to understand; but the main significance of their report on this head is undoubtedly the expression of a suspicion that the Elder Brethren may have been doing the work too cheaply to have done it well.”

This is terse and to the point, but we shall see hereafter as to the quality, if the character of cheapness has been secured.

Then, again, on the number and position of the lights on the coasts the Trinity House says—

*“2ndly. As regards the Position and Number of Light-houses and Light-vessels on our Coasts.*

“The Commissioners state that very few complaints are made with regard to the position of the lights, and that ‘those which are made, are generally confined to three or four sites.’ This is no slight praise, considering that there are about 240 general lights ashore and afloat, including Scotland and Ireland, and is more or less due to the Trinity House, which is the directing authority, to whose decision all and every one have been submitted.

“As regards the number of lights relatively to foreign countries, the Commissioners have constructed a table (at page 5), which gives the proportion of lights to the coast line at 1 for 14·0 miles in England, and 1 for 12·3 in France. In the next page they discover that “justice requires them to state” that the lights shown from light-vessels are not included, and that if they were, the proportions would be for England 1 to every 11·37 miles, against 1 to 12·3 in France. If those who see the table at page 5 see also the stultification of it at page 6, this is a verdict which the Trinity House has no cause to question.

“ At page 5 the Commissioners speak of ‘ the Channel Islands lying near the track of ships bound up-Channel, and surrounded by rapid tides, having been left in a state of culpable darkness, although a light is now being erected on the Hanois Rocks, on the West coast of Guernsey ;’ and as this light is being erected under the direction of the Trinity House, the implication is, that the Elder Brethren are responsible for the ‘ culpable darkness.’ But the Commissioners must have been aware, that previously to the passing of the Merchant Shipping Act in 1854, the Trinity House had no authority to erect lights on the Channel Islands, but that the necessity for a light was recognised by them, as was shown by correspondence, in 1846 and 1848, with the Governor of Guernsey, and that owing to the disinclination of the States to contribute their fair proportion to its maintenance, the work has been delayed for several years.”

There can be no doubt that on the character of a coast, as to flatness, sinuosity, and off-lying dangers, its freedom from or fullness of evils that may arise from these features ; as well, perhaps, as its frequency of navigation, should depend the number of lights upon it, and not upon its lineal extent, which is less important, while from those conditions seamanlike reasons are at once supplied. We therefore think that the number of miles of coast to a light is no safe condition on which to found a conclusion.

But we will now proceed with the next branch of the subject in the report, and that is the

#### *Quality of Lights*

Which we are told by the report depends mainly on the following points :—

- “ 1st. *The character of the source of light.*
- “ 2nd. *The character of the apparatus, by which the light is directed to where it is needed.*
- “ 3rd. *The adaptation of the source of light and the optical apparatus to one another, with a view to the requirements of the locality.*
- “ 4th. *The distinction of one light from another.”*

We shall hereafter condense from the report, out of respect to our space ; but we find so much of interest in this part of it that our readers will not blame us for continuing this portion as it stands.

“ 1st. *The character of the source of light.* It is the invariable practice of the three general lighthouse authorities in England, Scotland, and Ireland, to derive it from the combustion of colza oil. Where metallic reflectors alone are used, the lamp is on the argand principle ; but where lenses are employed, a large central lamp is resorted to. The argand burners vary in number from one to thirty, and the central lamps differ in the number of concentric wicks. The Trinity House and Ballast Board, at the time of the commencement of our inquiry, used fountain lamps, and never employed more than

three of the four concentric wicks, while the Scotch Commissioners retained a fourth in first order lights. The lamps in Scotland being mechanical lamps, were found also to cause a considerably greater consumption of oil (as 5 to 3), and therefore the production of a higher and more powerful flame than was produced in England or Ireland.

"The local authorities also generally employ oil lamps, but the oil burnt is not always colza. Liverpool, for instance, prefers olive oil; and the Admiralty and Newhaven still retain the more expensive sperm, the use of which was abandoned for various reasons by the general authorities some years since. Gas is also burnt in many harbour lights, and in the beacon light at Northfleet, under the management of the Thames Conservancy; and in that, as in many other cases, and in the United States, with a very satisfactory result.

"To the subject of the height of the flame your Commissioners have given much consideration. It will again be alluded to in this report; but they are glad to be able to put on record here that the Elder Brethren of the Trinity House have lately admitted the propriety of returning to the use of the fourth wick, and are now making experiments with a view to ascertain the best possible description of mechanical lamp.

"Your Majesty's Commissioners, however, are of opinion that the science of lighthouse illumination is in a transition state, and capable of further development. We have conversed with a man who was actually employed in his youth in burning coal fires at Harwich for directing ships at sea; in fact the last coal light, that at St. Bees, was only extinguished in 1822; the use of oil does not seem to date back beyond 1730; and we now find inventions under trial which promise to transcend far the powers of even the four-wicked mechanical lamp in producing light. Gas might probably be advantageously employed in other than harbour lights, where it is now frequently used.

"An electric light, which is produced between carbon points by the revolution of magnets fixed on wheels worked by a steam engine, has been tried with great promise of success by Professor Holmes at the South Foreland, and is to be further tried at Dungeness or at the Start.

"Another electric light, produced by galvanic action in a stream of mercury, has been exhibited by Professor Way, and proposed for adoption in lighthouses.

"Several modifications of the lime light, produced by an oxyhydrogen flame playing on a surface of prepared lime, have been exhibited, and are commonly used in lecture-rooms and elsewhere; and these are now proposed for use in lighthouses. And the least powerful of these surpasses the best oil lamp in brilliancy, as the oil lamp surpasses the open coal fire.

"When any of these are so perfected as to make their action certain, the optical apparatus now used, and made to suit large flames, will be out of date as much as the large tinned reflector which was first erected behind a large coal fire on the Tour de Cordouan, and which was then considered a great advance in science. Optical ap-

paratus, to suit a very small and exceedingly brilliant source of light, one-eighth of an inch long, may be of small size, and finished and adjusted with all the accuracy of a telescope. Thick lantern bars, and the comparatively clumsy and costly brass fittings, which now interfere with light, may perhaps be done away with, and then the cost of apparatus may possibly be as much diminished as the quality of the light is improved."

On the second of the above points it is obvious that it would be the object always to employ to the best possible advantage every straggling ray of light by the aid of reflection and refraction, so as to fall into the mariner's path, whether it be on the broad highway of the ocean or in a defile between beds of rock, and the better this is done the less light will be lost. The report says,—

"There are two principal means by which it is sought to throw the light in the desired direction. The one is by silvered parabolic reflectors, and is called the 'Catoptric' system; the other is by lenses of peculiar construction, and is called the 'Dioptric' system. Sometimes the two systems are combined together, as in the ordinary 'Cata-dioptric,' and in Mr. Stevenson's 'Holophotal' arrangement.

"These silvered reflectors even are comparatively modern inventions, dating, in fact, from the close of the last century, and it is not forty years since the first dioptric apparatus was constructed by Fresnel, in France, and lenses have only gradually replaced the reflectors in our country. The lenticular system, as now developed, varies greatly from that first proposed; and modifications are continually suggested. Manufacturers both at home and abroad have invested large sums in machinery and in improving the quality of glass; and where so much thought is bestowed, it is reasonable to anticipate further improvement."

The most advantageous method of refraction (dioptric) (as a portion must always be lost by reflection (catoptric) seems to be more adopted in the Scotch lights than the English or Irish, and is accounted for in one case that the Scotch are of a later date than the English. But in reference to this the report states that

"It has been generally assumed that the dioptric is preferable to the catoptric system; but while your Commissioners do not controvert this opinion, they have conclusive evidence that many of the catoptric lights in England are not only excellent in themselves, but exceed in efficiency the dioptric lights on its shores. The first part of Question 7, of Circular VIII., addressed to mariners, runs thus:—"What British light have you usually seen farthest off?" and out of the 579 witnesses who have answered this question, the greatest *distances* are mentioned with reference to the lights at Lundy Island, the Calf of Man, Tuskar, Flamborough Head, Beachy Head, and Cromer, and the greatest *numbers* of witnesses mention Flamborough Head, the Lizard, Lundy, Beachy Head, the Start, and the South Stack, all of

which are catoptric revolving lights, with the exception of the Lizard, which is catoptric fixed, and the Lundy and Start, which are dioptric revolving. We, are, however, of opinion that this preference of the large reflecting lights arises not from any inherent superiority of the catoptric system, but from the fact that the dioptric principle, owing to errors of adjustment, has never yet been allowed a full and fair chance in the United Kingdom, and a saving of oil has also been unfortunately attempted in various ways, chiefly by the use of the inefficient fountain lamps, in all the dioptric lights with the exception of those in Scotland, which has not been considered in the great revolving catoptric lights with thirty Argand burners."

The next division of this section, "the adaptation of the source of light, &c., to the locality," forms a wide field of inquiry for the Commissioners in the application of the two modes of directing the rays, and as they say that "a lighthouse flame is composed of many irregular figures, there are probably no two spots equally illuminated by a lighthouse beacon." The result of these investigations was that this management of the collecting and utilising the light was imperfect in many of our lighthouses, arising from this want of the true adjustment of the means of utilizing the light, and in some cases arising from an insufficiency of oil, wicks, or an imperfection in the lamp. Assuredly the perfect adjustment of the numerous parts composing the huge refracting lens so happily devised by Fresnel, is a piece of work requiring all the skill of the engineer, no less so than when this is constructed to insure its united effect to be properly directed. But it is added that "authorities are alive to the importance of these subjects, and that the defects will soon be remedied."

Under the next head, of the distinction of one light from another, we find the proportion of the different methods adopted by us thus:—Fixed 269, revolving 65, flashing and intermittent from intervals between maxima of brilliancy of 5s. 3, of 10s. 5, of 15s. 3, of 20s. 5, of 30s. 10, of 45s. 1, of 1m. 18, of 1½m. 2, of 2m. 13, of 3m. 4, of 4m. 1, and we read in the report that

"Many of these distinctions again are susceptible of sub-division; for instance, some lights designated "fixed and flashing," give a constant light, besides the waxing and waning light, with intervals of darkness, while others alternate between brilliancy and total darkness. Again, the relative duration of light and darkness may be different, although the intervals between the maxima of brilliancy may be the same."

We should have been glad to have gathered from the report the definition of the term "flashing," which in conjunction with that of "fixed," has been adopted of modern date. The flash of a gun or a flash of lightning leads one to the impression that it is instantaneous, suddenly appearing and gone. But some of our lights to which this term is applied, extend commonly to several seconds,—nay, others again extend their *flash* through no less than eight or ten. Time was when



this was called a revolving light, notwithstanding the small fixed light seen in the intervals of the strong light, and which fixed light is not seen beyond a certain distance, making the flashing light then a revolver with its interval of true darkness. So that after all it is a kind of *twin* light, partaking of the two characters, as twins sometimes do, as male and female. The sooner the legitimate derivation of the term "flash" is defined the better, for to our mind it is often misplaced in our lighthouse nomenclature.

The Commissioners, it appears, recommend the adoption of more red lights and the colouring of the towers, so as to render them conspicuous when seen on the back ground; and in reference to the next point, "quality compared with foreign lights," the Commissioners state that

"On comparing the *quality* of British lights with those of foreign countries in the four particulars mentioned above, it may be remarked:—

"1st. With reference to the source of light, the observations of the Commissioners have placed it beyond doubt that the French have the advantage over the English and Irish in the height and brilliancy of their flames, owing mainly to their use of the mechanical lamp.

"2nd. As to the optical apparatus, the dioptric system, invented and first employed in France, has been gradually adopted in our own country, and in Scotland some improvements have been made in it. There is, however, this important difference; in France the new apparatus was adopted throughout the whole lighthouse service; and in the United States, and in Spain, it has been lately exclusively adopted in the great reformation of their lighthouse system just effected by the governments of those countries; but in the United Kingdom the old reflectors have only been replaced from time to time by the refracting apparatus; and the Board of Trade now lay down the principle, that the expense should only be incurred when the reflectors are worn out. It still remains an open question in some minds whether the change should at once be completed along the whole shores of Britain, and in other minds whether the purely catoptric principle is not better than the purely dioptric under certain circumstances; but few will doubt that a combination of the two would often be the most efficient, and such combinations exist in all countries, especially in Scotland. Your Commissioners, indeed, are prepared to recommend a more rapid substitution of these catadioptric arrangements for the simple metallic reflectors now in use at so many situations, and we deem this especially requisite when the light is a fixed one. If the electric light come into general use, it may necessitate some important modifications of the existing apparatus.

"3rd. As the dioptric apparatus used in England has been obtained from France till very recently, or constructed on French models, it can be no matter of astonishment that your Commissioners found in that country the same errors of adjustment between the optical pieces and the lamp, which they had first remarked at home;

but these errors were greatly aggravated in England and Ireland, where the flame was low. The excellence of the light at Grisez was found to be due partly to the height of the flame of the mechanical lamp, but partly also to the fact that the old-fashioned mirrors had been well adjusted to the sea-horizon after erection,—a point that cannot be so easily secured in apparatus of more modern construction, (such as is used at Calais,) where the totally reflecting prisms are secured in their places before the apparatus leaves the manufactory, and without reference to the altitude of the proposed situation. There was, however, but very slight fault to be found with the adjustment of the illuminating apparatus at Ailly. (See the Astronomer's Report, vol. i.)

“4th. In regard to the distinction of one light from another by varying its character, the French, according to the Admiralty lists, do not avail themselves so much as the English of the various means, and the Americans seem to be inferior; but in Spain and Brazil the proportion of revolving to fixed lights is much greater, and red flashes are more frequently employed than in the United Kingdom.

“The United States Authorities pay more attention to the distinction of lighthouses by day, by means of colour, than the Authorities in this country.

“The French use silk webs in the wicks; and filter the oil that has flowed through the burners before returning it to the lamp for another night's consumption.”

The expensive electric light is not likely to supersede oil, nor is it required; for the light derived from this is so good that it is clearly seen as far as the curvature of our globe admits, and what more could we want when this is secured with economy? But our space warns us to reserve the subject for our next.

---

#### WHALING ADVENTURES IN THE PACIFIC,—By *L. H. Vermilyea*.

I left New Bedford the 26th day of June, 1851, on the whaleship *Cortes*, Captain Peter Cromwell, fitted out for thirty months, for the Arctic and North-west right whaling. She was an old ship, some said seventy or eighty years built, and had been repaired so often that scarcely a stick of her original timbers remained. We had a pleasant passage across the Gulf, and when within a short distance of the Western Islands raised a large sperm whale. The boats were lowered, the captain's boat pulling immediately after him (the best way for getting on sperm whales, though the right whales and bowheads are best approached on the quarter, or head, the eyes of the two species being differently situated), and the boatsteerer fastened to him. The boat was so far over the whale's small, which was under water, that,

when he rounded to go down, it was gently capsized, and the carpenter, a young man from Maine, by the name of Gallup, (a green hand) jumped, or fell, into the line-tub, and was taken out of the boat, and down a few fathoms, when the captain cut the line, and let him loose. But his leg was badly splintered below the knee, so that when we got to Fayal (Western Islands,) three days after, it was taken off above the knee, at the hospital, and he was afterwards sent home, the captain, I am told, giving him five dollars, and the owners 100 dollars. The whale was easily captured.

There are no doctors on a whaleship, the captain having a doctor book and medicine chest; and when the man was brought aboard, the captain was so tender-hearted that he could not bear to look upon him, or help to carry him below. We had three days calm, warm weather, and they bandaged up the leg the best they could; but when we reached Fayal, the toes and feet had turned black. The man's first request when brought aboard was for liquor, which was given him to stop the pain. This circumstance will serve to show not only the dangers of whaling, but the great inconvenience in not having doctors in a class of ships exposed to more danger, sickness, hardships, and accidents than any other. The captain seldom knows anything about administering any kind of medicine except salts, an emetic, or castor-oil; and another great want on ships which go in the Arctic and North-west, is a stove in the fore-castle to warm the benumbed limbs, and dry the wet clothing of the sailors, in a climate of cold and ice, snow, rain, and fog, where sometimes, for six weeks, clothing cannot be dried. Not one ship in fifty has a stove in the fore-castle. How many accidents and diseases, coughs, colds, consumptions, rheumatisms, and premature deaths, have been occasioned by this neglect? Whilst Sailors' Homes, Bethels, and moral, religious, and intellectual means for improvement are multiplying in our own and foreign countries, and a general interest is beginning to be felt for the poor sailor by all classes on shore, should there not be a more practical application of this doctrine in looking to the physical comfort and well-being of a class of men so necessary in carrying on the commerce of the world,—so short lived, and whose lives are spent in hardships and toil to build the princely palaces, and enrich the wealthy owners, whilst their bones lie bleaching at the bottom of every sea.

Candor compels me to say that, in regard to good substantial food on New Bedford whaleships, there is generally plenty if the captain has a mind to give it, and that in the seven different vessels I have been in, I seldom went hungry, and never saw a case of flogging; but that such cases do occur, where the captain is a selfish, tyrannical man, there is no reason to doubt. The above is the only accident that ever occurred in ships I have been on, where over eighty whales have been taken, though a good many have lost their lives on other ships, from carelessness, want of good whalers, poor boats' crews, and other causes.

We stopped at the Western Islands a few days, took in potatoes and onions, and sent ashore in the lighter the 100 barrels of oil to be sent home. The Western Islands are famous for grapes and wine, which

last can be bought for four cents per bottle, and the prospect from the ship of the green hill-sides, and profusion of small houses, is delightful. Peak Pike is an abrupt lofty island, in the form of a sugar-loaf, opposite Fayal, connected by small schooners and boats. We next went to the Cape de Verde Islands, and then across the line in the direction of Pernambuco, thence southward to the river La Platte. In crossing the line the water, in the night time, presented a brilliant appearance, sparkling like so many millions of diamonds. Off La Platte we raised a large school of sperm whales, lowered the boats, and struck one; two boats were stove and capsized; one by a loose whale, and the crews and boats brought aboard by the other two boats, and no whales taken. We then started for Cape Horn, arriving there in October or November, which we were seventeen days in rounding, experiencing a heavy gale, which, for severity, the captain, who had followed the sea over thirty years, had never seen equalled. We lost one boat, two or three sails, the cook's galley was blown over, and the medicine chest stove. This same captain, six years after, was destined to lose his own life off Cape Horn, by a fall on deck from the main rigging. He had ordered officers and men aloft to do something, and, as they were afraid, he went himself. He lived a day or so, and his body, preserved in spirits, was brought to Honolulu, and thence sent across the Isthmus to his home at Holmes' Hole, Martha's Vineyard, where he left a wife and two children. He was a resolute, energetic man, generally filling his ship the first season, and was highly esteemed at the Sandwich Islands.

After rounding the Cape, we kept off to the westward to a new right-whaling ground, and saw plenty of whales, but it was continually blowing and rough; and after two or three days' unsuccessful whaling, we put off for Juan Fernandez, a beautiful island, not far from Valparaiso, which with its green, lofty, and abrupt hill-sides, exposed to the sea, seemed to us, storm-tossed, sea-sick mariners, on our first voyage, as a land of paradise. Our ship was short, and her bows round like an egg, after the old models, and she rolled badly in a storm, so that it was a pretty hard initiation for landsmen, on a first voyage, to the death-like sea-sickness which usually attends a two hours' watch at the mast head in rough weather. The masts will sway forty and fifty feet each way, and the mast-head will even now produce vomiting with me.

We lay off and on at Juan Fernandez but a few hours. There was a Chilean bark there from Valparaiso, with prisoners sent by the ruling faction, on account of some political disturbances which so frequently agitate the people of that country. From here we went to the Island of Chiloe, and thence to the desert of Atacama, (called by whalers Humpback bay,) being the coast of Bolivia between Chili and Peru. There is no fresh water within thirty or forty miles, and the small company of soldiers stationed near the entrance to the bay, are supplied from that distance. There is a hill here where guano is got, and the bay is filled with birds and small fish, whilst there are plenty of muscles ashore. The weather is warm, the water of the bay smooth, and

immense flocks of birds repose on its surface, or are constantly diving for the fish, whilst humpbacked whales, with their calves, come in from the sea in the morning, and go out in the afternoon. The boat steerer darted at and missed one, and the captain, telling him that he would never miss but one more whale for him, hove up anchor, and started for the Sandwich Islands.

On the passage we took one sperm whale of fifty barrels, and about thirty barrels black fish oil, and, then crossing the line, took a stiff trade to Hilo, Owyhee. The celebrated volcano Mauna Loa was then in full blast, and the sight from the shipping in the harbor, twenty miles distant, was, in the night time, grand and imposing. The whole heavens, above and around, were covered with red and black clouds, and the river of lava could be distinctly seen running down the mountains some fifteen or twenty miles, through forests, filling up deep valleys, and making its way to the sea. The missionary there, Rev. Mr. Coan, wrote a graphic description of this volcano, which was printed in the *Friend*. When we got to Hilo, tired and sea-sick as I was, seven and a half months out, it seemed the most beautiful place I ever was in. We pulled the boats for water up a small river, its low, level sides covered with flower bushes, and the pretty *wahines*, with black eyes, and hair hanging down their necks, swimming and sporting in the water, catching hold of the water-casks, and jumping off again, whilst the cocoa nut trees thickly growing around, with huts interspersed among them, made it appear to me, wearied and dispirited as I was, as the most enchanting and delightful spot on earth. The land and mountains fitted to and fro in my disordered mind for weeks, and so utterly prostrate was I in body and mind, that it seemed impossible to proceed north immediately, unless as an invalid, or be of any service until after rest and recruiting ashore.

I consequently stopped here five or six weeks, and was so far restored, that I shipped on the *Eric* of Fairhaven, Captain Blackmore, and proceeded north. The passage to the Ochotsk, on the Siberian coast, is some 3,500 miles from Honolulu, and it is generally rough and stormy in the spring and fall. We experienced a severe snow storm off the Kurile Islands before entering the Ochotsk, in which I froze my fingers in the night time, whilst furling sail. We got into the Ochotsk the 6th of May, and took our first whale the 19th, and by the 1st of September had taken 2,500 barrels. The weather was generally very cold and bad, with much snow and fog in the forepart of the season, and cold rain in the latter. We took nineteen large whales and 800 barrels in a single week, and were at times so drove, both day and night, that we got but four or five hours sleep out of twenty-four, lowering down for whales, cutting in, trying out, stowing down, and chasing whales with the ship. We had two glasses of liquor apiece for each whale. I drank but for the first two whales, and it not agreeing with me, discontinued it. We had seventeen Portuguese foremast hands, besides two Portuguese officers, and three boatsteerers, and they made good whalers. The ships of both the Arctic and Ochotsk, over 200 in number, averaged the season 1,500 barrels each, though

the average for the seven years has been about 900 barrels each. The Arctic has run out of whales two or three times, it being a small place, only clear of ice from the icy barrier in 73° to Bhering Straits 69° lat., and ships would leave off going there for two or three years, and then quite a number of whales be taken ; but not so the Ochotsk, some 700 miles long, and nearly circular, or about 2,000 miles around, with numerous bays, and gulfs, and islands, where ships find it difficult and dangerous oftentimes to approach near the shore, and where the whales flee from pursuit. I have seen them within a few feet of the shore, spouting among the breakers, where it is difficult to distinguish the spout from the white water around.

The Ochotsk and Japan seas have supplied ships with an immense quantity of oil, which seemed almost exhaustless—the Ochotsk principally bowhead oil, and the Japan with right whale. There is but little difference in these whales, or the price of the oil, the bowhead being a shorter, thicker, clumsier whale, delighting in the ice, and principally found north of 55°, and the right whale from 40° north up to 60°. Bowhead oil has a reddish cast, and is two or three cents less a gallon, but this is more than made up by the greater quantity of bone; a 100-barrel bowhead usually having 1,500 lbs. of bone, whilst the right whale has but 1,000 or 1,200 lbs. This whalebone is very valuable, having been as high as high as 1d. 25c. per lb., and when pounded becomes hair, out of which is made the glazed sofas, lounges, settees, and chairs, so fashionable and durable, and in such general use in this country. This bone comes in thin slabs, the largest from twelve to eighteen feet long, and about a foot wide at the butt, where it fastens to the white gum on the upper jaw bone ; the slabs within one-eighth of an inch of each other and the inside edge, the whole length having hair like a horse's mane, four or five inches long, hanging down, which catches the small insects called brit, on which it feeds. This brit is sometimes of a grayish color like ashes in the water, and at others of a reddish cast, and is sometimes found hundreds of miles in extent. A whale feeding, or scooping, as it is called, with his mouth wide open, and swimming at ordinary speed, has as much water pass through his mouth, it is estimated, as flows down the Hudson river (!) To give you a little idea of the upper part of the head where the whalebone sets in, I give a rude and imperfect sketch. Underneath is the tongue, throat, and under jaw, the tongue usually making from five to ten barrels of oil. We picked up a dead bowhead, three years ago, which had 3,300lbs. of bone, worth 4,000 dollars, besides 100 barrels of oil. The largest slabs weighed 14 lbs., and one was sent from Honolulu to the Emperor of Russia.

The head of the sperm whale is entirely different, the upper part being a solid square mass in front, eight or ten feet high, extending back fifteen or twenty feet, the front being composed of what is called "white horse," a hard substance, without oil, and apparently without sensation, which can hardly be cut with a sharp spade, and with which they sometimes stove ships. The *Ann Alexander*, a sperm whaleship, was stove and sunk three days' sail from Callao (Peru) in 1851. In

sperm whaling, no prudent captain will, if possible, allow his ship to get nearer than a mile or three-fourths of a mile of the whale. The whale was struck, and getting sight of the ship, made for it, striking her under the bows, and the captain and a few men aboard had barely time to lower a boat and get into it, before the ship went down. So quick was this done, that some of the boats, so eager in chasing whales, had not noticed its disappearance. Fortunately they were not far from the track of ships going into Callao, and were picked up the second day. The same whale was taken two or three years after by Captain Jernegan, with the irons still in him, and splinters from the ships timbers in his head. He was poor and sickly, making but eighty barrels. The miserable fate of the *Essex*, many years ago, is generally known. A U.S. sloop-of-war was, a few years ago, in Honolulu, and the commander, in conversing about sperm whales, expressed his conviction pretty strongly, that no whale could injure his ship. On the passage to Callao, his vessel was struck by one in the night time, which set her leaking.

Sperm whales are generally found in warm countries; and around the islands of the Pacific, Indian, and Atlantic Ocean, and off the coast of Japan, Peru, New Zealand, and around Otaheite, and the islands of the Pacific, much sperm was formerly taken. They are occasionally found up near Bhering Straits, and above Oregon, and make passages around Cape Horn, one being taken in the Pacific which had been struck seven years before in the Atlantic, with the iron and ship's name still in him. I was acquainted with a young chap, whose ship's boats had struck one off Cape Horn, got capsized, and he was two hours in the water on an oar, the other boats chasing and capturing the whale. I was capsized by a small one, a little south of the line, near the Friendly Islands. The boatsteerer had fastened to the calf, which had come up at the head of the boat, in a roughish sea, unknown to the officer or crew, and with no one to sing out stern. We lay over the calf a few seconds, when the whale came and stove a hole as large as a bucket under my seat at the bow oar. Most of the men and boatsteerer swam to another boat; one, an Italian, getting tangled in the line, was taken down a fathom or so, and shoved the line off. Seeing that the boat must fill, I took hold of the gunnel or side, and let myself down in the water, when the whale came a second time, and hoisting it on her head, completely out of the water, capsized us, catching a young man who could not swim, by the name of Murray, from Troy, N.Y., underneath. By great exertions I succeeded in shoving clear of the boat. No one was hurt. The boat was badly smashed, and we lost 300 fathoms of line, getting no whales, because there was but one boat near to pick us up.

The only other time I was ever overboard was in Margarita Bay, Lower California, where ships go between seasons or in the winter time (from December to March), when they cannot go North. These are a small, iron-grey, spotted whale, with spots as large as a man's hand, making but forty or fifty barrels, and called by various names, such as California gray, devil-fish, muscle-diggers, scamper-downs, &c.

They come down from the Arctic in December, along the coast, into the bay and the gulf, to calve in shoal water, and go back again the 1st of March. We chase only cows with small calves on their backs, which have to breathe so often, that the whale cannot stay under long, or get along very fast. We had chased one three hours, the sweat falling off of us, and had got him along the shore in two or three fathoms' water, when the boat-steerer struck, and our boat going swift, and we tired out, were unable to stern off clear. They are probably the worst whale to fight in the world, and she came at the boat,—the officer, boat-steerer, and men, except an old man-of-war's-man named Brown and myself, swimming off to another boat. The whale came several times, breaking oars and paddles with her head and fins, but could not injure the boat much, as the water was not deep enough for her to go down and use her flukes, in which case she would have smashed us to pieces.

Seeing the men had left the boat, I jumped out also, and swam off two or three rods; but in the excitement had taken the wrong direction for the other boats, and found, by the boiling water, that the whale was coming up under me. The officers and men from the boats were singing out for me to take care of myself. One of them (a second-mate named Welles) was next season killed by a whale in the same bay. He had been lancing a whale, lost his balance, and fell out of the boat; the whale saw him, and the water being deep enough to use her flukes, swept him down, and he was never seen after. The cow came up until my feet rested on the calf, and then settled again to get a better chance, as the calf was in the way of her striking, and I swam back for the old boat. I was so exhausted I could not get in, and old Brown helped me up. As I was crawling over the gunwale, the whale, which had followed me, came again at the boat, knocking him out and drawing blood on his nose, grazing him with her fins. I helped him in, and the whale came again ten or twelve times, when, the calf wandering off, the whale followed. She had taken all the line except one coil at the bottom of the tub, and, seeing it straighten, I took two turns around the loggerhead and let old Brown hold on, whilst with a broken piece of an oar I prepared to hold the boat if the whale stopped. Off we went, sailing across the bay, without officer, boat-steerer, or men, hatless and oarless, the other boats in chase. The calf soon stopped, and I held the boat until the others overtook us, took the line in their boat, and captured the whale. Another of our boats was stove before striking the whale, knocking the officer (who was part Indian from Connecticut) several feet in the air, he singing out to his men to stern as he was going up and coming down; a veritable shuttlecock.

Right whales fight with their flukes, sometimes standing on their heads, with their flukes ten or fifteen feet out of water, and sweeping right and left like a whip-lash; but sperm whales use their head most, striking with their flukes only square up and down. The sperm whale has no whalebone in its head, but from twenty to forty barrels of oil are dipped out of the case. Sperm whales are not so large as



right whales or bow-heads, the largest sperm making but 130 barrels, whilst right whales sometimes make 250 barrels each. Captain Parsons, of New London, took two which made 500 barrels. The male of sperm and the cow of right whales are much the largest. The value of sperm is most, being from forty-five to fifty dollars per barrel; but the bone of the right whale and the greater number taken makes northern whaling of most account.

Sperm whales have but one spout, low and bushy, with much white water; whilst right whales have two spout-holes and spout high, the water falling over each side like a rainbow. A whale's spout can be seen by the naked eye from the mast-head three or four miles, and a mile and a half from off deck. Their spout-holes are closed by a black skin valve, as large as elephant's ears, which are forced up by the water and fall back again, closing the orifice. Their ears are no larger than a pipe-stem, passing a foot or so through the blubber and enlarging like a horn as it approaches the brain. Their sense of hearing is acute, but that of seeing is dull. The outside of the whale is a smooth, glossy black or brownish skin, soft, and about half an inch thick, fastened on to the blubber; which is from one to two feet thick, coarse-grained, and surrounding the entire body of the whale.

When the whale is brought alongside he is fastened by a chain to his flukes and rope to his head, and his head, bone, tongue, and throat are first cut off and hove in. The manner of doing this is by fastening it to a large iron hook, connected with a heavy rope pennant two or three inches through, passing up through a block on the main-yard, perpendicular over the whale, then going forward to the windlass which heaves up the anchors, &c. The hook is fastened to a part of the whale, and twelve or fifteen men heave the windlass, and hoist it over the ship's side. The officers have a little staging over the ship's side on which to stand, and with long-handled spades cut off the blubber in blanket pieces some four or five feet wide, the men are heaving at the same time and rolling over the whale as they cut. When it gets up to the main-yard, a hole is cut in the blubber parallel with the deck, and another hook fastened in to hold it and hove upon, whilst the piece is cut off two or three feet above, swung in over the deck and down into the blubber-room, where it is cut up into small pieces, a foot or two long and six to eight inches wide, to go through a mincing-machine. This process is continued until the whale is all in, some six or eight blanket pieces, occupying two or three hours.

The mincing-machine is turned by a crank, like a fanning-mill, the knife cutting it into thin slices one-eighth of an inch thick, leaving the bottom slightly connected for the piece to hold together. It is then pitched into two try pots, holding three or four barrels each, set in brick on deck, with arches underneath. The first fire is built with wood; but after the first pot comes off, the scraps in the bottom are thrown out and make the fire, burning like tinder, and when the whale is tried out, there are usually several barrels of scraps left. From the light cinders or ashes a strong lye is made, which cleans the deck and

washes all the clothes, so that a whale tries itself out and cleans up everything. One hundred barrels can usually be tried out in twenty-four hours. The heaviest work is in stowing down oil, as it must all be kept at the bottom, and large casks of water and provisions have to be hoisted on deck and wood removed as each whale or fair is stowed down.

I think I have given you now a pretty good idea of this part of whaling in my rude style. When a whale is approached, no one can conjecture what will be his movement. There is as much difference in their nature as can well be imagined. Some will lie almost motionless, apparently without pain, until killed; others will sink down with the greatest rapidity, making the line smoke, and taking out 400 fathoms in a few seconds; others, again, will start off like the cars, the boat cutting through the water with furrows on each side high as the gunnel, and others, again, stand on their head and fight with their flukes, or come at boats with their heads. Probably no person ever approached a large whale, in a light fragile boat, and listened to the monstrous deep roar of his breath, as he lay spouting, but that felt his own weakness and comparative littleness, and, as Cromwell used to say, "I do not believe that any person ever went on a whale without a momentary sensation of this sort." Many lives are lost every year, and generally several ships. The *Golconda* (I think) lowered down two boats in a fog. They chased different whales and got separated; one boat fastened and got capsized; the other heard their cries, but supposed, as usual, that it was cheering from a fast boat, and kept on after their own whale. The men crawled up on the bottom of the capsized boat, and remained in their wet clothes until three of them got chilled through, became blind, and fell off; and when found but two were left, and they were frozen so that they had to be hoisted on dock. All this happened within half a mile of the ship. The *Cowper* lost three men, the *Northern Light* two boats' crews, and Captain Fisher, of the —, and boats' crews were lost, besides numerous others that came under my notice.

Four or five ships were usually lost each year, running ashore in the fog, or stove in the ice, besides the great disasters among whale-ships in the Arctic in 1850, the season before I went out. Besides this, many die of sickness, or impair their constitution by hardship, exposure, climate, and dangers for life. I have been out all night in a boat in the ice, the ship out of sight, with a dead whale which we had captured floating amongst the ice, with a little flag waif fastened to a stick stuck in him, by which he could be recognised.

[We find the foregoing in the *Commercial Advertiser* of the Pacific, from whence we transfer it for our readers as a specimen of life in an American whaler.—ED.]

THE FEEJEE ISLANDERS,—*Their Religion, Laws, Manners, and Customs.*

The *Athenæum* quotes the following from Mr. Bertholdt Seeman, Ph. D. on those interesting islands called Feejee.

*Lado, Port Kinnaird, Feejee, November 13th, 1860.*

Once upon a time a god and a goddess, who rejoiced in the name of Lado, were directed to block up the Moturiki Passage leading into this fine port, in order to stop the rolling surf from disturbing the nightly repose of the great Feejeean deities. They resolutely set about it. But having, in common with other spiritual beings, a decided objection to daylight, they threw the enormous rocks collected for that purpose in the middle of Port Kinnaird, as soon as they began to "smell the morn;" or, according to another version, their noble selves became changed into rocks, as were the villagers in the Bohemian legend of Hans Heiling. The latter version seems the more rational, for once transformed into stone they were unable to stir again, whilst, if they had merely thrown down their burden, they might have been made to resume their labours, like Sisyphus of old. However, be that as it may, the fact is, that I am now on the rock identified with the name of the goddess, to pen a few lines to you; and I trust that, whatever intentions the Feejeean Olympus may formerly have entertained respecting the two Lados in general, and the one I am writing on in particular, they will reconsider the question. Since the British colours wave on the summit of this islet, the rocky slopes have been transformed into terraces of flowers, and a neat European built cottage, surrounded by a lawn of couch-grass, contains the archives of the British consulate. Judging from the crowds of boats and canoes daily arriving,—for every one here has either the one or the other,—the sudden disappearance of this establishment would be felt as a serious inconvenience. The British Consul is now the sole authority that keeps order in Feejee, the natives having voluntarily made over to him the entire jurisdiction of the group, and found it preferable to abide by his judgment rather than break their own heads and those of the white settlers by an appeal to the club. It was easy for them to arrive at this conclusion. Meanwhile, the person who thus finds himself called upon to adjust the differences of a native population about twice that of New Zealand, and a sprinkling of white immigrants, amounting to about five hundred souls, some of whom hold queer ideas of political justice, has no idle time of it; and if Mr. Pritchard had not acquired a thorough mastery over the Polynesian mind by means of his intimate acquaintance with all their customs, usages and traditions of which he skilfully avails himself, there would be again wars and dissensions, to the serious detriment of the native population. I have repeatedly listened to the proceedings in court, and been struck with the logical acuteness of the natives. Their mind is indeed of a much superior order to that of

most savages; and their discussions are as much above those of the Maoris, now teeming in the New Zealand newspapers, as the talk of men is to the prattle of children.

The Feejeeans are not so prepossessing in appearance as those lazy and handsome fellows, the Tongamen, who flock over here in great shoals; but whilst the Tonguese lose, the Feejeeans gain by a closer acquaintance. There is a manliness about them that is extremely winning. Their language, so far as euphony goes, yields to none I have heard in any quarter of the globe, and to my ear it sounds as pleasing as Spanish or Italian. They are certainly not an idle people, and though not working like our own labourers, from six to six, they are great cultivators of the soil, and skilful fishermen, and able builders and managers of canoes. Far from living under an absolute despotism, as is erroneously supposed, all the different States of which Feejee is composed, have institutions hallowed by age and tradition, fundamentally almost identical with those cherished by the most advanced nations. The real power of the State resides in the landholders or gentry, who, at the death of a ruler, proceed to elect a new one in his stead from amongst the members of the royal family. Generally the son, but not infrequently the brother, or even a more distant relation of the deceased is elevated to the chieftainship, and loyally supported in his dignity as long as he carries out the policy of those who have set him up. If this "House of Commons," as by a stretch of language it may be called, finds its wishes and aims disregarded, the members avail themselves of the privilege of refusing supplies, which, in the total absence of money, consist in yams, taro, pigs, fowls, native cloth, canoes, (the naval estimates!) and all the other requirements of a great Feejeean establishment. The intractable chief who has attempted to play the despot is thus generally brought to a proper sense of his condition. Of course, chiefs who, by strong family connexions, can afford to set the "Commons" at defiance, will occasionally do so. Then new expedients have to be resorted to, and the trial of strength which follows, provides one of the elements of political activity. Europeans might fancy that a barbarous people would readily adopt the more simple process of getting rid of an intractable chief by knocking him on the head; and certainly that would be the solution adopted if usage had not provided a law for his protection, according to which he cannot be killed by any one inferior to him in birth. We have here the English law that a Peer cannot be tried except by his own peers, in its rudest embryonic form. It would be "*taboo*" for any commoner or serf to lay violent hands on a chief; and however obnoxious he might have been to the community, the taboo-breaker would not go unpunished. Outsiders might suppose that amongst a people destitute of all written law much confusion existed in regard to the application of this peculiar code of polity and customs. Never would a greater mistake be committed. All their usages are as firmly established, and as strictly adhered to, both in letter and spirit, as if they had been engraven on tablets of stone. The early white settlers soon found this out, and often owed the pre-

servation of their lives to a thorough knowledge of this system. Thus, an Englishman, of the name of Pickering, once fell into the hands of a hostile tribe long on the look out for his body. He soon became aware that they were making preparations for a cannibal feast, of which he was to be the principal dish, though these preparations would not have been noticed by any one less versed in their peculiar customs. He knew that before they proceeded to kill him a bowl of kava would have to be made, that a prayer would have to be said over the beverage when ready, and that the person saying the prayer could not be the one eaten. Pretending utter unconsciousness of what was going on around him, he eagerly watched the moment when the preparation of the kava was advanced to the stage at which the prayer had to be said, and suddenly, to the utter dismay of his enemies, he pronounced the well known formula. No one would now have dared to take his life, and he had the keen satisfaction of partaking of the refreshments provided for his own funeral.

Another old settler, American by birth, had also the misfortune of being an object of hatred to a tribe opposed to, and at war with, the chief under whom he lived: and as ill luck would have it, he met a strong party of his enemies making straightway for his boat. They were about to open fire upon him, when, with a coolness deserving all praise, he exclaimed:—"Don't shoot! I am a herald of peace, charged with carrying the token of surrender to your chief, and put a stop to further hostilities." The stratagem succeeded, and the self-styled herald effected his escape.

The Feejeeans early discovered the advantage of possessing diplomatic agents. The whole group consists of different States, all of which unhesitatingly admit the *social* supremacy of the people of Bau, and most of them, sometimes in a roundabout way, their political supremacy also, by paying a direct tribute to Bau, the capital, or an indirect one through other tributaries. Each of these states or principalities has its ambassador to Bau, (Mataki Bau,) who, however does not constantly reside in the capital, but only when there is any business to transact, which may occasionally last several weeks or months. On arriving at Bau, he takes up his abode at the house of the Bauan "Minister," if he may be called so, charged with the affairs of the district from which he comes as ambassador, and he is by his host introduced to the King of Feejee. When Bau has any business to transact abroad, the ambassador selected is invariably the minister of the affairs of the district to which he is sent, and his place at the capital is temporarily filled by a relative. The office of these diplomatic agents is hereditary in certain families, and they are appointed by the ruling chiefs. Title and office are quite as much valued as they are in Europe by ourselves.

The Feejeean religion has some sound fundamental ideas, though much incumbered by a fanciful superstructure. The belief in a supreme God, termed Degei, and to whom is attributed the creation and government of the world, an existence hereafter, and future reward and punishment, are amongst the leading features. No images of

Degei are made, nor are there any idols. The temples, presenting a pyramidal form, are free from any decoration. The nether world, to which the souls journey after death, is under the water, and known as Naicobocobo. The manly nature of the Feejeean is nowhere better displayed than in the conception of his future abode. He does not expect to exist there in indolent ease, reclining on soft couches, and sipping nectar handed by lovely houries, but hopes to resume all the out door exercises to which he has been habituated during his stay on earth. Food will be plentiful, it is true, but there will be lots of canoes, plenty of sailing, fishing, and sporting, plenty of action. The point of departure to this abode of bliss is supposed to be the extreme western or lee side of Vanua Levu; and it is not a little singular that the Feejeeans agree with the Tahitians, Samoans, Tonguese, and Maoris in fixing this starting place invariably on that side of their respective countries. The ancient Egyptians, it will be remembered, coincided with them in supposing their souls to depart westwards. But I must not accumulate coincidences. Those theory spinners, who are always on the look out for traces of the lost tribes and similar losses that give them uneasiness, might propound an hypothesis purporting to account for the westward movement common to the souls of the ancient Egyptians and the modern Polynesians, and, taking a hint from the incidental observation, that Feejeean temples have somewhat the shape of pyramids, and that "*Lali*" in Egyptian means "to rejoice," and that "*Lali*" in Feejeean is the name of a drum beaten when the people do rejoice, advance conclusions of a startling description.

What Humboldt pointed out as one of the characteristics of all religions is not wanting in that of Feejee. There is a tradition of a flood. Degei, the supreme god, had a monstrous bird, whose office it was to rouse him in the morning by cooing. Two youths, ignorant of the nature of the bird, caused its death by aiming arrows at it. Too late, they discovered the crime of which they had become guilty, and, to conceal it, they buried the corpse. Degei, finding his faithful bird absent from his post, anxiously despatched messengers all over the land, who ultimately traced the fate of the missing bird. The two youths, dreading the punishment in store for them, fled to the mountains, and induced a tribe of carpenters to build a strong fence for their protection. They little knew the powers they had attempted to baulk. Degei, unable to overcome the obstacle presented by the fence, caused a great flood to rise, which ultimately reached the place of retreat, and compelled the two youths and their abettors to save their lives by embarking in large bowls that happened to be at hand. When the waters subsided, they alighted at Suva and Navua in Viti Levu, and it is from them that the present numerous race of carpenters and canoe-builders claims to be descended. Those who make a philosophical digest of such myths as these, will at once perceive the points of resemblance it exhibits with the Mosaic narrative:—the anger of the Supreme God has been roused by certain transgressions, as a punishment for which a flood rises, and it is only by embarking—

not in ordinary vessels—that certain people save their lives, afterwards to become the progenitors of a powerful race.

As the Feejeeans believe in the creation, so they believe in the ultimate destruction, of the world. This appears incidentally from their tradition of the *Daiga*,—a species of *Amorphophallus*, the foliage of which consists of a single leaf, supported on a stalk two to four feet long, and spreading out somewhat like an umbrella. In the cosmogony of the Samoans, the office of having, by means of its singular foliage, pushed up the heavens when they emerged from chaos, is assigned to this plant, and the Feejeeans recommend it as a safe place of refuge when the end of the world approaches, the *Daiga* being a "*Vasu*" to heaven (*Vasu ki lagi*). A *Vasu*, it should be added in explanation, is, according to a widely-spread Polynesian custom, a nephew who holds the movable property of his mother's brothers at his absolute disposal, having the power to do whatever he pleases with it; some *Vasus* even go so far as to sell the lands belonging to their uncles, but that is not generally the case. A *Vasu* to heaven—a personage who can do in heaven whatever he chooses—is the climax of the whole system, cleverly employed in the charming Feejeean story of the Princess *Vilivilitabua*.

No one can be long in this region of "*taboo*" and "*tutoo*" without perceiving what rich stores of human fancy and ideas, shortly to be lost or mutilated for ever, are here offered. Attention is constantly directed to them, and you have as little chance of remaining ignorant of the great deeds of *Degei*, *Rokoua* and the *Vasu ki lagi*, as you have in the East of the stories of successful magicians, spell-bound princesses and mighty treasures concealed in obscure caverns. In the *Namosi* district of *Viti Levu* I could hardly turn without hearing of the doings of the *Veli*. My curiosity was at last so much excited that I determined, come what might, to write their natural history. By inquiry and repeated cross-examination, I found the *Veli* to be a class of spirits in figure approaching the German *gnome*, in habits of life the fairy of England. They are believed to have been in the country from time immemorial, and to live in hollow *Kowrie-pines* and *Kabea* trees. They are of diminutive size, and rather unproportionally large about the upper part of their body. Their hair is thick, and prolonged behind into a pig's tail. Some have wings, others have not. Their complexion rather resembles that of the white race than that of the Feejeeans. They have great and petty chiefs; are polygamists, and bear names like the Feejeeans. They also resemble the latter in wearing native cloth or *tapa*, which, however, is much finer and whiter than the ordinary sort. They are friendly disposed, and possess no other bad quality than that of stealing iron tools from the natives. They sing sweetly, and occasionally gratify the Feejeeans by chanting a song. They feed on the fruit of the *tankua* and the *boia*, which they emphatically term their cocoa-nut and their plantain, and men who have been imprudent enough to cut down any of these plants have received a sound beating from the enraged *Veli*. They drink *kava* made not of the cultivated *Piper methysticum*, but

of a pepper growing wild in the woods, and vernacularly termed "*Yugoyagona*." The Feejeeans have no long stories about them, as they have of their gods. All the accounts of the Veli relate to isolated facts,—to their abode, their having been seen, heard to sing, caught in a theft, or found to beat the destroyers of their peculiar trees; but they are so numerous that it is no wonder the Feejeeans should consider the evidence sufficient to establish their real existence.

But I must conclude, for fear that my communication may prove too lengthy for insertion, or that I may be served as Dr. Brower, the American Vice-Consul here, served a man residing on his estate at Wakaya, who nightly would persist in attracting all the boys of the neighbourhood by telling stories, and inflaming their youthful imaginations to such an extent, that not one of them would stir abroad for fear of meeting some of the mighty personages to whom he had been introduced. Dr. Brower, not liking the whole troop to sleep on his premises, hit upon the expedient of requesting the story-teller to accompany every one of those he had frightened to his respective home, and as the youthful listeners lived in every direction of the compass, it takes him a good time to comply with the request; still, it does not prevent him from again and again indulging in his old weakness of telling fairy and ghost stories.

---

We find the following, on the annexation of these islands, in an Australian paper:—

The commercial value of the Feejee Islands is, no doubt, far inferior to their political importance, for it would secure us a good position in the mighty archipelago of the Pacific, where we have hitherto not a single station, while the Americans have several, and the French are making rapid strides in that direction, and have already obtained possession of New Caledonia, with the Loyalty Islands, Otaheite, the Marquesas, the Gambier Group, and Clipperton Island. There can be no doubt that there would be great advantages gained by the possession of the Feejees, especially when the Panama and Australian steam communication shall have become a reality, as they will then become a convenient coal station; while their sheltered harbours and delicious fruits and excellent provisions will not fail to make them in future a favourite resort of navigators in those distant regions.

It is true that the present productions of these islands are but of limited extent, but they are capable of great development, which would assuredly follow if placed under the security of the British flag. The only produce fitted for exportation is now confined to sandal-wood, cocoa-nut oil, and *beche de mer*; but from Mr. Pritchard's account, both the soil and the climate are admirably adapted for the cultivation of the cotton plant, and there is no doubt that not only the sugar cane, but coffee, tobacco, and arrowroot, may be cultivated with success. But this development can only be expected to



take place under the security of impartial administration of justice and a strong and recognised government.

The Wesleyan missionaries have been singularly successful in their endeavours to pave the way for civilisation by their example and precepts, and that, too, at a considerable pecuniary sacrifice, for we are enabled to state in proof of their disinterested conduct in the cause of humanity and Christianity, that their missions in the Feejee Islands have cost them no less than £80,000.

Hitherto the principal trade with this group has been chiefly confined to the enterprising merchants of New South Wales, who export ironware, clothes, gunpowder, furniture, and other articles, receiving in return the native produce.

---

#### LUNAR EQUINOCTIALS,—or, *the Past and Future.*

Sir,—My important duties give me little leisure for correspondence even upon the serious subject which I have broached in your pages. I must be content with having stated convictions which I am glad to see becoming contagious. There has been no mysterious reserve in my communications through the *Nautical*,—while facts have been submitted which are totally new to science; thus a new field for research has been opened for all who, like myself, feel an interest in following up or tracing effects to causes.

I should consider further arguments in favour of my weather theory as almost uncomplimentary to your intelligent nautical readers, but need not on that account withhold information. As mentioned in my last, I had intended to state some matters in which the uses of the barometer were to be considered. To expose some fallacies respecting that instrument, (valuable indeed as it is when properly used,) but much prefer waiting the completion of some experiments which I am making in connection with the subject; in the meanwhile, however, recording my strongest protest against the false position in which meteorological science has been placed by assertions lately made in the columns of a leading journal, (and which have been allowed to remain uncontradicted) viz.:—that weather changes can be predicted by means of instruments with as much certainty as eclipses, &c., are by the astronomer. No reference is here intended to be made of those useful occasional telegrams issued by the Board of Trade to the coast.

In fulfilment of a promise, I will very shortly, if allowed, state, in the *Nautical*, the real position of "weather warnings" in a more complete form than I could do just at present; and will, as I have promised, separate truth from error, suggesting, as before hinted, some valuable improvements in the mode of using the barometer along the coast.

In continuation of the subject of weather warnings as deduced solely

from my "weather system," another instance of its importance (selected from many,) will, doubtless, be acceptable to your readers and the public. And to prevent all speculation as to the quality of the evidence adduced, I will give names, and will read the statement to the officer referred to, in order to prevent inaccuracy.

On the 8th instant, the warrant officer in charge of H.M. gunboat *Lively* being alongside this ship on duty, acquainted me, in the presence of several persons, with the following:—A Mr. Millbank, (whom I never saw) a Sheerness pilot, had asked him to take an early opportunity of requesting me to give him an extended list of periods of suspected changes of weather for his use at sea. He said he had copied out early in the year such a list from the *Sheerness Guardian*, (in which they were published three months since in advance); and Mr. Millbank having been, as he said, at sea during the whole of March, had found very great benefit and convenience from my fore-warnings against periods of suspected changes, and they had been of great service to him as a pilot. The officer, (well known for his high character,) further acquainted me that the pilot offered the use of his name, (if of public utility, and I think it is,) as he declared he had carefully, and, indeed, anxiously watched every such period, and that he had a strong conviction of the value of my discovery, even from his own experience.

It is well known to those to whom I have personally explained my theory, that so long as eighteen months since I had noticed a circumstance, which then was to me inexplicable, viz. :—a peculiarity which seemed to regularly attend changes of weather in the months of May and June, as traced through several years of registration, inasmuch as the changes at those periods were comparatively very feeble.

Now next to the test of calling attention to actually occurring weather in connection with previous warnings, it is very important to find that the subject of my investigation has been also carefully examined theoretically by others, and more especially when results have been traced by them to the proper causes. It helps me to firmer ground for operation. I, therefore, avail myself of the following:—

About a century since M. de Mairan published a work on the Aurora, and among much interesting information, he asserted, that the months of May, June, and July, were remarkable as being periods of quiet as regards Aurora. He states that between A.D. 583 and 1751, of all recorded appearances of the Aurora their occurrences took place, averaging in each month as follows, viz. :—

January . . . . .	113	May . . . . .	45	September . . . . .	172
February . . . . .	141	June . . . . .	22	October . . . . .	212
March . . . . .	202	July . . . . .	22	November . . . . .	153
April . . . . .	124	August . . . . .	84	December . . . . .	151

And, again, about thirty years since M. de la Rive, in the *Bibliothèque Universelle de Genève*, demonstrated that atmospheric phenomena, such as hail, the Aurora, &c., were due to one and the same cause. His subsequent observations fully confirmed his opinions. He also

noticed that the Auroræ Boreales were less intense in May, June, and July, than at any other times ; but he added that the months of March, September, and October were periods of excessive auroral activity, and distinctly records his opinion that the greater disturbances were caused by the sun's crossing the equator, being, as we call them, the times of "equinox." Professor Arago, in Paris, and various observers in our own country, have also proved the identity of electricity with the Aurora. Therefore, may we not say theoretically, that inasmuch as the passage of the sun affects the electricity of our atmosphere at certain well defined periods, so may the passage of the moon likewise affect (perhaps in a different degree) the electricity of the atmosphere at well defined periods, since each body acts with an attractive, or, say disturbing power upon the mass of our earth, as noticed in the tides. Well, sir, this is what I mean by asserting that lunar influences affect weather. But it follows that because this is stated in opposition to a popular philosophical dogma, it requires the more decisive experimental proofs, before it is likely to be generally received, such, indeed, as I offer monthly in your magazine. The "attractive power" referred to, (whether as sun or moon) manifestly by its change of position at the Equinoxes, disturbs the electric condition of both earth and atmosphere as together forming the great equilibrating recipients of that subtle element ; and such disturbances are made perceptible to our senses, and instruments at regularly recurring periods, by consequent evaporations and condensations which widely and easily affect our atmosphere, sensible as it is to resulting sudden displacements.

The "vapour cloud" seems the very *ultima Thule* of the ordinary meteorologist ; but as well may we attribute the tempest to the agency of the foaming surge, or describe the ships as towed by the hawser, and not by the tug, as attribute weather changes to the agency of vapour.

#### *The Past.*

In your number for March (at p. 164,) I gave warnings as to the weather at the following periods of suspected change, viz. :—

March 4th—11th—18th or 19th—25th—31st.

April 7th—15th—21st—27th or 28th.

In the same number I explained actual fulfilments of such predictions up to the 11th of March, and now turn to my register in continuation of such fulfilment.

March 18th or 19th—Very strong N.W. gale. .

25th.—Wind changed to E.N.E., and returned to South next day, the scud flying very rapidly. The day is remarkable as one of particular outdoor gloom and *discomfort*, with fall of temperature.

31st.—(Easter Sunday). At ten a.m. rain set in from S.W. in heavy showers. *Rapid scud*, although at p.m. a *dead calm*.

April 7th.—On the 6th the wind was easterly and variable ; but on the 7th the easterly winds, with fall of temperature, set in, which have prevailed up to the date of writing (18th).

15th.—An easterly gale, and very cold. It would be tedious to  
NO. 5.—VOL. XXX.

state all the proofs of change at each period ; but the above have also been times of decidedly marked disturbances, as predicted by me, or interruptions of the generally prevailing weather. It is remarkable that on the 7th of April (Sunday) the weather at Balta Sound, Shetland, was "cold and cloudy until about ten p.m., when every cloud cleared away, and the wind changed from previous easterly to S.W., and continued till the 9th (the date of the latest report therefrom, from one of my sons)."

*The Future.*

I have issued some printed papers bearing the following weather warnings, and, perhaps, you will favor me by allowing in this place a recapitulation of advices respecting the observance of weather, according to my theory ; what follows being a copy of one of such papers.

List of days on which the weather may reasonably be suspected as liable to change, most probably towards high winds or lower temperature, being especially periods of atmospheric disturbance.

April 7th—15th—21st—27th or 28th.

May 4th—12th—19th—25th.

June 1st— 8th—15th—21st—28th.

N.B.—If the day marked prove calm and still, distrust the day after, and especially the second day after.

The changes vary in intensity, but even at quiet periods they may be plainly traced in the scud flying with a velocity totally at variance with the state of the air at the earth's surface.

I shall be happy to be allowed to continue my lists of fulfilments in the *Nautical*.

I have, &c.,

S. M. SAXBY, R.N.

*To the Editor of the Nautical Magazine.*

P.S.—I find it difficult to register the temperature accurately in this ship, because the height of the ship's side (upwards of thirty feet) warms the air when the side is presented to the sun, and the inclination of the side in its direction as compared with that of the sun, so frequently changes, from the variations in the set of the tide in the Medway.

*Sheerness, 22nd April, 1861.*

Permit me to add to my letter this important fulfilment.

April 21st.—Total change of wind and weather. The easterly winds which had continued uninterruptedly since the previous lunar equinox of 7th instant, changed this morning, and westerly winds with rain replaced them.

S. M. S.

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XVIII.—  
*Time Signal at Edinburgh—Observatory on Ararat—Fresh  
 Water Springs in Salt—Hoyti and the Spaniards—Charts—  
 Wreck of the "Vancouver"—Life-Boat Institution—General  
 View of the Navy—Iron Ships and Old Docks—American  
 Arctic Expedition.*

Transition, Sir, is the order of the day—transition in the arts and sciences. We have been all along in the lower grovelling condition, and are now in the chrysalis state, to come out perfect. Our ships are to be invulnerable, flying destructives and moveable castles; nay, more than that, they are to become itinerant cities afloat. Civil engineering has done much, but other engineering is to do far more, and we intend to leave the old world behind us.

For the next, eh? replied Arion to these remarks of his friend Rodmond.

No, Sir, replied the latter. Don't you know that mankind delights in progress. He imbibes the principle from the stars. True, he has been slumbering a long time; but these, Sir, are no times for sleeping,—the whole world is running a race.

Come, come, leave your high ropes, interrupted Arion, and tell us something worth knowing.

High ropes, indeed, well—look at them in Edinburgh. They have got a high rope there which is to fire a cannon at noon daily! I'll tell you all about it, if you have not seen the account, here it is:—

“On April 22nd the important operation was commenced of suspending the wire between Edinburgh Castle and the Calton Hill, which is to be the means of discharging at one o'clock, daily, a signal gun from the castle, the time being given by the electric clock in the Royal Observatory, Calton Hill. The distance in mid air from the turret at the Argyll Battery to Nelson's Monument, Calton Hill, where a time-ball signal has been in operation for several years, is 4,200 feet, above three-quarters of a mile, and over that distance the wire has been suspended without a rest.

“It was at one time intended that the wire should be the medium of an electric current passing along simultaneously with the dropping of the time-ball, and discharging the gun in the castle; but the plan has been changed, and instead, a clock has been fitted up beside the gun, the movement of which is, by means of the wire, to be controlled by the electric clock in the observatory. The timepiece thus regulated drops at the proper moment a small weight, which touches a lever, the action of which liberates a heavy weight, and the fall of the latter releases the lock, and the fulminating powder in the fuse ignites by this action and discharges the gun. The action of the whole mechanism is instantaneous, and all that the gunner has to do previously is to place the heavy weight so as to be caught by the small

lever moved by the action of the clock, and to insert the fuse in the touch-hole of the gun.

"The suspending of the wire, at an elevation of from 150 to 200 feet, was one of considerable difficulty. It was commenced at four o'clock in the morning by paying out from the castle, and in the course of its progress to the Calton Hill, which was not reached till about one o'clock, four rests were employed—namely, at the head of the Mound, on the roof of the railway-station, on the new buildings, North Bridge, and on the prison buildings. The wire was carried forward from station to station by means of a rope drawn by seamen and others, and at length the end was fastened in safety at Nelson's Monument, where it was brought into connection with the wire from the observatory to the time-ball signal.

"After the cable had been thus swung in five different portions, the operation of tightening it and raising it in mid air was commenced. Considerable difficulty was experienced in clearing the trees in Princes Street Gardens, and the various preparations throughout the line caused no little delay. After the operation had made some progress it was found necessary to postpone till next morning the final raising of the wire, which was to be accomplished by coiling it round the drum in the castle turret till it became straightened in the air.

"It was originally suggested that the gun itself should be placed on the Calton Hill, but it was feared that its discharge would affect the instruments at the observatory immediately adjacent."

And all this done by the observatory clever. That reminds me, continued Arion, that the Emperor of Russia is going to build an observatory on Mount Ararat.

Oh, aye, said Rodmond, smitten with the Edinburgh Astronomer's account of his observations on the Peak of Tenerife.

However that may be, continued Rodmond, it has been proposed by Professor Struvé for some time.\*

And to be constructed with the fragments of the ark, added the Secretary, and furnished with Noah's instruments. You know the gossips there tell you gravely that fragments of it abound, and as for tradition,—that would find quite enough to build it.

No doubt, said Rodmond,—look for fresh water in salt—

And you will find that, too, rejoined the Secretary. Between Ruad and the coast of Syria (as you will see in our *Nautical* of 1859) the Greeks used to water their ships at a submarine fountain, and another has recently turned up in the West Indies, and here is an account of it:—

"Mr. W. A. Booth, the coast pilot of the revenue cutter *Harriet*

\* These remarks on the intention of the Russian Emperor to build an observatory we believe to be quite true; but whether near Tiflis, as stated, or on Mount Ararat, we shall hereafter ascertain for the information of the Club.

*Lane*, reports the discovery of a boiling fresh water spring at sea, off the coast of Florida. He says the spring is situated twelve miles N.b.E. from St. Augustine (Florida), and eight miles off shore. It boils up with great force, and can be descried at a distance of two miles. When first seen it has the appearance of a breaker, and is generally avoided, but there is no danger in the vicinity, as there are five fathoms of water between it and the shore. Ten fathoms of water are found to the seaward, but no bottom can be reached with the deep sea lead and thirty fathoms of line at the spring itself. The water in the spring is fresh, and is by no means unpalatable. One peculiarity about this phenomenon is, that when the St. John River is high, it boils up from six to eight feet above the level of the sea, and presents rather a forbidding appearance. This spring has doubtless deceived hundreds, who have hastily put about from, as they thought, imminent danger, and reported seeing 'a rock, with water breaking over it.' The *Harriet Lane* has passed through it several times, and water has been drawn from it by a bucket thrown over the side, and when drank no unpleasant taste or smell has been found. Its position and harmless character have been long unknown, but now the supposed danger has become, as it were, 'a well of water in a barren land.'

The reading of this account was scarcely concluded when attention was called to the Chairman, who said—Since the Club has wisely determined that matters political shall not be excluded from our papers, one of the most important topics of the day is the movement by the Spaniards in San Domingo. It was very well known that the eastern portion of that island was occupied by Spaniards and the western by natives. It was also very well known that the island had undergone a variety of changes in the hands of the French, and then in those of the natives, since the end of last century. But it appears that General Saldanha, from Cuba, is said to have landed with troops there, and planted the Spanish flag on the island, declaring it to belong to the Spanish crown. The result of these proceedings has yet to be developed in the views of the different European governments on the subject, as well as those of the United States, as to the permanency of the measure. Certain it is that by priority of discovery the island belongs to Spain, but it is to be hoped that the slave trade will not predominate there as in Cuba.

There will be plenty more work for our cruisers than, observed Rodmond.

The only good that may possibly arise from it, added Albert, will be a good survey of its shores; all that we really know of them being from our own countrymen and the French, who always give us a good account of places that they hold.

I wish, continued the Chairman, that we could say the same for the Spaniards, but there is Cuba, that they have really had in actual possession from the time of Columbus, and they have not yet given us a chart of it that can be depended on.

No, nor of their own shores either, continued Albert,—the very place that Columbus sailed from on his voyage that gave them the island, the mouths of the Rivers Odiel and Tinto, are in such a condition on the charts as to be of no service whatever to the navigator, and disgraces the hydrography of these days. Their old motto,

“El socorro de España viene tarde en el día,”  
applies as well to their hydrography as to other matters.

Aye, no less than that of their neighbours, too, the Portuguese, added Rodmond.

Since they had been thus led to the subject of hydrography, Albert begged permission to make a few observations on the result of a recent wreck that had taken place on the North coast of Brazil. The ship, *Vancouver*, had been most improperly lost on a portion of that coast, in a part, too, where she had the temerity to go against all authority. Indeed, a great authority now gone by, no other than Sir Francis Beaufort, the late hydrographer to the Admiralty, had most truly said, that there are no charts of any part of the world so accurate, and no directions so perfect, as not to furnish frequent occasion for revision and amendment,—and every day proves the correctness of the remark,—indeed, the *Vancouver* even sacrifices herself in verification of the soundness of the doctrine. Doubtless a scapegoat, in the shape of an incomplete chart, is a very useful thing: or perhaps it matters little whether complete or not. A rock out of its place, or a rock not in a chart, are equally good ones. But certain ships go on hugging the shore as if because no danger appears on their chart, there is none in reality. It is taken for granted by some seamen that if a coast is said to have been surveyed, the surveyor has been everywhere on it; that his lead has explored every square cable's length of ground off that coast. What a fallacy! How long would surveys be making if such a plan were adopted. A ship that is *discreetly* managed, takes care to go as near to the surveyor's steps as she can, and that is where he shows soundings, and she avoids especially all blank spaces. There was nothing in the chart where the *Vancouver* was lost. What business then had she there? She had really no business to be exploring instead of making good her proper course.

It appears by her own account that she had Captain Wellesley's directions on board. Of what use were they on board if they were not to be followed? They distinctly tell a ship going to Maranham, like the *Vancouver*, to haul off as soon as she makes the land,—to haul off W.N.W., instead of which the *Vancouver* does exactly the contrary, and this on a low flat coast, which could not be otherwise than shoal, and where she was neither justified by common sense nor by all the directions that have been given on the subject, nor even by her chart, which, had it shown the reefs N.E. of Maranham on which she seems to have got, would not have helped her to get from them. It is admitted she was too near the coast, the directions would have told her she had no business there at all, had they been consulted. A strong current was sweeping her still nearer, and she was ultimately lost. Much is made of the want of information on the chart; but



nothing is said of that want being amply made up by the directions. So the chart becomes the scapegoat, when it is really holding out warning by its unfinished condition. They are very good scapegoats, and there always will be ships that will use them as such. It was but the other day that a ship discovered a dangerous shoal in Torres Strait by going where the surveyor had not been, leaving a large blank space of several miles square. Had this ship been lost like the *Vancouver*, of course the chart would have been the scapegoat, for the shoal was not in it,—but that ship had no more business there than the *Vancouver* and even if she had been lost could not have been so much to blame as the *Vancouver*, since her directions did not point it out, while those which the *Vancouver* had gave ample directions, which, had they been followed, she would now have been a whole ship, pursuing her intended voyage on the Brazilian coast!

The Chairman then said, as they had reached the subject of wrecks, for one subject led much to another, he would take the opportunity of stating that he was sure it would give much pleasure to every friend of the cause of humanity to find that the public generally were beginning to appreciate in a substantial manner the important and national character of the operations of the Life Boat Institution.

Miss Burdett Coutts has, with her wonted sympathy for shipwrecked seamen, intimated her intention to present the cost (about £200) of a lifeboat to Plymouth, where the National Lifeboat Institution are engaged in organizing a lifeboat station.

The Rev. H. J. Hutchesson, M.A., has also presented to the Lifeboat Institution £180 to pay the expense of the lifeboat at Dungeness, on the coast of Kent, and an additional donation of £20 in aid of its current funds.

During the past seven years the average loss of life from shipwreck on the coast and in the seas of the British Isles, has been eight hundred. The Institution was at present using every effort to place lifeboats on all dangerous points of the coast, and was, as is well known, seeking every information to ascertain where, from the occurrence of shipwrecks, lifeboats would be of service, and where the residents are prepared to help the Institution to keep its lifeboat station in a state of efficiency in future years.

He, the Chairman, was also happy to say that a benevolent gentleman, who he was told had formerly been in the royal navy, had intimated his intention to bequeath to the National Lifeboat Institution £3000, on condition that the society will, on the receipt of his legacy, place a first class lifeboat, thoroughly equipped, on some exposed point of the English coast, and another on the Scotch coast, and will undertake thereafter to keep them permanently in a state of efficiency. He also stipulated that in the event of his increasing his bequest to £4000, a third lifeboat on the same conditions shall be placed on the Irish coast. As the National Lifeboat Institution had one hundred and twelve lifeboats under its charge, it was a most important and anxious consideration to keep up permanently this numerous life-saving fleet. It could only be satisfactorily accomplished by the cou-

tinued support of the public to the Lifeboat Institution, and by the legacies and similar bequests to the above of benevolent persons.

The Chairman then observed that from wrecks he thought they might proceed to ships, and he meant the ships of the State. He considered that it would be useful to them to preserve among their papers a general view of this subject, and they could not have a better than that laid before Parliament by the first authority in the country, that of the Secretary of the Admiralty, and he should therefore propose that the following history, which he had delivered, should be placed among their records: a proposal which at once met with general assent.

It was as follows:—

At the present time and during the past year, as it is my duty to inform the committee, throughout the maritime nations of Europe there is a determination, and a very proper determination to obtain a great increase in their navies. I have heard from all quarters that the more powerful nations of Europe are paying great attention to the subject both as to materiel and personnel. If the committee wishes it, I will read the list, showing the number of fast and large ships possessed at present, as far as we know, by other nations. We have first of all the French navy. As far as we know, judging from returns which have been officially published, they have 35 line-of-battle ships afloat, and 2 building, making 37 altogether. I believe they also have 18 paddle, and 21 screw frigates, making 39 frigates afloat, and 8 building. All these are wooden ships and steamers. There are also a number of small vessels, such as corvettes, gunboats, &c., making the total of the French navy 266 vessels afloat, and 61 building.

Then there is another powerful naval power, Russia. She has 9 screw liners afloat, and none building. She has 10 screw frigates and 7 paddle frigates afloat, making 17 altogether, and 6 building. Then we have a new account to take of the Spanish navy, which is now taking rank as an important naval power. The Spaniards have steam liners afloat two, and one building; 12 frigates afloat, and 2 building, all steamers. Then there is another nation which is coming into the arena with a powerful navy; I mean the Italians, and I hope that navy and power will speedily rank among the modern leading nations of the world. Italy has at present one screw liner afloat; she has 6 screw and 12 paddle frigates afloat, making 18. She has also a considerable number of smaller vessels, irrespective of those which lately belonged to the Neapolitan government, which of itself had a very powerful force of steam vessels.

I will now, however, advert to that new weapon of warfare, which to my mind is of still more importance, in considering what is the actual force of a nation at sea. With regard to France, we know that she has two very large and powerful iron-cased ships. We also know that she has a very powerful class of vessels which are called iron-cased frigates. We know that she has four of the new and very powerful class of marine defences, which are called floating batteries.

France has also five gunboats—vessels which are partially cased in armour. We find that the Spaniards also are building iron-cased vessels. Of the French ships there are, I believe, three afloat—*La Gloire*, *La Normandie*, and another. As to the gunboats and floating batteries, I believe every one of them will be ready for service in a very short period of time. We then have the Spaniards, who are building iron-cased frigates; the Russians, who, I believe, are about to build an iron-cased frigate; and the Italians, who have already one of these iron-cased frigates, either afloat, or about to be so shortly, in one of the ports of the Mediterranean.

All we know with regard to this new class of vessels is derived from the performances of that famous vessel, *La Gloire*. Our own ships, unfortunately, are not yet ready for sea, and therefore we have no experience to offer with regard to them. This has not been the fault of her Majesty's government. I can certify for myself, having written a great many letters to contractors, calling upon them to hasten the completion of these vessels, and I think they have not quite done their duty to the public, or they would have finished them a long time since, I may state, however, that we have the *Warrior*, and two sister vessels of the *Warrior* under construction. The *Warrior* is launched, a second sister ship is also launched, and the third is about to be constructed at Chatham dockyard. We have then a second class of what are called the *Resistance* class; of which two will be launched within the next month or two. Two more have been latterly, within the last few months, ordered. We have, therefore, seven iron-cased ships under construction at the present moment.

Now, perhaps, some information with regard to what we know of these iron-cased ships may be acceptable to the committee. We remember it was imagined by many people that these ships would be failures—that, even if we could get speed out of them, they would not be seaworthy. We have now got a proof that *La Gloire* has great speed, and that she is also seaworthy. We know that *La Gloire* was appointed to accompany the French Emperor to Algeria, on his last visit to that colony; and that the squadron consisted of the fastest and finest ships in the French navy. My hon. friend the member for Finsbury (Sir M. Peto) was at Algiers when that squadron arrived. He will tell you that *La Gloire* was in company with the yacht of the French Emperor himself, which is a very fast vessel; and the rest of the squadron were out of sight. That is a proof that the French vessel *La Gloire* is a vessel of very great speed. She is also seaworthy. It happened that the squadron, on returning from Algiers, encountered a very heavy gale of wind in the Gulf of Lyons. I have conversed with a merchant captain who told me that he was in company with the French squadron, and that he never remembered being in a heavier gale in his life. I myself saw *La Gloire*, at Toulon, a few days after she returned, none the worse for the voyage. With regard to the interior accommodations of *La Gloire*, she is kept like some Eastern beauty, veiled from the public gaze. I know nothing of her interior fittings, but my hon. friend (Sir M. Peto) has effected an entrance, but

if so, he is the only man who has been able to succeed. These iron ships are built of wood, and cased with armour throughout the vessel. They have a peculiarity of rig ; they have nothing but three, what we call schooner masts, and therefore they are vessels which could not trust to anything like their sails for speed or for manœuvring of any kind. They are entirely screw-vessels—steam vessels, and have no pretence to be anything beyond. Their stowage also is very much confined both as to provisions and to coals, because they have been restricted to the size of ships of the line.

Here is a principle of construction in which we have entirely departed from the French plan. They build them of wood, and of a size no larger than that of line-of-battle ships. They consider them merely as vessels for narrow seas, and unfitted for long voyages ; and they think it right to case them entirely with iron. We have adopted a totally different plan. Who is right and who is wrong ? I am quite prepared to speak freely on this subject. No credit for any merit which the vessel may possess is due to me. The *Warrior* was designed by the late Board of Admiralty ; I am therefore fully at liberty to mention her defects, and also to speak of what I may believe to be her good qualities. One distinction between foreign nations and ourselves in building these vessels is, that they build them of wood, and also of confined size, so as to be not much larger than line of battle ships.

We, on the other hand, are building our ships at about double the size of line-of battle ships. The tonnage of the *Warrior* is 6,025 tons, that of *La Gloire* and of an ordinary line-of-battle ship being about 3,000 tons. The *Warrior* is built entirely of iron, as are the rest of our ships. But though built of iron, they are only partially cased with iron plates, and are rigged fully like line-of-battle ships. They all have immense stowage in comparison with other ships of the navy, and I believe those of the largest class, such as the *Warrior*, will have very great speed. A very interesting question arises as to the best class of construction. No doubt the French system is attended with considerable economy, as it must be cheaper to build a ship of 3,000 tons than one of 6,000. The French ships, however, are built of wood. Now, wood is a very perishable article, and behind these iron plates it is said that a considerable decay must necessarily take place.

Another question is with regard to the size. Why should we build vessels at 6,000 tons, while other nations built them only of 3,000 tons, carrying very nearly the same number of guns, and nearly the same armament and weight of metal ? But here there arises considerations which have engaged the attention not only of the late Board of Admiralty, but of the present. All those engineers who have given their attention to the improved use of projectiles tell us that we are as yet in the infancy of gun-making. If we build our ships with only sufficient flotation to carry the 4½ inch plate, where should we be if a gun were invented to go through a four-and-a-half inch plate ? Such vessels would be perfectly useless. The great advantage in building these very large vessels is this : we can, if necessary, not only increase the armament of these vessels, but double them. I have taken some

pains to ascertain what would be the effect on the *Warrior* of a nine-inch plate. It would be to immerse her three feet, She would then certainly not be so good a sea vessel, but nevertheless if it be necessary to increase the thickness of the plates we have the means of doing so.

But if we build vessels of only sufficient flotation to carry a four-and-a-half inch plate, what should we do on the new gun coming out, which is to pierce a six-inch plate? That is one of the reasons why I think the government is wise in building these vessels of great tonnage and capacity. There are other reasons connected with the advantage of carrying large stocks of provision and coal. I may state generally that the *Warrior*, like other vessels having great speed, has considerable and very good stowage for provisions and coals. Another very important point is that of rigging. All foreign iron-cased ships are merely rigged with three jury schooner masts. We have thought it incumbent to make them independent of their engines. I think that a wise course to take, as we do not know to what part of the globe the ships may be called, and there may be difficulties in the way of repairing. With respect to casing, other nations think it important that ships should be entirely cased with iron. We only partially case with iron, and for this manifest reason, namely, that if you build ships for great speed with very fine ends, and if you at the same time arm them with heavy armour plates, it is impossible that speed can be obtained in a heavy sea, and this is the mistake with foreign ships.

It has been stated that your ships are liable to be sunk; the bow and the stern of our fine cased ships may be knocked away. Such remarks are I think hypercritical, for great precautions have been taken on board these ships, namely in fitting their ends with water-tight heads and bulk heads, with a view of preventing any serious damage to the ship from the effects of shot in those parts. I have gone very carefully into the calculations as to the effect upon the *Warrior* of a shot striking between wind and water, and going into bow and stern. The effect would be almost insensible, as the water would only fill a particular compartment, and the damage could be promptly repaired. But it must not be supposed that because our ships are not iron cased throughout that they are not strong. The whole of the plates are 9-16ths of an inch in thickness, so that if a shot struck her at a very acute angle it might glance off altogether.

The only other point I will advert to in regard to these iron-cased ships is as to the propriety of building them entirely of iron instead of wood. Taking into consideration the probability of being obliged to case them with thicker plates of iron, I believe we have done wisely in constructing ships of the larger size of iron, because I think that with proper care they would be entirely imperishable. But for all practical purposes in connection with commerce, I believe we must ever maintain a large wooden fleet. An iron ship, after being two months in equatorial latitudes, would present a bottom like a lawyer's wig—she could not steer, and such a vessel would become entirely useless. On these points I believe we shall obtain very important information from the discussions going on in almost every society, and

more particularly from the Society of Naval Architects, and I am sure the Admiralty will watch with the greatest interest what takes place in that society, and will profit by the excellent papers read by the eminent men belonging to it.

It was observed by Rodmond, in reference to the remark of the Secretary of the Admiralty about the weeds on the bottoms of iron ships, that he thought the evil had been overcome by Peacock's well known composition.

Yes, added Albert, but it has to be renewed every year.

The Chairman believed that to be necessary, and if so it would apply to ships of war.

Albert then observed that in reference to the new iron ships we had been building, he would like to know the docks that we have to receive them. He knew of none. Some remarks had been made in reference to Portsmouth in the *Naval and Military Gazette*, but if, instead of Langstone Harbour, the mouth of the Southampton Water was substituted in the following letter, there would be some sense in it. Every one knows that Langstone Bar will admit little more than a good sized wherry; but Southampton has not only abundance of depth, but space on shore and afloat. He would ask permission to read the letter to which he had alluded. It ran thus—

“ Having observed in the *Naval and Military Gazette* an article, signed ‘A.B.,’ on the subject of the want of dock accommodation at Portsmouth, may I be permitted to say that I do not think he has done the justice that is called for, when we consider the lamentable state of the docks in that neighbourhood. It is quite true what A.B. has stated, that ships of the first-class can only be hauled into dock at high-water spring-tides, but he has forgotten to state that a first-rate line-of-battle ship cannot be taken into Portsmouth except at high-water spring-tides, which occur every fourteenth day, and then only after taking out her lower-deck guns and starting her water, and then it is not a matter of feet between her keel and the bottom, but a matter of only four or five inches.

“ What a state for our country to be in in the event of a war. It is true we may not meet with a reverse; but if the fleets of England and France come to action, the half of each must necessarily be so much damaged as to render docking immediately necessary, and yet fourteen days must elapse before they can even get into the harbour; while the French fleet have gone into the capacious docks at Cherbourg, are refitted, and at sea again by the time ours get secured in the docks.

“ Is this right? Do the heads of departments do their duty to the country by not ascertaining the best and most advantageous position for docks; We have for years been grovelling along at the same snail-like pace, for which all our departments are so famed and so perfect; and, what is worse they will not open their eyes to such glaring defects until it is too late. A.B. has very properly stated

that there is a good site for royal docks in Langstone Harbour, into which the *longest ship* that can be built can be taken at dead low-water spring-tides, there being twenty-six or twenty-eight feet water.

"Now, I believe the present Board of Admiralty is composed of men who would try to carry out all the improvements and arrangements of the late Board, of which Sir John Pakington was the head. He was indefatigable in all his exertions to improve everything; and surely his Grace the Duke of Somerset will not be behindhand in what will tend so much to benefit our country? Beg him to send down competent men to survey and report, and I am sure the people of England would not begrudge the £1,500,000 such magnificent docks would cost.

"It is only through the medium of the press that we can hope for changes that are absolutely essential, I have not the honour of knowing any of the present Board of Admiralty, and regret much that my feeble voice cannot be heard; but there are those who would be listened to, and these are the men who should take it in hand.

"I must not, however, trespass more on your time, I only hope 'A. B.' will press the matter on, and that the Admiralty Board will take the hint that has been so well thrown out by him; for it is really a disgrace to see foreigners looking on and laughing at our ships,—sticking half in and half out."

The Club agreed generally in the soundness of Albert's observation, indeed there were those among them who well remembered the building yard at Bursledon, where many a line-of-battle ship had been born in the last great war.

Rodmond said, he had received an account of the United States Arctic Expedition that he thought would interest the Club. The letter states,—

"After passing the Arctic circle, on Saturday, August 4th, the sun did not set upon the expedition. This was the first night in which they had entire sunlight. The sky being cloudless, the sun was seen the entire night, first to pass slowly in a circle to the northward, and then eastward, till it began to rise again. The expedition was becalmed several days off Svorte Hook, but at length reached a point within sight of the low islands beneath Sandersons Hope, a great landmark for arctic navigators. At this time a scene of sublimity was witnessed. The coast for miles on either hand to the North and south, was plainly visible. Cliffs, high or low land, mountains and inlets, were seen in the distance, while around the vessel floated thousands of icebergs. In the intervals between the heavy reports and roar of falling or turning icebergs, the noise of the surf or sea beating against each of the many bergs was distinctly heard, sounding as a distant Niagara or a near small waterfall, so continuous was the noise. The greater part of the time the crushing and crumbling of the bergs in turning over and coming in collision with each other, or of detached pieces falling, or of a glacier parting from its *mer de glace*, and rolling down a thousand feet into the sea, kept up a terrific cannonade.

The stay of the expedition at Proven was quite pleasant. The cargo was all broke out and removed in boats to the shore, whence it was restowed on board. The ship's company were assisted by forty or fifty Esquimaux. They worked hard all day, and gave their nights to jollity, attending balls, parties, and feasts, given in their honour by the natives. The Danish officials rendered Dr. Hayes and his officers every service in their power, and the usual courtesies passed between them. Numerous presents were made to the Danes of delicacies for their table, in return for which they sent fur garments, which were of better quality and make than any that could be bought. Every other night a ball was given, to which the whole ship's company were invited. A promiscuous company assembled at these balls, composed as it was of all the human beings in the vicinity who were able to dance or wished to look on. In the same set, at one time, were Messrs. Inkermann, Hansen, Hayes, Sontag, Carruthers, all the crew of the expedition, and male and female Esquimaux, perhaps twenty in number; while others, in such numbers as to uncomfortably crowd the room, were standing around laughing and shouting in high glee. The ball-room was the carpenter's shop, decorated with the flags of the vessel, lighted at midnight with candles, for though light outside, the flags covering the little windows made the room dark. In an adjacent room was a table, on which there was a variety of drinks, and a huge wooden bowl of punch, made of three kinds of wine, brandy and rum, with lemons and sugar.

Mr. Sontag, with his assistants, was engaged most of the time, while at Proven, in making a topographical survey of the harbour, while Dr. Longshaw was employed in geological and botanical labours. Commander Hayes was busy all the time in a general supervision of affairs. At twelve o'clock in the evening of the first day in Proven, Dr. Longshaw ascended to the top of a high hill for the observation of the sun. It did not dip below the horizon in the least, but moved slowly northward, till at length it began to ascend, shining brilliantly the while. At Proven Dr. Hayes procured forty dogs and a large supply of furs, and the expedition sailed for Upernavik on Saturday, August 3rd.

Dr. Hayes, writing at Upernavik, August 14th, says:—"It is impossible for me to predict anything with respect to the prospects before us. The season has been backward, but the weather has been very mild during the past ten days, and the recent southerly gales have doubtless broken the ice. The wind now blows fresh from the N.E., and if there is much ice before us it will be driven to the S.W. We shall leave here to-morrow, and attempt at once the Melville Bay Passage, and shall hope to make Smith Strait not later than the 1st of September. If successful in this eudeavour, we shall have abundant time to secure a convenient harbour on the coast of Grinnell Land. You are already aware that I anticipate (from observations made by myself upon this coast in 1854) reaching Cape Frazer, lat.  $70^{\circ} 42'$ , where I propose spending the winter. A degree lower, however, will place one within practicable reach of my proposed field of



exploration. If the condition of the ice will permit, I will immediately—after a winter harbour has been selected—carry forward the boat which I intend using for next summer's labours, and some provisions, as far North as possible, and then leave them, secured against the bears, and return to the schooner after the winter has firmly set the ice. Early next spring, we shall push forward advance depots, and should we find either ice or water, we shall endeavour to accomplish with boats or sledges, or with both, the chief object of the voyage before the close of the summer. If this fortune awaits us, we shall then return home without unnecessary delay. I do not, however, anticipate this result, but I expect that we shall be detained two winters. I shall endeavour by every means to avoid a third year's absence. We carry with us, however, food and fuel for that period, and in the event of our being so long detained I do not fear adverse results. With the fresh supplies we have on board I believe we can resist the scurvy."

These remarks were scarcely read when the Chairman announced that the proclamation of the United States President, Mr. Lincoln, had just been placed in his hands; which, as an important historical document, should be preserved by the Club. It runs as follows:—

"Whereas, the laws of the United States have been for some time past, and now are, opposed, and the execution thereof obstructed, in the States of South Carolina, Georgia, Alabama, Florida, Mississippi, Louisiana, and Texas, by combinations too powerful to be suppressed by the ordinary course of judicial proceedings, or by the powers vested in the Marshals by law; now, therefore, I, Abraham Lincoln, President of the United States, in virtue of the power in me vested by the constitution and laws, have thought fit to call forth, and hereby do call forth, the militia of the several States of the Union, to the aggregate number of seventy-five thousand, in order to suppress said combinations, and to cause the laws to be duly executed. The details for this object will be immediately communicated to the State authorities through the War Department. I appeal to all loyal citizens to favour, facilitate, and aid this effort to maintain the honour, the integrity, and the existence of our national Union and the perpetuity of popular government, and to redress wrongs already long enough endured. I deem it proper to say that the first service assigned to the forces hereby called forth will probably be to repossess the forts, places, and property which have been seized from the Union; and in every event the utmost care will be observed, consistently with the objects aforesaid, to avoid any destruction of, or interference with, property, or any disturbance of peaceful citizens in any part of the country; and I hereby command the persons composing the combinations aforesaid to disperse and retire peaceably to their respective abodes within twenty days from this date. Deeming that the present condition of public affairs presents an extraordinary occasion, I do hereby, in virtue of the power in me vested by the constitution, convene both houses of Congress. The senators and representatives are therefore summoned to assemble at their respective chambers at twelve o'clock noon on Thursday, the 4th day of July

next, then and there to consider and determine such measures as, in their wisdom, the public safety and interest may seem to demand. In witness whereof I have hereunto set my hand, and caused the seal of the United States to be affixed.

“Done at the city of Washington this 15th day of April, in the year of our Lord 1861, and of the independence of the United States the 85th.  
“ABRAHAM LINCOLN.”

Our limited space prevents us from inserting the discussion which followed.

---

CHARTS, &c., *Published by the Hydrographic Office, Admiralty, to the end of April, 1861, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.*

Scotland, Western coast, Monach and Haskier Isle, Captain Otter, R.N., 1860, (2s. 6d.)

Ireland, East coast, Carlingford Lough entrance, R. Hoskyn, Esq., R.N., 1857, (3s. 6d.)

River St. Lawrence, above Quebec, sheets Nos. 1 to 13, Admiral Bayfield and Captain Orlebar, R.N., 1860, (each, 2s.)

River St. Lawrence, Quebec, Admiral Bayfield and Captain Orlebar, R.N., 1860, (2s.)

River St. Lawrence, Montreal, Admiral Bayfield and Captain Orlebar, R.N., 1860, (2s.)

South America, West coast, Cupica and Cabita Bay, Captain Kellett, R.N., C.B., (1s. 6s.)

South America, West coast, Bayoneta and Pedro Gonzales Islands, Captain Kellett, R.N., C.B., (1s. 6d.)

Nova Scotia, Liscomb and Mary Joseph Harbours, Captain Bayfield, R.N., 1857, (3s.)

Nova Scotia, Sheet and Mushaboon Harbours and Spry Bay, Captain Bayfield, R.N., (3s.)

Mediterranean, Syria, Ruad Anchorage, Commander Mansell, R.N., 1860, (1s. 6d.)

Mediterranean, Syria, Tripoli Roadstead, Commander Mansell, R.N., 1861, (1s. 6d.)

Mediterranean, Archipelago; Grabusa Isle, Kutai, Rhithymno, and Lutro Ports, Captains Graves and Spratt, R.N., 1859, (2s.)

Africa, West coast, Lagos River, Lieutenant J. W. Glover, R.N., 1859, (2s. 6d.)

East Indies, Banka Strait to Singapore, 1861, various, (2s. 6d.)

Australia, East coast, Port Denison, J. W. Smith, Esq., R.N., 1860, (1s. 6d.)

Sailing Directions for Crete or Candia Island, Captain Spratt, R.N., C.B., 1861, (1s.)

China Pilot, 3rd edition, Edited by J. W. King, Esq., R.N., 1861, (5s.)  
*Admiralty, 22nd April, 1861.*

---

#### TO CORRESPONDENTS.

The remainder of M. de la Tour's Report is unavoidably reserved for our next.

Several books will be also then considered.

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle.

---

JUNE, 1861.

---

REPORT ON THE FRENCH IMPERIAL NAVY,—*By M. de la Tour,  
of the Corps Legislatif of France.*

It would be most desirable to banish from this our civilized world the pest of war and that expensive evil of large armaments, for it is a melancholy prospect to see those who consider themselves reasonable beings expending both their treasure and their blood. What barbarous folly it does seem to make over to the effects of instruments of destruction, improved as they are now to perfection, a crowd of beings who do not dislike each other and who do not desire a premature removal from this world. We may celebrate the glory of battles and the valour of heroes; but strife between Christian nations, what is it but fratricide and revolting to every honest heart when it has no other object than ambition in view, forced to the field by the pride of confidence.

Philanthropists and financiers have abundant reasons for enlarging on this peaceful theme. Here they are in accordance with all social and Christian principles. But, alas, if from the world of notions we pass to one of facts, what do we see? The constant necessity for man to defend himself against his fellow man! Nothing is so scanty as brotherly love in the human heart. Every one is obliged to provide for his personal safety,—a more important point necessarily among nations than among individuals;—for an improvident weakness would not long remain free from attack. And again, the more sudden the attack may come, the more necessary it is to be prepared for it. In these days steam and electricity admit of such formidable

combination and such immediate application, that vigilance was never more necessary. Never, in fact, was it more necessary for governments to have at their disposal a force sufficient to protect the national interest, to secure the chances of fortune, and to protect the lives of its people.

This duty is more especially required of those who have to watch over the healthy condition and security of France; for although Frenchmen may have warm hearts, an ardent patriotism, and, perhaps, a taste for war, still they have more energy than perseverance—they are more impulsive than enduring. They like a rapid war, remarkable for a series of brilliant exploits. The outset is of the first importance to them. They are discouraged by repeated reverses in the beginning of a campaign: they become uneasy and down-hearted, exclaim against their leaders—often even to accusation of treason, and it is very difficult to make up for these checks upon their ardour, and sometimes to avoid disaster.

It becomes, therefore, actually necessary that our force should always be found in a disposable condition, organized and prepared. War becomes more and more to be decided by grand and sudden descents well combined and rapidly carried out. Such a descent we are in a condition to make on any empire of the continent, whatever that may be, if we have not to fear a coalition. Our navy, well capable of seconding the impetuosity of our soldiers, is an admirable completion of our continental power. In a word, we could defend victoriously our land frontiers, however vulnerable they may be on that of the Rhine! But is it thus with our coasts? That magnificent maritime frontier of 2,400 kilometres,—is that secure from sudden attack? Could it now withstand attacks vigorously conducted? Is our nautical progress equal to that of England? Should we be quickly enough prepared for an aggressive resistance if the honour of France and the command of the sea were at stake? These are the questions for us to consider.

Let us first look at the latest move in England. That country is in an absolute state of effervescence, as if an enemy were at her very doors, and all the time we at home are asleep. On the other side of the strait 150,000 Volunteers have sprung up at the words of some writers who from this side in their folly would incite France to conquer the British Islands. Without depreciating the merit and valour of our neighbours and allies, our soldiers, well proved in battle, may smile on hearing of this motley army; and may contemplate without alarm the "Devil's regiment," composed of the lawyers and advocates of London and Edinburgh in battle array: if the God of War were favourable to them, they might even hope, without much boasting, to put these choice troops to route, and we dare wager that in the heat of battle the cohorts of the English six feet giants—"Six Foot Volunteer Guards"—would not resist the carbines or the bayonets of a battalion of our little chasseurs.

But as a proof of national sentiment, this armament, almost general and unanimous in England, is of real importance. A powerful and

warlike people, conscious of their own strength, are fatiguing themselves with incessant agitation; the time may come when it may be right to face the danger in order to dissipate it. Would not this be the reasoning of those English statesmen who promote this agitation? Without exactly looking for war, have they not shown a desire to assure themselves of the means of carrying it on eventually in the best possible way if it should be at hand? This supposition only can explain the alarmist language of the "leaders," against which one man only, Mr. Bright, has protested. Lord Palmerston, in spite of his being seventy-five years old, is enrolled in a brigade of riflemen; the Duke of Cambridge is in command of another; the Government fans the flame from time to time, instead of trying to quench it. We are permitted then to ask if the English will always remain quiet and inoffensive in their foreign policy? and we are compelled to give serious attention to the enormous expenses which they have imposed on themselves for several years, but above all for the past year, to obtain a crushing preponderance over the French navy.

In less than five years £36,000,000 have been expended on the defence of the English coast, and two thirds of this sum have been applied to those floating ramparts in which British clear-sightedness recognises the principal source of security for the country. During this period the only extraordinary effort of France was in 1857, appropriating 17,000,000 francs (£680,000) for the service of the fleet until 1872 inclusive. In 1858 our navy was sufficient to resist the English fleet that was disposable. We had twenty-nine screw ships of the line and forty-six steam frigates. The English had not then more than twenty line-of-battle ships and thirty-four steam frigates. Our 17,000,000 francs (£680,000) of extraordinary subsidy had for their object to raise the number of our ships of the line to forty and that of our frigates to fifty.

One would believe for the last three years that this was sufficient to keep us in a respectable position. But now the proportions are all altered and England very soon will again have the advantage of us. England was reposing in entire confidence of her strength, but she learns that we have been busy during her slumber. Not only is the number of our engines of war superior, but also their quality. Moreover, Malakoff and Inkermann begin to sound unpleasantly in British ears. The first angry cry or one of alarm will raise the whole country: she will set to work and will not rest until she has removed the smallest cause for disquiet. During the years 1858 and 1859 the English steam fleet was increased by fifteen ships of the line, either new or converted, five new frigates, and two floating batteries. The newly constructed vessels of the English for the last ten years amount to 46,284 tons. On the 1st of July, 1860, England had a fleet of sixty-three ships of the line and forty-one screw frigates; while France had only \* -eight ships of the line and thirty-five screw frigates, carrying half the number of guns of the English.

\* Omitted in original.

In the short period of twenty-six months the English have augmented their force by thirty screw ships, new or converted, while we have not launched above five or six. We have not more than 17,000,000 francs (£680,000) to expend, while our neighbours can readily lay out £8,000,000 to augment their fleet. A screw ship of the line costs £200,000: a frigate, with her iron armour, cannot be built under £240,000: and when these formidable engines of war go to sea they will consume from £160 to £200 a day in their coal. One can easily imagine that with our small budget we have not been able of late to preserve our normal position. The English budget, doubled since 1855, now reaches £15,600,000:\* ours remains fixed at 124,000,000 francs (£4,960,000). The actual difference is by far too great.

The increase to the *personel* of our neighbours has followed that of the increase of their navy. In 1836 they had 17,500 men; but in 1859 they had far abandoned this modest number, and had obtained 37,000 men: last year it was increased by 4,000 men, and in 1861 it would be 58,000 seamen. The number of marines would also be 18,000. These 18,000 men, well drilled, are at least twice as valuable, when embarked, as our sailors, and form of themselves a permanent maritime force of considerable value. Many British ships have had their fittings, &c., carried on by detachments of marines, and no captain would complain at being obliged to take marines for two-thirds of his crew. Thus the number of men before the end of the current year will reach 84,000, and perhaps England will not stop at that. It is, however, verily a warlike step to take in the face of a nation much inferior in maritime force, and which seems lulled to sleep in her security, as if peace at sea should continue.

There are not persons wanting in France who excel in pointing out for ever the radical faults of the army and navy of England, and who can imagine the sword of France penetrating there at the first blow up to the hilt. They point out, for instance, as a source of relative weakness the difficulty England has of finding men, the number of foreign sailors increasing, and which is now not less than 20,000 in the British fleet. They speak triumphantly also of their defective construction and the inequality of speed displayed by different English ships, as if we were not suffering from the same imperfections. It is certain that England would feel herself much more powerful if she could adopt our system of maritime inscription. But, happily for us, this excellent plan is impossible for her: this arrangement of her seafaring population would be so opposed to the feelings of the country, that to escape it they would emigrate *en masse* to the Americans. Nevertheless, the bounties devoted by the English to the renewing of their crews have produced very important results.

The large resources which Great Britain possesses in her commer-

\* This budget was not more than £6,132,000 in 1854. It was increased to £11,857,000 in the following year, on account of the war in the East. England then had two fleets at sea, manned by 70,000 men.

cial marine are very well known. The number of seamen registered as embarked in this branch does not appear to exceed 228,000; but this does not include coasters and fishermen, no more than it does the seamen of the fleet. It is, in fact, difficult to get an approximation to the number of British seamen. Some estimate them at 322,000, and others at 420,000; the mean, perhaps, or 370,000, may be near the mark. At all events, England has three or four times as many seamen as France, although we may have 15,000 merchant ships to her 26,000. Her larger amount of tonnage and her much larger number of fishermen may account for the difference. The number of seamen employed in the British commercial marine is estimated at 200,000, and she has some of the best foreign seamen in that service; but she loses a certain number by the American shipowners.

In spite, however, of her great resources, the recruiting of men for the fleet is not an easy task for her Admiralty. The reserve of 60,000 coasting men decreed by Lord Derby in 1848 has not yet been entirely formed. Nevertheless, the fixed and disposable part of the seamen has been considerably increased lately by the simultaneous adoption of concurrent measures. 8,000 men of the customs have been placed under the Admiralty, and these are choice seamen. The establishment of schools for boys secures a large number of new hands. In 1857 they had not above 1,898; but in 1860 they had 8,535, and these would prove a good nursery for petty officers. Considerable bounties have been given to newly raised men, as well as to seamen re-entering.\* Seamen who re-enter receive a high pay, an increased pension, and acquire exceptional rights to promotion; and some thousands of seamen have availed themselves of these advantages. An allowance of £6 has been made to another portion of the reserve who can only be employed on the coasts. Every force by sea or land for the defence of the coast has been confided to superior naval officers, and divided into eleven districts. Each of these officers has under his orders the stationary and floating batteries, the gunners, custom-house men, and militia of his district. He may also order and prepare as required the elements of resistance, and his flag is flying in his stationary ship in the principal port.†

Thanks to the immense sums which she has been laying out for some years, England has been able to protect her arsenals and to make harbours of refuge, as well as others of military aggression. Plymouth, Portland, and Portsmouth may be considered as grand entrenched camps equally adapted for organizing an attacking force as for concentrating resistance. A number of secondary ports, such as Falmouth, Dartmouth, Newhaven, and Dover, afford a refuge for merchant vessels. Hollesley, Chatham, Harwich, and the Downs roadsteads afford well fortified shelter for ships of war. And beyond all this mixed system of attack and defence, a formidable position has

\* The minimum term is three years, and the maximum ten years.

† The *Revue Contemporaine* was the first to show this system of defence in its number for 28th February, 1859.

been created, *peculiarly offensive*, in the port of Alderney, in communication by electric telegraph with all the other naval ports. From thence Cherbourg is commanded and threatened,—*the only refuge for the French navy in the Channel*. Alderney is able to contain double the number of ships to neutralize or even to attack Cherbourg.

Such is what England has been organizing for several years. Her offensive and defensive strength has been immoderately increasing. She has divided them into two distinct parts—the active fleet and the reserve: 6,000 officers of the navy are ready to command them. The base of offensive operations being thus provided, the active fleet will be independent of those operations. Along the English coasts will be found enough of ports, arsenals, depots, and places of refuge. In every distant sea England has found points of support, markets, and fortified asylums. Verily, our neighbours seem to acquire all sorts of privileges at their ease: they can sleep in peace, if they have not, as we are pleased to believe, other than defensive intentions.

How can a people of so much intelligence, and who know so well their own interests, in the midst of this security,—how can they fear invasion? Such a thing could not be possible, provided that her maritime power was not held in check. If Ireland was in rebellion,—if a new Pretender had a number of partisans in either of the islands, it would no doubt be possible for France to renew the unfortunate attempts of Louis XIV and of the Republic. A fleet with some thousands of men, thanks to steam, would have plenty of chances for escaping the enemy's ships and land an auxiliary force on the British shore. But what folly that would be with an inferior fleet to risk to the chances of naval combat an army of 150,000 men, and even to land them there with the certainty of meeting no resistance. What in the end would become of such an army deprived of the means of obtaining supplies? Suppose it was to overrun Great Britain victoriously. It would become exhausted by its own victories. The circle of its enemies would be incessantly closing around it, and the first check would infallibly be followed by defeat. But the English united and masters of the Channel are quite free from all invasion. It would be worse than rashness to rush into combat with a great people, without a reserve, without a point of support, without a base of operations, without refuge, a people, too, who are not surpassed by any other in bravery, in determination, and in patriotism.

The English have good reason for bestowing their attention on Russian progress, which is so rapidly drawing towards the Mediterranean and the Indian Seas. They are not uneasy without reason when they see American tonnage replacing theirs, and that they are gradually losing actually seventy-two per cent. of their foreign commerce: for her commercial prosperity is the best guarantee which England has of her power. It is possible also that she may dislike the extension of our coasts and the increase of our mercantile marine. Our million of tonnage is not to be despised, although we still leave the foreigner to take from us forty-three per cent. of international commerce. But in the present state of things France, far from



threatening her neighbours across the Channel is rather threatened by them.

Let us then recapitulate the efforts made by the English in six years in anticipation of a naval war: a budget increasing from £6,500,000 to £15,000,000; nearly £40,000,000 of expenditure on fixed and floating fortifications; her navy trebled both in men and material; 150,000 armed volunteers; a reserve formed both for land and sea. Such are the various precautions taken by England.

Let us now consider by way of comparison the navy of France, its *personnel* and *materiel*, with a view to those improvements which are desirable and of which it is capable.

Real maritime power consists in the number and efficiency of sailors. By means of money ships may be built, ports may be fortified, and losses replaced, but seamen are not so easily made. Let us see, then, what our resources are for seamen, active fighting men, and what means might be employed to increase their number.

Our material progress, which may be considered as tolerably certain, is to provide in eleven years 150 vessels, of which 90 would be either ships of the line or frigates. Compared with the English, this would be a falling off. But, however small this number may be in reference to the British, we should have neither officers nor men sufficient for them in 1872 unless we set about increasing the number of both.

For the 6,000 officers of the English navy we could only show 1,574; and their career is far more advantageous in the British service than in ours. We have 650 lieutenants for 230 capitaines de frigate and 110 capitaines de vaisseau. The English navy supplies 1,200 lieutenants, 517 commanders, and 356 captains; and therefore 873 superior officers to 1,200 lieutenants, more than two-thirds, while France only affords 340 posts of rank superior to her 650 lieutenants. In the English navy more than a fourth of the lieutenants may become captains; but in France one in six can only have this chance, and the English commanders, under similar circumstances, are half again as favoured as ours. The difference is no less unfortunate for our officers in regard to appointments.

Small chance of promotion, poor emolument, and constant work are the attractions which our country holds out to those young gentlemen of a superior class, distinguished for their intelligence and attainments, who compose the officers of our navy. And in proportion as ships, thanks to steam, become, as engines of war, more certain, more effective, and more rapid, they will require to be directed by more intelligent and more powerful hands. The naval officer should possess the qualities of a navigator, a naturalist, an astronomer, and a diplomatist. How is so valuable a person to be secured to the navy, unless he is attached to his profession and to his country by the ties of gratitude as well as by those of duty?

Although we have a very limited number of ships at sea, and a single squadron of evolution, our staff of officers, so poorly paid, is, as regards the subordinates, overworked even in time of peace. When

a lieutenant has had three or four years at sea it is seldom that he can get six months' leave. Fatigued, and often with broken health, he looks to the future with no pleasant feelings, and takes an irresistible dislike to an ungrateful and trying profession, without hope of gratifying a legitimate ambition.

These officers, on an average, are ensigns at twenty-two, and lieutenants up to thirty; with perseverance they would be capitaines de fregate between forty-eight and fifty, bordering on old age. To this last rank the only mode of advancement is by selection. A large majority of lieutenants cannot hope to advance further. To attain this rank of superior officer, one must be resigned to brave every clime, every epidemic, to submit to all sorts of privation and fatigue, subject to exposure every day for four hours to all the severity of weather, without even having for shelter the sentry-box of the soldier. The naval officer is nearly always on service, striving against the elements, and the dangers which he is braving always make no return to him in the way of glory. He is often, comparatively, worse off than the officer under him, for he is obliged to preserve a station and appearance, which eats up his allowance. How must it be when he is obliged to reserve a portion of it for his family? Thus, as soon as a lieutenant de vaisseau, whatever may be his merit, sees a lucrative appointment apart from his regular line, he tries for it. One-half at least of these officers ask as a great favour the command of a packet in the service of government. The necessity of not entrusting the ships of the line to others than selected officers has produced captains in the upper ranks of our navy who are comparatively very young, and have had the chance of proving their qualities. Retirements are rare in this rank, and at this moment the door of promotion is closed against our lieutenants.

Here is a proof of their discouragement, and others could also be cited. Some months ago some shore appointments were created, in order to reduce the number of claimants for promotion. Those who accepted them gave up all promotion; a condition perhaps somewhat unjust, because in other branches of the navy promotion is obtained without going to sea. But what officers have taken these appointments? Generally young and active men, newly promoted, who, discouraged by their prospects, resign themselves to live on shore in the enjoyment of appointments nearly as good as those of officers afloat.

An increase of the class is therefore necessary, indeed urgent, to meet the exigencies of the service, to revive emulation, and keep up the love of the profession: at the same time it is indispensable also to improve their condition. The officers of the navy can only be increased gradually every year up to the number considered sufficient, and it will be at the foundation of the increase that we must begin. The number of eighty would not be too many to admit to the training-ship for several years to come. The rule of requiring the aspirant to be four years in the fleet before attaining the position of officer should be modified. Perhaps it might even be as well to revise the

mode of admission into the navy by the naval school. It will be necessary to increase the number of enseignes by 50. Next, the lieutenants de vaisseau should be increased by at least 100; the number of these officers (750) would be scarcely sufficient for the wants of the navy. We ought not to require in times of urgency the officers of an auxiliary marine; which not only withdraws from the commercial marine, for a time, their efficient officers, but introduces an heterogeneous element which is injurious to the service. 50 capitaines de fregate and 40 capitaines de vaisseau more will not be over proportioned to the development of our *materiel*. The number of vice-admirals has been lately increased from 10 to 12, and of contra (rear) admirals from 20 to 24: this is a first but insufficient step. There are highly distinguished officers who are of opinion that one in three only should be promoted to the rank of capitaine de fregate by selection, and that one promotion in three should go by seniority to capitaines de vaisseau. This proposal might be considered. It appears to us that there would be no inconvenience in extending to capitaines de fregate similar advantages to shore appointments, which are now given to capitaines de vaisseau; and it would be often of service to lieutenants de vaisseau if they were permitted to command merchant ships for two or three years.

Another point which should be taken into consideration has been advanced by the capitaines de vaisseau. There is but one class of colonels in the army, they say;—Why, then, have two classes of capitaine de vaisseau? It would be most proper to increase the allowances to lieutenants de vaisseau. The superior officers never go to sea but as second or first in command, and they are passably remunerated. It is very difficult, on the contrary, for lieutenants to obtain command: those who cannot obtain it should be encouraged to go to sea. But the allowance for lodging to them, added to their pay, on shore, is equal to a service appointment.

In the Spanish navy the emoluments of officers are doubled as soon as they pass the line and trebled when they round the cape! This, no doubt, is an exaggeration. But they are quite right in the English and American navies to give to zealous officers benefits for long sea service. It would be just and proper to increase the pay of every lieutenant who had completed twelve years at sea. The same advantage should be accorded to the capitaine de fregate after twenty years of sea service, and to the capitaine de vaisseau after twenty-four years.

Something also should most certainly be done for the widows and orphans of naval officers. These widows receive only one-fourth of their husbands' pensions, while in the civil service they receive a third, or even a half. This difference is much to be regretted. It would be both advantageous and just to admit gratuitously to the preparatory naval school a large number of the sons of officers. It would afford peace of mind to their fathers in the midst of danger; and the love of the profession would be perpetuated in the family, together with a sense of honour and devotion which it would draw forth. Such

are, in the aggregate, the ameliorations which we claim for our naval officers. If, above all, it is not soon decided to augment their number, we shall experience, in the event of a maritime war, extreme difficulty and serious danger. The Crimean war should have enlightened us sufficiently in this respect. This was not a naval struggle, the fleet having to perform a secondary part in transporting and victualling the army, and the large number of English transports employed permitted us to lessen ours. It was, however, necessary to withdraw some of the officers from the squadron of observation. Some ships carrying 1,000 men had not more than 5 officers, while a battalion of 1,000 men in the army has 26. Batteries of thirty-two guns were under the command of a single officer; and the transports, which were so active, had not more than three or four. If the war had lasted their duties would have been insupportable. At that time, and for two years afterwards, it was necessary to embark aspirants who had scarcely been a year at school, and who had to continue their interrupted studies as well as they could on board or on shore.

In the course of the short expedition to Italy, even, the equipment of the fleet was not effected without difficulty. Instead of the complement of six lieutenants in ships of the line there were scarcely four, and even the fourth of those was often made up of *enseignes de vaisseau*; the number of which, again, were insufficient, their services being, in fact, required by the Adriatic squadron and for the command of the mortar boats. Lately, when the government had decided on sending the second expedition to China, so much discouragement showed itself among the officers that the minister received in a few months fifty-nine resignations and applications for retirement. It is not surprising that men who have attained the age of forty or forty-five years in the lower grades should be discouraged when, after being at sea twenty years, the government sends them, without any real hope for advancement, some 3,000 leagues from their families; often thus forsaken for little pay, under painful conditions, on service where no honour can be derived, but additional infirmities. The state thus loses the flower of its officers, for they are by no means the worst who retire. It is thus that they lose intelligent and good men, inured to danger, accustomed to privation, mostly of good attainments, who would carry to distant shores, along with the colours of France, the benefits of their genius and their chivalric spirit. The evil is serious and must be attacked at its two sources—the insufficiency of emolument and retirement, and the still greater evil of the limited lists, and thence the limited chances of promotion.

The example of England will afford proof of the justness of these remarks.

England has at this moment, either afloat or building, 69 screw line-of-battle ships and 40 ships of the line under sail only, for which 109 captains are required. She has 35 screw frigates, 17 paddle-wheel frigates, and 54 under sail, which require 106 captains; 26 screw corvettes, and 16 sailing corvettes, which require 42—being

together 257 captains. Now, we find in her *Navy List*\* the names of 356 active captains. From this number it is necessary to deduct 70 who are on half-pay, and who, from age, do not go on distant foreign service; but there remain 286 captains ready for active service at sea or to command defences on the coast. Then 257 captains require the same number of commanders: again, for the command of 24 corvettes (paddle), 12 large screw transports, 8 floating-batteries, and 50 large gun-vessels, 94 commanders (a rank which corresponds with our capitaine de fregate), in all 351 commanders. We find 517 on the list, from which we must deduct 121 on half-pay; let us add to these 81 commanders on the reserve list. Again, allowing 5 or 6 lieutenants, as is usual, to a line-of-battle ship, 4 or 5 to a frigate, and 3 for a corvette and floating-battery, placing them in command of 185 gunboats, various services in the large ships and in packets, we arrive at the number of 1,700 lieutenants de vaisseau indispensably necessary for the British fleet. Now, we find 893 lieutenants in active service, and a reserve which numbers no less than 595 officers. Some of these last it is true are unfit for service; but there are no less than 1,200 ready for sea.

At the same time it must not be forgotten that in the English navy there is a class of officers to which we have none similar in the French, viz., that of masters, who come immediately next to lieutenants and who fulfil on board a duty which among us devolves on the lieutenants or ensigns,—that is, the care of the navigation, the chronometers, and the stores. Of full masters there are about 240 [340?]. These form a distinct class (the officers of which cannot attain to the higher ranks of the service), and consists of three divisions—masters, second-masters, and master's-assistants. They may have a high rate of pay according to length of service, and are retired with the rank either of captain or commander. Those only enter this class who, being without interest, have little chance of reaching the higher ranks of the service. In conclusion, there are also an innumerable quantity of midshipmen (aspirants), acting-mates, who correspond in a great degree with our rank of enseignes and élèves. The English navy derives great advantage from this organization, which spares it a lieutenant in large ships, and which contributes much to the good order of the crews of the fleet. The greater part of these masters are good pilots, and are well acquainted with the navigation of their own shores as well as ours. We do not know whether it would be expedient to create a similar class of officers in our navy, but there can be no doubt that what is wanted by our ships is a class of subaltern officers as pilots, which it would be well to introduce.

It is easy to perceive by this general statement that the number of naval officers of England is sufficient, and more than sufficient, for the service of her immense fleet. We may add, so as to complete the statement, that it does not contain less than 21 admirals, 27 vice-

\* *Annuaire de la Marine.*

admirals, and 51 rear-admirals on the active list, and 22 admirals, 21 vice-admirals, and 51 rear-admirals on the reserve, besides 46 vice-admirals and 101 rear-admirals on the retired list. It is to this large number of flag-officers that the British navy owes the rapid advancement of its officers, and it is not uncommon to find among them captains under forty years of age.

If we examine, however, the condition of our lists in comparison with the *materiel*, their insufficiency will be evident. We have

*Screw Ships Afloat or Building.*

	Requiring	{	Captain de Vaisseau.	Captain de Frigate.	Lieutenant de Vaisseau.
Ships of the line . . . .	38	....	38	....	38
Frigates . . . . .	35	....	35	....	35
Corvettes . . . . .	7	....	..	....	7
Packets . . . . .	36	....	..	....	10
Floating-Batteries ..	14	....	..	....	14
Gunboats . . . . .	53	....	..	....	..
Transports . . . . .	39	....	..	....	35

*Paddle Steamers.*

Frigates . . . . .	18	....	18	....	18
Corvettes . . . . .	10	....	..	....	10
Packets . . . . .	76	....	..	....	7

*Sailing Vessels.*

Ships of the line . . . .	9	....	9	....	9
Frigates . . . . .	27	....	27	....	27
Corvettes . . . . .	14	....	14	....	14
Brigs (small vessels) .	46	....	..	....	17
Transports . . . . .	31	....	..	....	31
	<hr/>		<hr/>		<hr/>
	453		141		272
					1074

For the service of this fleet of 453 vessels we have only 110 capitaines de vaisseau, 230 capitaines de frigate, 650 lieutenants de vaisseau, and 550 enseignes. In case of war, then, we could not arm all our ships; they would have a short complement of officers, the rest being made up with auxiliaries—two dangerous extremes. It is right to observe that many of our small ships, then becoming useless, would return to port and dismantle, and from thence may be found a supplement of about 29 capitaines de frigate and 100 or so of lieutenants de vaisseau. But if we consider that the service of the military ports of France and stationary employments are filled by the active officers of the army, we must at the same time admit that this supplemental force is no great help for the fleet. It must also be observed that the greatest number of our enseignes, particularly those of the first-class, are fit to take the duties of lieutenants de vaisseau; nevertheless, it still remains that the number of our subaltern officers is not sufficient. An increase of 100 lieutenants de vaisseau, which we recommend, would then be indispensable.

Many good officers of our navy desire to see an augmentation of officers of the lower grades much more considerable. But we differ

from them here. We think that among the lieutenants de vaisseau the vacancies would not be so frequent and that we should never find ourselves with fifty resignations or applications for retirement, as we have done recently, if we were to hold out to young officers the hope of promotion and the certainty of attaining a satisfactory position. It must always materially affect the estimates to create a large number of subaltern officers; it is often more economical and efficacious to enlarge the lists at the top, thus giving zeal to the officers and diminishing retirements, as well as adding energy throughout all ranks. There should be in future 15 vice-admirals, instead of 12; 30 rear-admirals, instead of 24; 150 capitaines de vaisseau, instead of 110; and 280 capitaines de frigate, instead of 230,—or perhaps an intermediate grade might be formed equivalent to the chef de batallion in the army, and the capitaine de corvette should be re-established.

The above numbers are scarcely sufficient for the service of our fleet, but they will increase promotion in the lower grades and serve to rekindle that zeal which is fast dying out. The love of country is a noble feeling,—it is glorious to serve and die for her; but then is it not right that one's country should not be ungrateful, and that while awaiting the hour of sacrifice she should let live those who would do so.

We ought not to forget the difficulties and dangers which might arise from our want of officers if a war should take place with England. We should be obliged to double our lists, and even then have recourse to merchant captains. In a severe conflict what vessel would not be compromised if she had only three or four officers fit to command her. All the bravery and experience of the seamen of the Republic could not avert disaster, because they wanted leaders. This fact should never be forgotten.

From the officers we will now turn to the seamen, and here again we find a deficiency in numbers and experience. If we do not apply ourselves in time to make up this glaring deficiency our national interests will inevitably suffer from our neglect. What have we actually to oppose in our crews to the 84,000 seamen who will be embarked in the British fleet at the end of the year? Less than 30,000 men,—of which two-thirds are obtained from the inscription and the other from recruiting. The English have a reserve of 300,000\* [30,000?] seamen;† all of which it is true the government have not yet at their disposal; it is certain, however, that in case of a prolonged war they will not want seamen. Have we the same reason for being at our ease? Certainly not.

The organization of our maritime inscription places at the disposal of the government nearly all the resources for seamen which are possessed by France. It is impossible, therefore, for us immediately to man a powerful fleet if we had one. But maritime wars are no less sanguinary than others: the means of destroying life have been no

\* But it shows only 26,000 men: we presume the number is higher.

† Not yet raised.—Ed.

less brought to perfection in ships than those of defence and protection. Sickness and the storm by no means spare our seamen abroad, as the Black Sea and the Baltic have too well proved. The war in the East, without being maritime, has left thousands of widows on our coasts. For France to be confident of maintaining in good condition a war of four or five years against a first-rate maritime power, she would require a reserve of at least double the number of seamen than were employed afloat. We do not possess this necessary reserve, and to this day have done nothing to form it; this indispensable element, in fact, has been utterly neglected. From the very first year of a war we should be obliged to embark more than three-fourths of our resources in trained seamen,—and how could we fill up their vacancies?

Recruiting would furnish us with 10,000 or 11,000 seamen, and we have about 100,000 names on paper, including novices;—does that mean that our disposable seamen amount to 110,000? Certainly not. In 1850 the inscription list numbered 96,000. The legislative commission examined it, and, striking off the useless, the merchant captains, and novices, reduced it to 71,000 seamen between twenty and forty years of age. If this be reduced by a tenth, for the sick and absent, we shall have 60,000 disposable men; and even this amount may be exaggerated, for many fathers of families are attacked by sudden illness when their services are required at sea! and a considerable number of seamen would be abroad in distant seas, from whence it is not easy to recall them in case of war. With the quota supplied by recruiting we might reckon, then, at most on 70,000 men, while the English will have embarked in time of peace 84,000. We should be obliged to double our 30,000 men if a maritime war broke out: thus, 10,000 registered seamen would form our only reserve. These would, perhaps, scarcely be sufficient to replace the killed and wounded in the first three months of a war.

Is, then, the rising number of the maritime inscription sufficiently rapid to supply of itself readily the necessary additions? It is quite an illusion. At the end of the reign of Louis XIV, after the war of succession (which ruined her commerce), France had the same number on her inscription list as now. The author of the system of inscription—the great Colbert, who substituted it for the odious one of impressment—had made it answer so well that Louis XIV was enabled to bequeath 87,000 registered seamen to his successor.

The deplorable government of Louis XV sacrificed the navy, with the colonies, for at a certain time in his reign France had but two ships of the first-class afloat! Louis XVI, at his accession to the throne, did not find more than 67,000 inscripts. He revived the navy, and bequeathed 80,000 seamen to the Republic, which again ruined our maritime resources.

All the abilities of Napoleon were insufficient to restore it, and the inscription reached only in 1813 the number of 74,000. In the course of twenty-seven years afterwards it rose slowly to 85,000; and from 1815 to the present time it has been increased by 15,000 names, although the mercantile tonnage has increased more than one-



third in that period. Thus the normal progress of the inscription cannot afford to our navy at sea and on the coasts a sufficient number of seamen. It therefore becomes necessary at once to increase its development and to seek elsewhere for this indispensable element of strength.

In a country like ours, which seems to have taken pains to make the most extraordinary experiments in internal organization, and which has so often carried to an extreme the practical experiment of liberal sentiments, it is surprising that the maritime inscription has not been put down. Attempts upon it have not been wanting either in times gone by or in these days; but the impossibility of finding a substitute has saved it. Some ultra theorists have proposed that our experienced registered seamen should be replaced by fifteen or twenty regiments of the line, which could be suddenly embarked; and they have triumphantly instanced the Romans as having beaten the Carthaginians by improvised crews. We shall not stop to refute this opinion. If we were to restore to our enrolled seamen absolute liberty, more than half of them would forsake the service of the state. They would much prefer to serve for something less in merchant vessels, rather than be subject to the severe discipline of our ships of war, exposing their lives, which are important to their families. Large bounties are not sufficient to man our ships with volunteers, and England (richer than we are), with more obligation than ourselves to command the sea and with only a moderate budget for her army, would take from us the greater part of those foreign seamen whom the love of adventure and the attraction of pay would lead to embark in one fleet or the other. We may also add that this mercenary element introduced in our forces would destroy their national spirit—that spirit, indeed, which gives us both our strength and our honour.

It would become necessary in case of war to resort to our troops of the line to compose a large portion of the crews of our ships of war. One can well imagine how useless 500 or 600 clumsy soldiers would be in a difficult manœuvre during battle or in a storm, perhaps sea-sick, scarcely able to stand upright, and dispirited from being out of their element. A year at sea would be required to render them serviceable, and during the first struggles on which side would victory turn?

The interests of the country then evidently demand the most rigorous maritime inscription. If, like the English, we had 200,000 or 300,000 seamen, and the power to have recourse to impressment in case of necessity, the difference of position would enable us to modify somewhat our maritime organization and we could try a new system, but in the actual state of things this would be folly. What we have to do is to increase the number of our inscripts, making them happier and improving their condition. Already the state encourages them by the aid of a kind of mutual contract. The inscript serves the state for twenty-five or thirty years, receiving in return the right to fish and to act as pilot. This privilege should be scrupulously maintained, if possible, everywhere. It has been pro-

posed, in order to increase and encourage the number of inscripts, to apply the law to all inland navigation, a rule which would no doubt much increase the number of registered seamen, but to carry it into effect seems almost impossible. The great majority of boatmen would refuse to submit to the inscription; living on the rivers, there is evidence that they have no fancy for the sea, and to avoid it they would sacrifice the few advantages they would obtain in exchange. - The effect of embarking them would be a grievous drawback to interior commerce, a diminution in river traffic, and a rise in the price of transport that would render it more difficult for us to compete with foreign industry.

Previous to 1826 we had established offices in the interior and the inscription was in operation in the upper parts of our rivers; but the reasons which induced us to abandon it are much more numerous now than they were then. It is with regret, then, that we fear the liberty of our river navigation must not be interfered with. But without looking there for the desired addition to our maritime inscription, we might avail ourselves of the partial fitness of the young boatmen of the rivers in the choice of inscripts for the navy. While as to the inscripts generally, in order to increase their number the most efficacious means would be to develop as much as possible the great fishery and the quota of men in ships on long voyages. The sacrifices which might be made by the state to encourage these would provide it in return excellent seamen. The bounties given by the government to the Newfoundland fishery are repaid with interest to the state. It would be the same with the trans-Atlantic packets, which should have been long established, and also those of the Pacific. Again, it would be useful and just to add a little to the slender pension of our seamen, who are far worse treated in this respect than the registered working classes; to add a little also to the widows' and orphans' pensions. The present regulation assigns to every widow the sum of forty francs every three years,—Is this really sufficient? Will it not be fair to secure to her the amount of her rent? Those who live on the coast know well the value of this small assistance, and how grateful they would be for it. The registered seaman always has been and always will be the select of our crews. He brings with him family virtue and good faith; he is also saving, orderly, and has proper notions of duty. If it be painful to him to leave his family fireside and to give up his liberty, the remembrance of those he has left there will not diminish his courage; but in sickness, or on his death-bed, his mental sufferings would be relieved if he were always assured that his wife and children would have a home to shelter them.

We know that our wishes are shared by the imperial government, and the *administration des invalides*, so well managed, would be happy if it were able to give more. To the government and chambers it certainly belongs to provide the means. They talk of suppressing the drawback for the expences of materials, that forms at present their readiest source of income, and to replace it by an annual grant. We doubt whether this would be advantageous; and, whatever be the

system adopted, it is desirable that its revenue should be rather increased than reduced. At present this establishment does not distribute annually less than 400,000 francs in relief, and 7,000,000 francs in retirements.

The improvement of circumstances in the inscripts will not always give us the complement of tried seamen that we require, and therefore we must have recourse to more power in levying from it. Happily there is no difficulty in this. What difficulty would there be in raising from our 100,000 conscripts 5,000 more men for the navy? What is there to prevent our adding another gunnery ship to the navy (which ship supplies it with 1,200 men a year) and to double the number of small arm men in training at l'Orient, where in ten months one is qualified. It is entirely a question of money, and this cannot be for a moment considered in the subject of defence and safety. Besides, this transfer of 5,000 men from the budget *de la guerre* to that of the marine would cost the country little. To lessen the expense one might divide these 5,000 men into two classes, which might be alternately exercised for six months. In seven years we should thus have 30,000 to 35,000 men from the levy; who, without all being expert seamen, would at least be capable of rendering good service. In order to ensure their being fit for their work before collecting them for examination, the mayors of the communes should send a return of the young seamen and boatmen of the river and coast districts. We could, moreover, have recourse to a general summons: more than one good sailor has been obtained from inland districts.

It has been proved by the experience of some years that half the crew of a ship, without any inconvenience, may be formed of inscripts and men obtained by levy, according to the principle laid down in the decree of 5th June, 1856. Up to the present time, however, two-thirds of our gunners are from our classed seamen. But it may be admitted generally that three certified gunners, three certified small-arm men, and something under two able seamen per gun, constitute the most approved complement for a ship. It would be possible then to embark in a much larger number, as gunners and small-arm men, men obtained from the conscription. In frigates, and especially small vessels, the proportion of class seamen should remain as it is: the kind of service required is very different. But on the whole, with less than a million of expense, from 4,000 to 5,000 more seamen would be raised, seeing that there would be so many less recruits to be paid by the war minister; which he might consider a reserve and exercise for three years and a half, or might keep from six to seven years on board as coming from the conscription (for our part we prefer this system, each having its advocates), and our navy would gain a third in amount of fighting men, which in seven years would be increased to the respectable number of 100,000 effective men. In fine, 600,000 soldiers and 100,000 seamen should always be the disposable contingent of France.

On a well organized administration depends the equipment and the provisioning of the crews. Is the administration of the navy so

perfect as the great interests entrusted to its care require that it should be? Are there not weak points which require improvement? We will proceed to answer both these questions. Organized and managed as it is, the administration of our navy does all it can, and forms a respectable body, to which justice has not sufficiently been done. But there is room for improvements in it, no less manifest and no less necessary than those which have been urged in favour of naval officers.

Our maritime administration has been often attacked of late. Too many officers, discontented with their position, cry out lately—"We are overwhelmed by correspondence," and reproach the administration for spending too much in accounts and *materiel*. On the other hand, again, others, who are not well informed on the subject, seeing that the *materiel* possessed by England doubled and soon trebled, charge our administration with incapacity and want of foresight, without considering that the English budget doubled in six years, and assisted by enormous supplementary credits, perfectly explains the difference.

If the construction and working of the French and English naval administrations be compared, the result is not to our disadvantage, although it has been said to be so. In England the supreme direction is invested in a person ignorant of naval matters, who has five civil\* functionaries under him, and each of these appoints his secretary (*personel*). The unity of direction is better secured in France by means of a responsible minister of marine, surrounded by competent functionaries and assisted by special councils.

In the arguments advanced against our system of responsibility, the estimate and the expenditure have been confounded with each other, functions of different bodies; and it has been concluded that in comparing it with the administration de la guerre (which they hold up as a model of order and method) the administrative system of our navy is radically defective, and very inferior in all respects to the English Board of Admiralty. Now, the responsibility of our naval affairs rests on the same law and is conducted on the same principles as those of war. The regulations of the 26th January, 1845, for war and of the 13th November following for the navy, according to which the routine is carried on, are nearly identical.

The peculiar tact of the English for clearness of correspondence and a limited staff for the duties of it is well known. Nevertheless, the admiralty and its offices stand at 1,730,000 francs in the English estimate, while our central administration costs only 1,000,000. The salaries and perquisites of our responsible men, heads of departments, *agents de manutention*, in our different offices reach the sum of 3,666,000 francs (£138,600); but the corresponding expenses of the English are 4,917,000 francs (£500,000). In fact, if the entire management of the admiralty business requires 122 individuals, our minister

\* M. de la Tour has been misinformed here: the Board of Admiralty is principally composed of naval officers.—ED.

employs but 50 in such matters. It is right, therefore, to look well into things before blaming the zeal and capability of our administration. The department *de la marine* has been a most laborious one for several years. Its moderate resources have in general been well employed; but it has not yet sufficiently increased its budget (estimate) nor improved its institutions in conformity with the period to which they belong. It has, in fact, been neglected, not to say more. It has been deprived of the right of intervention in preparing commercial treaties. It has been denied all direct interference with the consulates, with commercial ports, with lights, and in relation to these matters has been deprived of all power. It would be unjust and dangerous to go on reducing its power and its credit by ill-founded criticism. No doubt all is not brilliant in our naval organization; but, to mend it, above all things means are necessary, and the grand criticism to be made on it is that the powers which dispense the finances have done wrong in having long withheld those means.

Let us glance at the improvements necessary for a good formation of the *personnel* administration. It is composed of 1,117 members,—that is, 429 officers of the commissariat, 34 officers of inspection, 97 in charge of stores, 72 to works (of the navy), and 11 to *manutention*. These 649 officers are assisted by 474 clerks at 1,200 francs, and by more than 1,500 extra clerks at 900 francs.

The principal branch is the commissariat, to which the name of *intendance maritime* would be well applied, which has undergone divers alterations. We are at a loss to imagine why it has been deprived since its formation, of maritime prefects; this well-known name best explains its importance. But this cannot convey an idea of the multiplicity of its labours. The minister of marine writes, in 1854,—“When we revert to the attributes which were specially defined in the laws restored in 1852, it is easy to see that no functionary in France to this day has so much power with so much responsibility. A *commissaire de quartier* is an administrator in the widest sense of the word: he is, in fact, a judge, the management of wrecks demands from him a knowledge of maritime affairs, and he should be familiar with the usages of the fishery.”

A *commissaire de la marine* is, in fact, an *intendante*, a responsible person, a judge, and officer of police. He unites these various duties, all of which demand a large share of intelligence and an unwavering probity. On him depend the levies and provisioning of the fleet, the police afloat, the payment of wages and retirements, the settlement of disputes between seafaring people, the superintendence of the tribunals of commerce at the ports, and the surveillance of all the coast wherever the fleet may be or has been. With a very defective commissariat it is impossible to have a good navy. It is therefore essential to select it with care and to treat it well. And yet a pitiful position is inflicted on the officer of this important judicial and financial body. He is so badly treated that in the present state of things we cannot get men of position to volunteer for the station. While the military intendant has a good prospect of the future before

him, he who enters for the situation of maritime intendant has to look for a series of ingratitude. It is almost impossible for a man of talent to obtain in it superior employment, even tolerably required. The military intendance has a great many superior positions. It has 8 intendant-generals, equal to generals of division; 26 intendants, with rank of general of brigade; 50 sub-intendants of the first-class and 100 of the second, considered as colonels and lieutenant-colonels; 56 assistants of the second-class, of an inferior rank. In each military division there is a general officer and many superior officers, who direct and superintend the officers of administration and those in charge. Thus this corps is one of distinction and authority. The future is insured to our intendance of, in fact, the first military administration of Europe.

If we compare the above with the maritime commissariat, we find nine commissary generals, but four of them only ranking with rear-admirals, and receiving 10,000 francs; the five others have only 8,000 francs. For them all assimilation to the rank of general officer is not carried out, since the Chambers and the Conseil d'etat most unjustly and much to their injury refused them last year the benefit of the reserved list. Twenty-six commissaries divided into two classes have 5,000 and 4,000 francs. Such is the head of the corps. Then there are 32 assistant commissaries, some on 3,500 and the rest on 3,000 francs: then 132 sub-commissaries, with the rank of lieutenant de vaisseau, half of which have only 2,000 francs; and, lastly, 230 sub-assistant-commissaries, who have only the miserable pay of 1,500 francs. Below these again there are 474 clerks and 700 copying clerks, who have to undergo at least twelve or fifteen years' labour to attain the lowest rank of the commissariat. As two thirds of the sub-commissaries are made by selection, the sub-assistant-commissary, who has neither interest nor good fortune, remains for fifteen years before becoming sub-commissary.

Such is the condition of the maritime intendance. A single exception is made in favour of the *Ecole Polytechnique*: two of its pupils may obtain at the first step the appointment of sub-assistant commissary and quickly gain in this manner the highest employment, much to the discouragement of others, without securing to the corps in return any accession of brilliant capacity.

Notwithstanding these defects of organization, the commissariat forms a respectable good working corps of incontestible probity, and can boast a good many intelligent and well informed officers. But is it fair to repay so ill persons thus occupied? Moreover, is it wise to leave in comparative indigence men who have large sums under their control, and who direct works of considerable outlay? To convey an idea of their occupations it will be sufficient to show the responsibility which the commissaries of Marseilles and St. Jervain have to incur. Let us repeat the details which we have already laid before the *corps legislatif*.

At Marseilles the chief of the administration *de la marine* has 22,500 inscripts under his surveillance, and all the coasts from the

Var to the Spanish frontier. He is the director-general for the minister of marine and the colonies. In the short period of nine months last year it was necessary to freight 149 ships on government account at the cost of four million francs. All commercial navigation depends on him. The allotments to the families of the seamen, the pensions and reliefs to widows pass through his hands, and constitute considerable difficulty and responsibility. This responsible officer, thus oppressed, was for several years a mere commissary, at a salary of 5,000 francs, while the military intendant is paid 10,000 francs. A few months since a commissary general was appointed to this post, but to the detriment of another very important one, for the number has not been increased.

At St. Servain the commissary last year had under his orders 25,042 inscripts: he had to superintend 1,550 ships, with crews amounting to 14,000 seamen, partly engaged in the large fisheries; the coast fisheries also are supervised by him, employing 700 vessels, carrying 5,000 seamen; besides the oyster fishery at Cancale, which occupies 400 boats, and he had to pay about 3,000 pensioners, &c. The circulation of funds through his hands amounted to 1,600,000 francs. To him also belong the presidency of the Shipowners' Society and the imposition of fines when the regulations are infringed. For such a position a superior person is required. Now this officer receives for his salary the sum of 6,000 francs. His labours are somewhat lightened by the creation of a *quartier* at Cancale; but enough remains to the commissary of St. Servain to warrant the appointment of a commissary-general in that busy port, and the same may be said of the principal commercial ports.

If from a *quartier* we proceed to a *sub-quartier*, we must again perceive that the rank and pay of a sub-commissary do not correspond with his power, his duty, or his responsibility. The *sub-quartier* of Paimpoul, for instance, gives him 10,000 inscripts, and in one port alone, the number of vessels fitted out for the fisheries of Iceland and Newfoundland in four years has increased from 5 to 48. The sub-commissary, chained to his office by excessive work, can never apply the surveillance required on the coast.

It appears to us from all this evidence that the numbers and position of the maritime commissary-generals, the commissaries, and assistant-commissaries should be increased. There are eight intendants general of division in the army. Why are not four given to the navy? For the twenty-six intendant-generals of brigade, why not give at least eight commissary-generals of the second class? and in regard of the 170 sub-intendants, colonels, and lieutenant-colonels, would it not be both just and proper to appoint 30 commissaries of the first class and 50 of the second, replacing the assistant-commissaries. This would be an increase of not more than 25 superior officers; but it would animate and strengthen the whole corps in future. One-half of the sub-commissaries besides should be considered and paid as assistant-commissaries of the second class: their number might be increased to

50. A salary of 3,000 francs would certainly not be too great for their important functions; and the other members of the commissariat, whose salaries are inferior to those of lieutenants de vaisseau and enseignes, should in all respects be placed in a similar position to them.

The whole corps being subject to sea service, the commissaries who have made many voyages should profit by the advantages which we have recommended for those officers who have had long sea service. More exposed than the military intendant, the commissary at sea shares almost all the dangers of the officers of the ship, and it is therefore only just that he should not be neglected.

The condition of the commissariat or rather of maritime intendance being thus ameliorated, men of distinction would seek the office. To compose the corps of younger men it would be wise to lower the age to twenty-five as the maximum for examination of clerks for the commissariat; and hereafter one-third only of the vacancies should be filled up by selection, as is the case with the officers of the navy. To those candidates who had failed in their examination the employment of *agent comptable* might be made more available, in the office of director of works at the ports, with a corresponding remuneration. We consider it will be possible to reduce the number of small auxiliary employments of 700 or 800 francs, to better remunerate persons of a higher degree. A commission appointed by the minister of marine has been for some months looking into the subject of returns and their forms, with a view to their simplification, and may succeed in reducing a number of these small appointments. But it may be observed that the departments of the navy have already done away with many of these superfluities.

In conclusion, there is also something to be done for the 20,000 workmen of the marine department. Compelled to serve the State from twenty years up to the age of sixty, they deserve an increase of their pensions, which are actually under 400 francs, the sum to which they are entitled on the principle of the laws by which the retirements are regulated.

It now remains for us to examine briefly our floating and stationary defences.

We do not invite our country to incur the enormous expenses of England, and to sacrifice in five or six years a milliard francs of resources in increasing and protecting our naval *materiel*. The state of our finances and imposts requires a strict economy. And yet it would be a piece of first rate imprudence not to place ourselves as nearly as we can on a level with our neighbours. To the *number* of ships and ports we are obliged to oppose especially the essential of *quality*;—a small number of military ports and ports of refuge, but these scrupulously fortified;—not too many ships, but these of a superior speed and construction, and as perfectly fitted and armed as possible. Such should be our programme.

Do not let us consider the number of ships of the line that we should



have in 1872 should be fixed at 40 and frigates at 50. Let us increase a little the number and quality of our engines of war, keeping mainly to the progress of science, and we shall be able to face, if necessary, double or treble the number of England.

The naval force of France for the future should undoubtedly be composed of two distinct elements. 1st, a fleet of war ships, all screw steamers and of great swiftness. 2nd, a fleet of transports of low speed, capable of transporting (in one voyage) a considerable army to any part of the continent. At this moment we have no more than fourteen fast ships of the line; and, unfortunately, the official return states that our building-yards have not been for a long time so bare.

There are twenty-three vessels of the old class of sailing ships, which we are fitting with small steam power to render them serviceable; these with the ships of the line which we already have, will form a mixed fleet. England is doing the same as ourselves; but while we are converting one ship, she metamorphoses three, and organises besides a powerful fleet of gunboats.

Our mixed fleet would be of little use to us if a war broke out with England, when they will be condemned to rot in our arsenals or the greater part of them will be destroyed by the numerical superiority of guns similar to our own. In order that our relative inferiority should be made up for, we should proceed with deliberate and cautious steps in the path of material progress. In the presence of a power which pretends to rule the world by the extension of her fleets and the number of her seamen, we have no other course but to keep pace with science. We should renounce at once those huge ships of war, at least those of slow speed, which we either convert or build at so much expense. Powerless for defence, and equally so for offence, these defective engines of warfare ensure neither the security of our frontier nor the honour of our flag! Let us not lose sight for an instant that to live in peace with our neighbour, we must show her that she will have little to gain and much to fear in attacking us.

In endowing fleets with two new and terrific appliances of warfare, the iron coating and the rifled cannon, ranging 5,000 metres, (5,466 yards,) with a percussion projectile,—science has overturned all the old theories. The power of naval offence has become far more formidable than it has ever been. Probably a ship of the line may have already become but a type of the old school, on account of her lofty sides and their weight, which renders it very difficult to fortify them with a cuirasse. The model to find is a fast, invulnerable vessel, that will not be overpowered by the sea, and strong enough to withstand a heavy shock if used as a ram. With a special fleet of this construction, so well adapted to the ardour of our people and their military aptitude, the enemy's ships might be partially destroyed; and most certainly such a fleet would make terrible havoc among thousands of British merchant ships. The value of the immense fleet of England would then be almost reduced to nothing. With these fast and

protected ships we might quickly come to those close quarters in which our crews excel. Until this reform is effected, the maritime frontier of France will remain open to the insult of the enemy.

We should want several thousand men for the protection of our coasts and the service of our floating batteries. In case of necessity the custom-houses would furnish their men, and it would be prudent to appoint officers to take charge of the separate districts of our coast, as England has done. These officers should command the conscripts which the electric telegraph would promptly summon to the coast at any part where it was threatened. Among the old seamen some good gunners will be found, and being charged with the inspection of the coast in peace, the officers would know it well and would be able to point out to the government the most accessible and vulnerable points. Their presence would contribute to the security of commerce and the confidence of the people, who would then find themselves protected by an organized reserve. We do not know how to recommend this measure too strongly to the government.

Our precautions thus taken, and the organization complete, should England bring her hundred ships of the line against us, as well as her frigates, and a large number of her new ships in armour, the necessity to spread her forces would render it difficult for her effectually to resist us everywhere. About a hundred very fast ships, cuirassed and armed with powerful artillery, would be enough for us to deal incalculable mischief among her merchant ships and colonies, if our ships were in all respects superior in speed. A portion of our maritime forces, supported by large cuirassed ram transports, (*grande transports blindés à éperon,*) would compel the English to have an enormous concentration in the Channel: and even then her merchant vessels would not be safe from our *eperviers de la mer* if we constructed alert cruisers, armed with some heavy guns, and provided them a secure retreat.

Above all things then we should obtain speed for our ships, and increase it in those that are the best adapted. A hundred cuirassed frigates, manned with 50,000 to 60,000 men, would have a very formidable effect in time of war. With such a force, we might fairly accept war in our own waters, and boldly assume the offensive if this hard extremity became necessary.

But it is not in two or three years that we could obtain such a condition, and yet this is no evil either, for we do not wish to imitate English precipitation. Nautical construction is at this moment in a state of transition, the first principles of which are not yet developed: the late English productions, although founded on our best models, are yet defective. The fact is that the best application of steam to either a ship of the line, a frigate, or a corvette, has not yet been ascertained. Our finest ships of war are at fault in regard to the height of their guns, and can only carry coal enough for fifteen days. It is said that the *Gloire*, so formidable in other respects, can only carry sufficient for five days, a defect of the greatest importance. Nor

have we yet arrived at the necessary combination of speed with a heavy armament and the power of carrying a large stock of combustible ammunition; nor are we yet agreed as to the proportion of large guns with the solid shot that will be proper to add in frigates and ships of the line to our rifle guns. Experience of all kinds is yet to come. It is hoped that superheated steam will furnish a motive power more effective and less expensive. Perhaps it may be found unnecessary to cuirasse ships lower down than a sheet below the water line, so as to lessen the weight, which would admit of adding several folds to their armour, if necessary, to resist the terrible cannon which nations are preparing against each other. Of these different points it is well to await for a satisfactory solution, but without slumbering, which we really are doing at this moment before a vigilant neighbour!

According to the budget of 1861, we shall have but eight screw ships at sea fully equipped. We shall have one ready for trial and completed in three months, and a second in commission. Our squadron of evolution does not even consist of nine ships, while we have ninety ships of the line in reserve, and the returns made to government only show a total of eighty-eight steamers. We ought to have at least two small squadrons of six or seven vessels each, without reckoning inferior ships, and to add (as we have already observed) a second instruction ship for our gunners. As in England we should make use of the floating batteries for instruction of a reserve composed of recruits or conscripts, and good gunners, which it is high time we increased in our ports. The English have recognized the great superiority of floating batteries over fixed forts, and are constructing a great many moving citadels, better adapted to defend a port than to breach in the ramparts of an enemy. To imitate this proceeding is our duty. Without incurring enormous expences we may by this method increase the security of our arsenals.

Were we to add thirteen millions to the seventeen millions of extraordinary estimates for the building and altering of our fleet, such a sum would suffice to give an impulse to our navy and bring it in a few years to that respectable condition we claim for it. Our defence in future would become something more possible, and our arsenals then more secure.

But let us not be utterly disconcerted at the present superiority of the English. They feel transition like ourselves. Our models of the *Napoleon* and the *Algesiras* are the finest in the world, although neither the one nor the other could resist a large iron-cased ship of equal speed. Among our thirty-eight ships of the line it is true that there are some which in model come near them: some of these were intended for carronades on one deck; which are to be replaced by cannon (30-pounders) three times their weight, and the result will be that the lower tier will be often under water in a heavy sea. There is also a deplorable inequality in the speed of our ships. In conjunction with our new ships of 1,200 h.p., we have

others of 900, 600, 450, and even of 150 h.p. The result of this in action will be something similar to the charge of a regiment of cavalry some of which cannot go beyond a trot nor others beyond a walk. Our frigates too are equally defective; but the English, according to their report, are not in a much better condition. Thus, the *Royal Albert*, of 121 guns, has only 500 h.p., while the *Victoria*, of the same force, has 1,000; and among the English frigates some, like the *Ariadne*, steam 13 or 14 knots, while others can scarcely reach 8. It seems most probable that the model most frequently followed in future will be a large frigate of 900 to 1,000 h.p., carrying from 36 to 40 guns, and cuirassed\* with sheets of 11 to 13 centimetres (4 to 5 inches) thickness. She will then replace the ship of the line.

In our navy, experiment should be followed up most cautiously, for we have fewer resources than our neighbour. We are obliged to concentrate our efforts on a small number of models, scrupulously studied and be alive to improvement. Steam has relatively increased our strength in reducing the number of seamen necessary. If we can diminish the consumption of fuel by means of superheated steam or otherwise, it will prove another advantage for us, who have less coal and pay dearer for it than the English. Let us take advantage of the gifts of Providence; but let us strive to deserve that the God of battles may enable us to provide for the future, as he undoubtedly has done to profit by our valour.

It has often been said that we are not gifted with foresight, and to convince ourselves of the truth of this it is only necessary to look at our coasts, everywhere deficient of defence and ports of refuge. Even our great arsenals are not yet fortified proportionately to the new powers of aggression. The time when the battery on shore was superior to a ship is gone by. Formerly a ship had only her sails for a moving power, and could not navigate narrow straits that were fortified without great risk: should she lose her masts or rigging she could not secure her retreat. But recent invention has modified and reversed these conditions of naval warfare, so that the present state of the defences of our arsenals no longer answers the purpose. Iron-clad ships, steam gunboats, submarine navigation, and galvanic currents have added prodigiously to the powers of resisting shore batteries. Without much risk an enemy may often effect mischief in a port or arsenal. According to the experiments made at Vincennes and Havre, at the distance of 300 metres (328 yards) an iron plate of 10 to 12 centimetres (4 inches) thickness resisted fourteen 30lb. shot in a square metre of surface before breaking and leaving its wooden interior exposed. At 800 metres (875 yards) the 50lb. shot had no effect. It appeared even that a 50lb.

\* It is yet doubtful that with this method a sufficient amount of strength can be given to ships to enable them to withstand the effects of severe weather, &c.

shot fired at 30 metres (33 yards) distance on a proof butt had no other effect on it than to split or indent it.\* The rifled cannon had no advantage in this experiment over the ordinary one, except at a distance beyond 1,200 metres (1,312 feet).

The result of these experiments shows that forts, however well armed they may be, cannot prevent iron-clad ships forcing their passage in a channel 600 metres (656 yards) across. On the contrary, it has been found that 50lb. shot, rifled or not, fired from a distance from 400 (437 yards) to 1,000 metres (1,093 yards) will speedily demolish the most solid masonry. Thus the inferiority of fixed batteries against floating ones appears to be perfectly established. Again, incendiary projectiles may be discharged to an incredible distance; and when these are from an iron-clad ship beyond the effectual fire of batteries, few of our arsenals may be considered free from danger. In a case of urgency, would not an enemy commanding the sea risk the sacrifice of some floating batteries to set fire to the immense mass of stores in one of our large ports? We should consider the possibility of this event occurring at one of our large commercial harbours, as well as at a military one, and spare no pains to avert so terrible a danger. Moveable defences should evidently be everywhere allied to stationary defences, and the first should consist of vessels which are swift, solid, nearly invulnerable, calculated for making dashing sallies at the attacking ships without ships of the line being capable of opposing any serious obstacle to them. Cherbourg, in particular, being most exposed to the attacks of the enemy, requires special preparation, and for its protection no precaution can be too great.

We have already a certain number of gun-vessels and floating batteries which may be turned to good account. But must it not be an object of the utmost necessity to provide for our ships of war some places of secure shelter on our coasts, both in the Channel and in the Western Ocean? Up to the present moment we have not thought seriously of this. From Cherbourg to the Belgian frontier there is not even a creek that affords shelter to a ship. Dunkerque, one of our past glories, one of our present resources, is left to become more and more choked with mud, which it would be easy to remove.

Again, between Cherbourg and Brest there is not a single retreat for our navy or commercial shipping. There is, however, at a point precisely half way between these two distant ports an admirable position for watching the channel, a shelter formed entirely by Nature for the rendezvous of our fleets, namely at Port Lezardrieux. Vauban was the first to point to its advantages. This place was in competition with La Hogue and Cherbourg for the establishment of

\* It is asserted that the Whitworth and Armstrong guns have penetrated, at a short distance, plates of from four to five English inches in thickness; but their plain surfaces were at right angles to the line of fire,—the result would be different on ships.

an arsenal in the Channel; but its long narrow entrance, so ill adapted for sailing ships, was the cause of its being abandoned.

In the event of war, that part of the channel that lies between Brest and Cherbourg would necessarily be the theatre of frequent collisions. It is commanded by Jersey, Guernsey, and Alderney. To avoid danger and to seize the favourable moment for attack it is necessary that our ships should be always able to find security easy of access and egress in a position as far north as possible. The only place which unites these conditions is the mouth of the Trieux, which forms the roadstead of Lezardrieux. The Brest Railway is not more than a few kilometres\* from it, and to make a branch line to it would not be difficult; by Napoleonville it could be connected with L'Orient.

All the conditions desirable for a port of refuge would be found in that arm of the sea at Lezardrieux. The approach is easy, and the light of the Heaux, the northernmost point of Brittany, indicates its entrance, which may be effected at any hour of the day or night.† The principal channel is straight, clear of dangers, and has deep water. The second channel is equally deep, and opens more to the north than the former; with the assistance of experienced pilots, other channels are available for small vessels. The length and contracted breadth of the first channel, formerly grave obstacles, in these days become rather important advantages, for they render it easy of defence. Steam will enable our ships readily to navigate this defile, and a few fixed and moveable defences would render it impregnable.‡

The sea is perfectly smooth within it—a wave there is never seen. Another great advantage which it has is that throughout the two channels and at the anchorage of Isle au Bois, in the Trieux, for three miles, the depth at low water of equinoctial springs is more than is necessary for the largest ships. With the assistance of a dam and sluice, the same depth may be obtained for a length of seven miles in the upper part of the Trieux; and this work would much diminish the rapid current which rather interferes with the entrance channel. The expence would not exceed 6,000,000 fr. (£240,000). If England possessed this admirable harbour, it would soon be covered with forts, magazines, and store-houses. But we, on the contrary, have neglected it, so that nothing ever has been done for it beyond a recent preliminary project.

It is to works of this kind that it would be desirable to see applied the sum of 150,000,000 fr. (£6,000,000) granted last year to the go-

\* A kilometre is about half a mile.—ED.

† The leading marks for entering take a vessel within a mile of another light on Brehat Isle, to the eastward of her, that on the Heaux de Brehat being about three miles from it to the westward, and both visible some twenty miles distant, and therefore excellent sea lights. The place is thus already well provided in the way of lights; although, for entering, harbour lights would be necessary.—ED.

‡ It is just forty miles about W. & S. from St. Aubyn Bay, Jersey.—ED.

vernment for extraordinary application. Two-thirds of this sum remain to be appropriated, and 30,000,000 or 40,000,000 fr. (£2,000,000 or £2,400,000) could not be better bestowed than in making our commercial ports the guarantees of security which steam and the casing of ships of war require. If we do not take care the day will come when a fleet outnumbering ours, and in command of the sea, after some success, will penetrate our ports and rivers and utterly ruin our mercantile marine.

We regret that such works are so limited, and that we are not stronger in the fortifications of our coasts and ports. In the generality of cases measures must keep pace with the views of the ministers of war and commerce; and thence the slowness and the frequent doing and undoing, and this at once explains the neglected state of our sea-board. If Colbert had not taken the entire management of all that concerned our maritime and commercial interests, could he have left us so large a proof of his genius as he has done? The most eminent statesmen at present in the department of marine see themselves so hampered with the complication of small affairs that they soon become discouraged in the midst of their most important designs.

It is desirable that a higher influence devolved on the *marine* authority in all that relates to its maritime and commercial interests; that a certain number of consulates at the principal ports should be entrusted to superior officers of the fleet, a system which England adopts with great advantage. The *marine* should form a part of the council in all cases which compromise its present and future resources. The abandonment of the prohibitive system, for instance, decided by the minister of commerce, as applied to the fisheries, will probably annihilate hereafter a pursuit on a part of our coast that supplies the best portion of our contingent of maritime inscription, and thus add to the difficulty of recruiting for the fleet.

The fishery provides the best part of our seamen, and is one of the principal elements of our maritime power. The maintenance of the inscription and the privilege of conscripts for the fishery have been sanctioned anew in the last session by the law on the grand fisheries. While for every 100 tons of measurement the general coasting trade employs six men, and those on distant voyages eight, those for the Newfoundland Bank fishery employ thirteen, those for the Iceland fishery take seventeen, and those for the coast fishery of Newfoundland thirty, the Scotch herring fishery and the Scilly mackarel fishery take thirty-six. Now, the decree of the 30th November, 1860, prepared by the minister of commerce—the minister of marine not being consulted upon it,—has thrown confusion into this last branch of industry, so important to our first maritime arondissement.

What will become of our marine if those industrial resources which cost nothing to the state and provide our best seamen are to be treated thus without being heard? The prohibitive system only can efficiently guarantee and combine with it a progressive development; and a respect for this principle is really the palladium of our maritime power.

If the minister of commerce leaves the fate of our maritime population to the chances of commercial speculation and concurrent industry, what is to form the foundation of our naval power? If the fishery is to be revived by the reduction of the tariff, on the system of common rights, at least the legislative measures which enthrall its operations and restrain its enterprize should be removed. English fish admitted at the rate of ten per cent. in our market, in lieu of forty-four, tends to depreciate the French, and that, too, without lowering the price to the consumer. In addition, Scotch produce is particularly injurious to our salting, and we consider it much to be regretted that the supply of the national market has not been preserved to our fishermen. The Scotch fishermen have already destroyed the competition of the Dutch and other rivals in the markets opened by lowering the duties, such as Stettin, Dantzic, Hamburg, Magdeburg, &c., entrepots from whence herrings go into Germany, Holland, and Denmark. "If the prohibitive duties were suppressed in Europe," says the report of the Board of Fisheries, in 1852, "the Scotch fish would monopolize the continent, in consequence of the low price at which it may be sold, its superior quality, and delicacy." Such a confession is not to be despised.

The English are on their own soil. They fish in small boats, use all sorts of lines, fish in all seasons, and have not to abide by the laws of employers. Our fishermen, on the contrary, have to go far away for their fish, to fit out ships, which the capitalist will not enable them to do but at a large rate of interest, and they have to overcome a mass of difficulties about regulations. At the cost of ten per cent., commerce for our fishermen is out of the question; and we know that already, on all our northern coast, the fishing-vessels that are building are to be sold at a loss of twenty-five per cent. below the prime cost.

This is a sad fact for our marine. We should, at least, suppress in favour of our fishermen the limitations of the seasons for fishing, extend the limits assigned to the net, and relax the rigour of the different measures which impede the small craft on our coasts. These concessions would not re-establish the equilibrium, they would not restore to our conscripts the privileges Colbert so justly conceded to them in return for the permanent service which they render to the state; but, at least, they should be permitted to live, and saved from seeking by other means a livelihood which the sea will shortly no longer yield to them.

Let us now recapitulate the views and conclusions of this essay, in which we have been forced to repeat opinions that we find expressed every day by the most distinguished men of our navy.

The extraordinary efforts of England to acquire a crushing preponderance over our maritime power demand from us a corresponding sacrifice. We consider that it is urgently required of us to increase our means of defence, both of *personnel* and *materiel*. With this object we repeat the following general outline of measures.

To increase gradually the number of naval officers until that of



vice-admirals is 15 and that of rear-admirals 36; to have 150 capitaines de vaisseau (captains), 280 capitaines de fregate (commanders), 750 lieutenants, and 600 enseignes,—which will increase by 103 the number of superior officers, and by 253 the total number of officers; to receive annually 80 pupils into the school ships for several years; to lessen the number of years of servitude of the aspirants; and to examine well the conditions under which young officers enter the service, as to whether they should not be modified. To have but one class of capitaines de vaisseau. To grant additional pay to these superior officers, to the capitaines de fregate, and to lieutenants after twenty-four years,—twenty years and twelve years' sea time; to extend this advantage to the marine corps. To grant to capitaines de fregate the privilege of shore appointments. To give the widows and orphans of officers of the navy the same scale of allowance as those of the army, and part of the civil service. To guard as much as possible from innovation the great and small fisheries and the ships on long voyages, and to preserve their interests most carefully. To increase the seamen's pensions; to give adequate premiums to the conscripts who re-enter after four years of service in the fleet; to increase the number of men called out by 5,000 for some years, with the view of attaining the minimum of 100,000 disposable seamen; to select in future those men from among the young hands who are accustomed to coast or river navigation. To establish a second gunnery ship, and to double the number of small-arm men and warranted seamen.

To assimilate much more the commissariat with intendants, and to grant to this body advantages of rank and analogous position; to increase by seventy-five the number of its officers, and its superior grades by twenty-five. To improve the condition of the subalterns of this corps so as to assimilate their rank to that of the effective officers of the navy; to regulate the examinations, so that the future additions to this important branch may be distinguished young men. To reduce to a third the number of commissions by selection; to diminish the number of small appointments generally.

To increase the number of our fast armour-clad ships up to ninety large ships of war, which we should have in 1872, and to add a proportionate number of gunboats, floating batteries, and large transports. To employ our building resources in constructing a small number of ships after approved models, and especially to watch important improvements. To have always two squadrons of evolution,—one in the Atlantic, and another in the Mediterranean. To confide the defence of our seaboard to the superior officers of the navy, commanding stationary and floating batteries. To instruct the reserve in these floating batteries, as well as those gunners which it is considered proper to add to our ports.

To fortify certain positions adapted for our ships in those portions of our coast situated between our military ports; to secure, especially in the Channel, other asylums besides Cherbourg for our ships of war and commerce; and to set about the important works at Lezardrieux. To employ on these works of necessary precaution a considerable por-

tion of the 150,000,000 fr. (£6,000,000) voted for extra works; to assign, moreover, 17,000,000 to 30,000,000 fr. (£680,000 to £1,200,000) of annual credit for the converting and improving the ships of the navy; to give the navy much more influence in the fortification of our coasts, and to assign to it the right of interference in the proceedings and diplomatic appointments which interest navigation. To entrust to superior officers of the navy a certain number of consulates established at foreign ports. Such is the amount of the demands which we submit to the wisdom, intelligence, and patriotic views of our government.

The increase in the classes of officers, civil and military, and the increase in the number of men which we ask for, will render it necessary that the normal condition of the budget should be increased in four or five years from 124,000,000 fr. (£4,960,000) to about 127,000,000 fr. (£5,080,000), a sum which will be no alarming amount in our finances. As to the supplemental amount of 14,000,000 fr. (£560,000) which we require for the *matériel*, the indemnity of 60,000,000 fr. (£2,400,000) which the Chinese are to pay may supply it for several years. The resources are shown by the realization of 100,000,000 fr. (£4,000,000) to be expended yet in large public works. No financial embarrassment, then, need result from the improvement which we recommend. Admitting that we may be obliged to borrow a little, we must not shrink from this sacrifice. Every day it is repeated that the budget of the army, so rapidly enlarged, cannot be reduced, because it is indispensable to maintain a disposable effective force of 600,000 soldiers, in the face of 500,000 men of Prussia, 600,000 of Austria, and 800,000 of Russia. It would be altogether illogical to make no effort to protect our maritime frontier, since in the very face of them the foreigner doubles his means of aggression. A hundred thousand seamen are indispensable, then, for the efficient protection of our shores and our national honour.

These precautionary expenses which we recommend are not a fifth of the sum devoted by England to a similar purpose, and need not cause alarm. Our views, in fact, have nothing in them hostile to her in particular. English politics often rival ours. In times of peace she is more revolutionary than is conformable to the repose of France and Europe. Immediately opposed to us, she has often been unjust and violent. In Italy she is evidently very hostile; and the jealousy which is now cherished against us prevails in the English government even to inducing her to assume a peevish attitude in Syria. God send that no Christian blood be sacrificed to her in that land. The experience of the past requires all our vigilance and energy, but the time is gone when England might have the chance of dismembering France. We think that we can foresee the day when the exaggerated national principle adopted hastily by despotism will unite France and England yet once more against what we now call free nations, to save the liberty compromised in the West. Nevertheless, on the other hand, there is as much of threatening against us as patriotism among the leaders of the united parties, as well beyond the Alps as beyond

the Rhine. It is not yet clear that the kingdom of Italy, the germs of which have been nourished by the blood of our soldiers, will not one day turn upon us the bayonets of her battalions and the weapons of her fleet in a new coalition originated in England.

*Moniteur de la Flotte.*

[The foregoing is translated from the *Moniteur de la Flotte*, into which paper it had been transferred from the *Revue Contemporaine*; both of which are periodicals of high celebrity for giving good papers on the nautical matters of France. A hurried translation of a few of the first pages having appeared in our April number, we must request our readers to cancel them, as in justice to M. de la Tour, the talented author of the whole article, we have considered it due to him, as well as our own readers, to bestow all the care we can in rendering his meaning into English,—no very easy process, considering the wide difference there is between our institutions and those of the French in these matters. At the same time we may observe that the insight which the whole paper affords into the management of these affairs by our neighbours cannot fail to be not only interesting but perhaps useful on this side of the English Channel.

We are glad to take this opportunity of adding our own testimony in favour of the high character of these periodicals; in which we find important papers on a variety of useful subjects, not only home but foreign—contributions of French naval officers,—the parallel of which we should have been glad to see in our own.—ED.]

---

REMARKS ON DIFFERENT ANCHORAGES, ETC., IN THE STRAIT OF  
MAGELLAN, while Employed in Verifying the Position of a Sup-  
posed Shoal between the First and Second Narrows,—By Mr.  
G. Reid, Master, R.N.

*Port Mercy.*—In this port a dangerous rock exists, not marked in any chart, upon which, in the latter part of the year 1857, a Chilian iron steamer (*Maria Isabella*) struck, and sunk almost immediately afterwards, whilst entering the harbour to anchor; likewise, in 1860, a Chilian barque, running in to anchor, was wrecked on the same rock. Its true position is not exactly known, but reported to be near the middle of the harbour, and about midway between the two outer points forming the harbour, and having no kelp on it at the time.

In November, 1860, H.M.S. *Satellite* (drawing 20ft.), having to pass through the straits from the Pacific to the South Atlantic to verify a dangerous shoal reported by Captain R. Hall, of H.M.S. *Termagant*, situated northward of the Triton Bank, in the fairway, and being nearly dry at low water, she anchored in Port Mercy for the night; and during her passage into the anchorage the kelp off the

S.E. ends of Observation Islets and the N.W. point of the harbour was found to have extended in a south-easterly direction some distance in detached patches, through which she had to thread her way in, keeping nearest to the N.W. shore. But in coming out she left the two inner kelp patches marked in the chart on her starboard side, passing out between the two outer ones, finding not less than eight fathoms water between them or on her way out, which appears to be the best way in and out.

*Sandy Point Anchorage.*—This anchorage is on the South side of a sandy spit, extending from the shore in an easterly direction about two miles, which is made by the deposit of a river, backed up with the tide. It runs past the back (northward) of the settlement and diagonally across the spit, dividing it into two parts, the eastern one forming the outward part of the spit, and the western, with the beach, the anchorage.

The best anchorage is in ten fathoms, mud and sand, about three-quarters of a mile from the shore, with the following bearings:—flag-staff, N.W.b.N.; East end of spit, East.

Anchorage can be obtained some six or eight miles to the northward and southward of this spit in twelve fathoms, sand, about a mile from the shore.

When coming from the northward, bound to Sandy Point, give the East end of the spit a berth of two miles, and haul up for the anchorage when the southernmost house of the settlement is well open of the spit, as a shoal projects to the southward from the mouth of the river.

If coming from the southward, bound to this anchorage, pass about a mile and a half to the eastward of St. Anna Point; then a N.N.W. course will lead up to it. The wind generally becomes scant off shore after passing this point.

St. Anna Point is easily known by having a bare appearance,—only three or four scattered trees on it, the land in the background thickly wooded.

At times, when coming from the northward, the spit at Sandy Point is not readily made out. A white patch, approaching to a square, about half way up the green bank over the beach to the northward of the spit is a good guide to show when getting near it.

High water, full and change, noon; rise of tide, six feet.

This anchorage is well protected from all prevailing winds from S.W. to N.W. (and it seldom blows home from the eastward), with good holding ground. The governor of the settlement states, after nine years' experience at Port Famine and this place, that he has only seen one easterly gale. He also says the spit is extending fast in an easterly direction. In the summer months the wind increases as the sun gets above the horizon, and decreases as it approaches it again. In September and October the wind blows the strongest; but if September is fine, then October and November are the two worst months. The thermometer seldom falls during winter below 20° Fahrenheit.

No supplies but wood and water can be obtained at the settlement, as it is only kept as a Chilian military station.

*St. Jago Bay Anchorage.*—The anchorage in this bay is in seven or six fathoms, sand and mud, with good holding ground, about one mile from the shore, eleven miles N.E.b.N. (mag.) from Cape Gregory and N.E.b.E. two miles from Point Valle. There is a small lake with excellent water about 300 yards from the beach. It is supplied by a river running from inland; afterwards over the beach into the sea. At this place Indians often encamp.

It is high water in this bay three hours before being high water in the offing.

When leaving this anchorage with an ebb tide, bound through the First Narrows, allowance for the tide must be made by steering well over towards the S.E. shore, to avoid being set over Point Barraneca Reef, as the ebb sets strong in that direction.

*Knoll off Point Barraneca.*—A small knoll has grown up since the last survey about three-quarters of a mile W.b.S.  $\frac{1}{2}$  S. from the point, with kelp on it, about one cable in length (100 fathoms). H.M.S. *Satellite* steamed across its West end and along its South side within half a mile, getting not less than eight fathoms, sand and rock, about one hour from low water. In 1857, while passing through the straits from East to West, kelp was seen in the same vicinity; but in 1860 the kelp appeared to have increased, or else, it being then the summer, it showed plainer. At present this knoll is not in the way of vessels passing.

*South Side of the First Narrows.*—While passing through the First Narrows from West to East, near low water, and keeping near the South shore, a spit of sand was observed to extend out from that shore between a quarter and half a mile in a northerly direction, and about six miles south-westerly from Point Aengada. To clear which the ship had to be hauled up to the northward, and while passing it no bottom was obtained in thirteen fathoms, being about half a mile from it.

This spit appears to have been thrown up by the tide. At present it is not in the way of shipping passing through, so long as they do not stand too near to the South shore; and from its appearance it would not be discernible at half or full tide—perhaps marked by a ripple,—having no kelp on it, and most likely it will change its position in winter.

*St. Jago Bay.*—Thursday, 8th of November, anchored in Gregory Bay, in a very heavy gale from the westward. At sunset more moderate, and at daylight the next morning wayed and steered to the N.E. Kept about a mile and a half off shore, having the depth of water from eight to ten fathoms, sand and mud, and came to in St. Jago Bay in ten fathoms, sand and mud. Moored ship with seventy-two fathoms of cable on small bower and twenty-four on the best bower, and fixed the ship's position with a round of angles between Cape Gregory, Mount Aymond, and Gregory Hummock (Gap Peak not visible), making the shoal to bear from the ship E.S.E. (mag.) two miles, and between her and the Triton Bank, in accordance with

the position and bearing given by Captain R. Hall, of H.M.S. *Terzagant*.

The boats then left the ship and sounded in that direction and in its neighbourhood for three and four miles, one reaching the N.W. part of the Triton Bank. But after sounding for some time and not getting less water than eleven fathoms, they returned without finding it or the least signs approaching to shoal water, except the Triton Bank.

At the same time an officer and party were sent on shore opposite the ship to register the tide.

Early the following morning (Saturday) the ship steamed out in the direction of the shoal, taking a line of soundings; and after arriving on the spot where the shoal was said to exist, the ship was kept moving about, soundings and angles taken. Ultimately anchored in seventeen fathoms, black sand and shell, on the eastern edge of the shoal, with Gap Peak bearing S.E.  $\frac{1}{2}$  E. Here, again, her true position was fixed with a round of angles between Mount Aymond, a station on shore, Gregory Hummock, Cape Gregory, and Gap Peak, and an astronomical bearing obtained from the ship to Mount Aymond; the tide being registered at the time on shore as well as on board, with its velocity and direction. Boats were sent to sound,—two round the ship, and one to take a line of soundings between her and the Triton Bank, likewise on that bank. No shoal or the least indication of one could be found in any direction; therefore conclude no shoal can exist answering to the one reported by Captain R. Hall.

Found the rise of tide to be 34 feet springs, and the variation  $22^{\circ}$  E.

The First Narrows do not appear open from the westward at a greater distance than five or six miles, on account of the low sandy formation of the land on each side of them, as well as the sandy coloured water running through, making the land appear as one continuous line of coast, without any signs of an opening, until within that distance.

*Triton Bank*.—On approaching the western end of this bank, the ship (northward), the water shoaled quickly and regularly from 12, 10, and 6 fathoms, with a sandy bottom; and when in 5 fathoms the bottom changed from sand to hard mud and mud and sand and boulders or large stones. The least water found on the bank was two feet, at low water spring tides. This spot was fixed by a round of angles taken between Gap Peak and Mount Aymond, angle  $128^{\circ} 50'$ ; station on shore and Mount Aymond, angle  $53^{\circ} 12'$ ; station on shore and Gregory Hummock, angle  $60^{\circ} 50'$ . Likewise all the other soundings were fixed by the same objects.

The depth of water on this bank varies from five, three, and one fathom to two feet, low water. No kelp was seen on any part of the bank, owing perhaps to its consisting of boulders and mud, the former moving about with the tide preventing the kelp growing on the latter. Kelp does not grow in that part where there is a tide running.

During the time the boat was anchored on this bank the flood tide was observed in the direction of the bank over it from East to West, towards the Second Narrows. It is high water on this bank and in the offing about three hours later than on the shore in St. Jago Bay; rise thirty-four feet.

From the shoalest part of two feet on the Triton Bank Mount Aymond bears N.  $\frac{1}{4}$  E. (mag.); Cape Gregory Hummock, W. b. S.  $\frac{3}{4}$  S.; and Gap Peak, S. E.  $\frac{1}{2}$  E. When to the westward of this bank Cape Gregory Hummock is shut in with the elevated land that forms the headland of Cape Gregory. This hummock is known by having a darker appearance than the land in its neighbourhood.

After having passed both northward and southward of the Triton Bank, I should recommend from experience for all vessels propelled by steam to pass southward of the bank; and when leaving the First Narrows, going westward with a flood tide, give Point Baxa about a mile and a half berth, and pass along the South shore, increasing the distance off it to two and a half, three, and four miles, until Mount Aymond bears N.  $\frac{1}{4}$  W. (mag.); then steer up for Cape Gregory till the Second Narrows open, and then steer for them.

On the ebb, keep along the South shore, increasing the distance off it to five miles; and, with Mount Aymond bearing North, then steer for Point St. Isidor, so as to keep it ahead, and when two and a half or two miles from it, haul to the northward till the Second Narrows open, and steer for them.

In going southward this passage is the widest and clearest, and the ship's position is more easily ascertained, through having better objects longer in sight to take bearings to. By keeping Mount Aymond longer in sight, being nearer to Gap Peak, which enables it to be made out quicker, and on losing sight of Cape Gregory Hummock shows when to the westward of the Triton Bank, also Point Baxa. And the South shore is the clearest of danger thereby, having only the bank in the way; and after passing Point Baxa the tide sweeps regularly round St. Philip Bay, and not towards the bank.

When passing northward of the bank Mount Aymond is sooner shut in behind the high land to the north-eastward. Point Barraneca Knoll and Reef are on the starboard side and Triton Bank on the port, which make the channel rather narrow. Likewise the flood tide is deflected from Point Baxa towards Point Barraneca, where it is retarded by the reef and eddies, altering its course and forcing it over the Triton Bank. And, should the vessel be rather close to it, by being in fear of, and trying to avoid the reef, in giving it a good berth she is set over the bank very suddenly by the tide, before having time to ascertain her true position from the chart.

The North side is perhaps the best and most suitable for sailing vessels, by their being able to anchor in good holding ground in almost any part of it, in case of calms or the tide turning before reaching Gregory Bay; for at times the wind falls very suddenly, more particularly towards sunset. On the South side the depth is greater, bottom

irregular, anchorage not so convenient and more exposed, the ground not so good for holding.

Anchorage on a black sandy bottom can be obtained under Point Isidor; but the shore must be approached with care, for the water shoals very quickly from twenty to seven and five fathoms in a short distance.

When coming from the westward, after passing through the Second Narrows and going southward of the Triton Bank, round Point St. Isidor, about two miles from it, and steer across the mouth of St. Philip Bay, keeping about three and a half or four miles off shore; and as Point Baxa is neared haul in towards it until the First Narrows open, then steer for them.

When going North of the Triton Bank, the ebb tide sets strong towards Barraneca Reef and Knoll, forcing the vessel rapidly in the direction of them.

Since the last survey, in 1834, the depth of water on Triton Bank has decreased from three fathoms to two feet. Lately, two vessels have been wrecked in trying to pass over it at near low water. One was a small fore and aft schooner. In this part of the straits the strong tides prevent a course being steered correctly, which cannot be depended upon without continually ascertaining the ship's true position by bearing or angles.

I should not recommend any sailing vessel from choice to go through the Straits of Magellan from the Pacific to the Atlantic. For, after having gone sufficiently far to the westward to make southing, she must again make easting to enter the straits, with the uncertainty of getting clear weather to make the land after running down upon a lee shore of a very dangerous character, and the wind almost always blows directly on it, attended with snow squalls and thick dirty weather. A current sets round Cape Pillar and the S.W. part of Terra del Fuego eastward; and in an E.N.E. direction, from half a mile to a mile and a half an hour, between the South part of the latter coast and Diego Ramirez, which makes it difficult and dangerous to keep a good position close enough to enter when the weather clears up only for a short time. After getting into the straits it is hazardous to run after dark without the moon. All the anchorages as far East as Fortescue Bay are deep and inconvenient to enter. Also, it is a risk to run for and through the First Narrows, and out between the sand-bank on each side, when blowing hard with an ebb tide, for it runs very strong.

When clear of Cape Virgins and the Falkland Islands the easting ought to be made while the degrees are small, so as to reach 30° W. long. in 35° S. lat. It is almost certain that more time will be lost in running for the straits and doing the 312 miles from Cape Pillar to Cape Virgins—not taking into account the risk and anxiety—than in going round Cape Horn. Ships bound through the straits ought to get into the latitude, or near the latitude, of them before closing the land; and when bound round Cape Horn should endeavour to gain



such a position to the westward, to enable them to make a S.W. wind a fair one, as it veers suddenly round sometimes from N.W. to that quarter and blows very hard, attended with a heavy sea.

---

*Remarks of a Passage from Rio de la Plata through the Straits of Magellan &c., in H.M.S. Termagant, Convoying the Two Gunboats Grappler and Forward. Extract.*

After passing the First Narrows a course was shaped to take the ship at least two miles to the northward of the Triton Bank, as laid down upon the chart; but on reaching the spot marked on the accompanying plan (bearings having been immediately taken) soundings were struck in four fathoms, and obtained afterwards as shown by the red ink figures. As the tide was half-ebb at the time, and the rise and fall amounts to thirty-six feet in this part of the straits, it is evident that some portion of this shoal must be nearly awash at low water spring tides; and as it lies right in the fairway of vessels passing to the northward of the Triton Bank constitutes a most serious danger.

To avoid this bank I should recommend a vessel to keep the North shore on board, giving the kelp a berth of about half a mile, until the neighbourhood of Point N. S. de Valle is reached; or to anchor till the flood makes in Possession Bay, and by starting with the first of the flood she would reach the neighbourhood of the bank at almost high water, when there would be water enough on it for any good sized ship.

The *Grappler*, following, struck soundings as shown in the plan ( $4\frac{1}{2}$  fathoms); but the *Forward*, being taken in the tide, was obliged to keep close along the edge of the kelp, the least water she had being five fathoms.

A large patch of kelp has grown up since the last survey off Baranca Point.

ROBERT HALL,  
*Captain, H.M.S. Termagant.*

*Valparaiso, March 31st, 1860.*

---

THE LIGHTHOUSE REPORT.

(Continued from page 248.)

In pursuing our extracts from the recent Report of the Royal Commissioners on Lighthouses we last alluded to the comparison of the quality of British in reference to foreign lights,—a rather unfortunate comparison, for it appears that this being brought forward in the House of Commons produced so much effect against our own as to lead to the appointment of the Commissioners to this inquiry. It

was neither more nor less than a great mistake that was made on that occasion; but, such as it was, it has realized the well known aphorism, "out of evil comes good," for not only has the excellence of our lights been established by the Report of the Commissioners themselves, but also their proportion to the wants of navigation. On this subject we commend to our readers' attention a little brochure entitled *Lighthouse Management*, with reference to the Commissioners' Report, from which some further interesting information may be obtained, and of which we may avail ourselves as we proceed.

Of the quality, &c., of our lights, with which we took leave of the Report in our last, the series of "Observations" on the Report to which we then alluded furnishes some additions. We learn from them that—

"Upon the early introduction of the dioptric apparatus into this country, the mechanical lamp was adopted, having four wicks and four pumps contained in one vessel. Each pump supplied each separate wick, and experience showed they were not well adapted for general use, inasmuch as when one or more of the pumps became deranged the light from that wick was rendered inefficient. The more simple and certain fountain lamp was consequently preferred, and this lamp has produced the lights which the Commissioners show will bear favourable comparison with those of other countries.

"As regards the use of three wicks rather than four, this was not done without due consideration and experiment; economy of oil in disregard of the efficiency of the light has never for a moment been desired by the Brethren; they have always admitted that the light produced was to a certain extent in proportion to the oil consumed, and as the result of the experiments gave a somewhat larger consumption of oil by the three wicks than by the four, it seemed expedient to remove the small centre one, and to promote combustion by giving more air to the inner wicks.

"As respects the amount of oil consumed, it would appear from page 13, that the French have a regulation standard of consumption of 785 gallons for a first order dioptric light; the average consumption for Scotland being 794 gallons, (page 10.) How this can be it is impossible to determine, when a comparison is made with the Trinity House consumption; bearing in mind that the Scotch lights are not exhibited as in England, from sunset to sunrise, but from some time after to some time before. The excess is most remarkable.

"As regards the adjustment and character of the apparatus, it may be observed, that whatever fault has to be found with the adjustment, applies equally to the French and Scotch, although in the latter case the blame is most leniently administered. Certain observations made by the Commissioners, in conjunction with the lighthouse authorities, result in the conclusion that light may be more advantageously expressed by a nicer adjustment of the dioptric prisms; but as regards comparison between the two systems catoptric and dioptric, the only light which the Commissioners report as being nearly perfect is Gris-

nez, on the French coast; and at page 13, the first order catoptric light at Beachy Head, is 'favourably compared with it.' And again, (at the top of the page,) out of twelve British lights which the Commissioners have compared with Grisnez, 'seven are said to be better, five worse.' The Trinity House are of opinion that as volume of light emitted from Beachy Head, and other such like first order catoptric revolving lights, is superior in efficiency to the light from any first order dioptric light on the French coast or elsewhere, however intense and condensed that light may be.

"As to the distinction of one light from another, the Trinity House are fully aware of the advantage in power a revolving light bears over a fixed one, and have invariably adopted it, when consistent with the safety of navigation. But it should be borne in mind by all lighthouse authorities, that it is not alone for the intelligent man that lighthouses are erected, but also for the less educated and unthinking mariner generally; and the too frequent recurrence of revolving lights, only distinguishable by the period of revolution, amounting to so many seconds, might lead to mistake and serious consequences.

"With these views, double lights, which are used by other authorities besides the Trinity House, have occasionally been exhibited to put mistake out of the question, and they have at the same time had another advantage as being useful for either leading or clearing lights.

"With reference to red lights the Commissioners complain of their being so little used for purposes of distinction; a deficiency, as they say, which will be 'at once apparent on a glance at' their 'table.' In this table the Trinity House are credited with thirteen white and red lights. If this number is made up by counting lighthouses where a red strip has been introduced here and there, merely to guard a sand or danger, it is only necessary to remark, that in such cases the red colour is not for purposes of distinction, but to meet some local difficulty in the navigation. It has been at no suggestion of the Commissioners that the Gunfleet, Varne, and Cardigan Bay were made red revolving, or that the Hanois will be of like character, but this colour is only resorted to by the Trinity House where the lights in the neighbourhood have become so complicated as to make such mode of distinguishing desirable.

"In the matter of fog signals, the Commissioners recommend 'the more frequent adoption of whatever means may be found most efficient.' This needs no further comment.

*"As regards efficiency of English lights, and their comparison with foreign ones.*

"It would appear that out of 586 persons who have replied to question 4, 'Do you think that the coasts of the United Kingdom are as well lighted as any of the foreign coasts which you have already named?' '514 consider that they are;' and 'out of 311, 200 express their preference of the British lights, and only 33 prefer those of any other country.' Nor is this due, as they state, 'to any pa-

triotic prejudice, not one foreigner preferring the lighting of any foreign shore.' Again, it appears that 'of the fifteen British lights preferred, 9 are catoptric revolving,' fully corroborating the views of the Elder Brethren, that volume is, practically speaking, at least equal, if not superior to intensity."

The last red light, or nearly so, established by the Trinity House is a good illustration of the foregoing remarks on these lights. The wreck of the *Blervie Castle* seems to have been the crowning argument in favour of that light, for wrecks are, after all, so many forcible reasons for a light even in these days, as well as in those gone by; and as soon as this was determined on, such an introduction among the first-class lights of the neighbourhood required that it should be distinguished by its singular feature, and *red* was chosen. It is one of the most valuable ever placed by the Trinity House, and has already saved many ships from "coming to grief," if we may use a free expression, that have run by Dungeness. But there is a curious fact, even, about this light, highly illustrative of the difficulty of obtaining publicity on these matters. Notwithstanding several hundred copies of these notices are issued by the Admiralty, and these repeated in many public newspapers, it has been a common circumstance for ships passing the light-vessel to hail her and inquire what light she is. No doubt their charts, coming from abroad, say nothing of her, nor has the intelligence of her being established fallen in their way.

We now come to the subject of *Expense of construction and maintenance*, one in which necessarily a considerable difference will be found, depending on local causes. This seems to be admitted by the Commissioners, who observe in their Report that--

"If it is difficult to compare justly the *cost of construction* between the different portions of the United Kingdom, it is still more difficult to draw a comparison with the expense incurred in countries where labour is very differently remunerated, and where the management of lighthouses is centralized in the national government. Yet some interesting data for such a comparison have been obtained."

And yet some idea of the expence of these edifices will be acceptable to our readers, as afforded in the following extract:—

"The *expense of constructing* a lighthouse depends so much on the requisite height of the tower, the accessibility of the site, the facility of procuring material or workmen, and many other circumstances varying with the locality or the character of the work, that it is difficult to form a comparison between the practice of different boards in this respect; yet there are some points which appear worthy of remark.

"The triumphs of lighthouse engineering are those towers which rise in the midst of an open sea on small isolated rocks or reefs that are washed over by the waves. The Eddystone was the first of this class, but it has been exceeded in magnitude, and in the difficulties

overcome in the construction, by three more recent erections, the heights and total cost of each of which are given below :—

" Bell Rock, Scotland, East coast ; height, 117 feet ; cost, £61,331	9s. 2d.
" Skerry Vore, ,, West coast ; ,, 158 ,, ,, £83,126	12s. 1d.
" Bishop Rock, England, Scilly Isles ; ,, 145 ,, ,, £36,569	18s. 9d.

" The two last are, to a certain extent, comparable works, both being erected on rocks almost covered by the sea at high water, both far from land, and exposed to the force of the Atlantic, and both more or less on the model of the Eddystone ; yet the Bishop which is nearly as tall as the Skerryvore, cost in construction less than half what was expended on that magnificent work. It must be remembered, however, that at Skerryvore the workmen, the materials, and all the requisite stores, had to be conveyed a distance five times as great as at Scilly, which in that stormy region rendered the chances of landing much more precarious, and that a quarry and a harbour had to be formed ; circumstances which involved a large expense that cannot be estimated with any precision."

The "Englishman" adds some important remarks on this in his pamphlet. He says :—

" The portion of the Report of the Commissioners upon the subject of the expense of construction and maintenance of lighthouses is marked by the same spirit of partiality and injustice to the Trinity House which pervades the whole of the document before us. Under this head, the larger expenditure in the structures of the Northern Commissioners is glossed over, when comparing them with those erected by the Trinity House, and the comparisons made are especially misleading.

" The Eddystone Lighthouse, built by Smeaton in the preceding generation, was then deemed the triumph of engineering art. The Trinity Corporation has in the present day erected a prouder monument of engineering skill, at a commanding position on one of the rocks in the Scilly Isles, called Bishop Rock, which stands isolated, and exposed to the accumulated force of the waves which sweep across the Atlantic. Some idea may be formed of the violence of the waves at Bishop Rock when we describe the following well-authenticated facts :—An anvil weighing two hundredweight was washed out of the central hole, which was about four feet in depth and two and a half in width, in the rock ; and a bell, weighing three hundredweight, was washed away from the gallery, nearly a hundred feet above high-water mark, in January, 1860. Such is the almost incredible force of the waves at Bishop Rock, and thus the isolated lighthouse built there is exposed to an almost inconceivable shock. The Commissioners extol 'the magnificent work' at Skerryvore ; they have no commendation to bestow upon the English work at Bishop Rock. The grandeur of that erection must, however, be admired, and its fame will survive and be identified with the adminis-

tration of the Trinity House, when the Commissioners and their ill-judged criticisms are forgotten. The Commissioners, in expatiating upon the engineering difficulties to be overcome in these structures, do not omit to magnify those which, in the stormy regions of Scotland, the engineer had to surmount. When contrasting the expense of the construction of the two lighthouses, the Commissioners state, that 'at Skerryvore the workmen, the materials, and all the requisite stores had to be conveyed a distance five times as great as that of Scilly.' The precise distance from which the materials were carried in Scotland is not stated: but we must inform our readers that the stone used at Bishop Rock was quarried at Carnsew in Cornwall, and was shipped at Penryn, a distance of sixty miles from the Bishop Rock. The Commissioners give the following estimate of the height and expense of the three following lighthouses. [Which appears in the foregoing.]

"It is stated that the Skerryvore and Bishop Rock lighthouses 'are, to a certain extent, comparable works, both being erected on rocks almost covered by the sea at high water, both far from land, and exposed to the force of the Atlantic.' The real facts are, that the Bishop is an almost perpendicular rock, with a depth of seventeen to twenty fathoms within a stone's throw all round it. The rock on which it is built is only fifty-two feet square; and although its summit is above high-water mark, the structure begins, as it were, at the base of the rock. In fact, the lowest course of masonry is built one foot under low-water mark, and the sea had to be dammed out to isolate a space on which to lay the lowest stone. Nothing could be more exposed than this position to the whole force of the Atlantic, and yet the expense of erection only amounted to £36,559. The Skerryvore, with which the Commissioners have compared it, may be described in Mr. Stevenson's (the architect's) own words. A reef of rocks, breaking the violence of the sea, surrounds the spot on which the lighthouse is erected: the rock itself is 280 feet square, dry at low water; and the rise of tide is twelve to thirteen feet spring tides, three feet neap tides. 'Before the excavation for the tower was made, a single conical loaf of rock, about five feet in diameter, rose to the height of eighteen feet above the level of high water, and the greater part of the rest of its surface about six feet above the tide-mark.' These facts disprove the alleged resemblance, and demonstrate the numerous points of difference between the two structures. The Bishop Rock light was built on a cone, the greater part of which was nineteen feet *below* high-water mark, the Skerryvore on one eighteen feet *above* it.

"Having thus briefly referred to the English and Scotch edifices, we may fairly claim for the Trinity House a verdict in their favour at the hands of the public on the counts of greater difficulties in the erection, greater economy in expenditure, and equal if not greater 'magnificence' in the structure of these important national works.

"The Commissioners go on to say—'In Scotland there are a number of modern lighthouses on the mainland, as at Girdleness, Buchan-

ness, Covesea Skerries, and Ardnamurchan—handsome towers from 115 to 120 feet in height, with substantial edifices for keepers around their base, and these have cost £10,000 or £11,000 for the building alone. The only lighthouse on the mainland in England equalling them in height and fairly comparable is that at St. Catherine Head,\* in the Isle of Wight, which cost £7,673 17s. 2d. It also is of stone. The Irish lighthouse at Kinsale, 100 feet high, is somewhat comparable with these Scotch erections, and cost about £9,000.

“The usual lighthouses on the mainland of England, or on rocky islands, built by the Trinity House, are much smaller erections, often costing no more than from £3,000 to £5,000, and rarely exceeding £7,500.

“The average cost of a lighthouse on the mainland, or on rocky islands, in Scotland, is about £3,000.

“In general the Irish lighthouses, even on the mainland, have been erected at an expense of £10,000; but this includes the illuminating apparatus, and in some instances the formation of a road.’

“In reviewing this statement, in which the economy and administrative capacity of the Trinity House stand out conspicuously pre-eminent, the Commissioners, after launching a sarcasm at the Board of Trade, from whom *alone* they have received complaints respecting the cost of erection of the Scotch lights, fall in rapture with these edifices: ‘The structures erected during this century in that country are doubtless most substantially built, generally of granite, and of great height; there seems to be very little outlay on mere ornament, and they present a noble appearance as public works. But when the great difference in cost between them and English lighthouses, designed to serve a similar purpose, is considered, there can be little doubt either that the Scotch and Irish authorities have not paid due regard to economy, or that the English authorities, keeping economy too closely in view, have not erected edifices worthy of themselves and of the nation; unless, indeed, there be some circumstances which render similar erections necessarily more costly in Scotland and Ireland.’

“The Commissioners, however, cannot get over the plain fact respecting the excessive cost, and they thus resort to these illogical sophistries in order to evade the just and obvious admission of the effective and more economical administration of the Trinity House. The English lighthouses are painted red or snow-white, and, if less magnificent in structural beauty, are visible as beacons by day as well as by night; while the handsome Scotch edifices, from want of paint, are at a distance undistinguishable during the daylight.

“As regards the comparison with foreign countries, especially with France, the Commissioners discover some ‘startling results.’ They point out that the Phare de Bréhat, comparable to the Bishop Rock

“\* We suppose we may say with propriety that we have sailed ‘round’ the Isle of Wight, but we have never heard of St. Catherine Head. We presume the Commissioners refer to St. Catherine Point, which is not a *headland*, but a comparatively low point well known to all mariners.

and Skerryvore lighthouses, cost but £23,120. This extraordinary statement necessarily forces them to explain that the above estimate did not include the payments to the government engineers, the transport of material by government vessels, and some other matters, and, finally, the 'startling results' disappear, and the Commissioners are forced to admit that the above and 'other circumstances render the comparison of little value.' In short, the Commissioners, after reciting the average cost of four Spanish lighthouses, which was £5,450, the highest being only £7,611; an American first-class light, which cost £8,600; a Dutch one, of 166 feet high, at West Schouwen, which cost £6,400; a Danish one, at Skagen, which cost £10,673; the Hohe Weg, at Bremen, which cost £10,996; the Norwegian light, at Little Føeder, which cost £7,500; and one built of iron, at Rundö, which cost 10,800—on the whole, comparing these sums with the sums paid in England, and embracing in the respective estimates every consideration of cost, the Commissioners arrive at the conclusion that 'the outlay of foreign governments in the construction of lighthouses, making every allowance for the advantages which a more centralized system gives in such a comparison, appears to be rather greater than the outlay incurred by the English board.'

"Here again we have an unqualified admission of the greater efficiency of the Trinity House; and nevertheless it is upon such incontrovertible evidence of facts proving the economy practised in England, that the Commissioners have arrived at a condemnation of our whole lighthouse system, which they recommend should be transferred to other hands. A more perverse, unjustifiable verdict, in the face of all the proofs adduced directly to the contrary, can scarcely be conceived.

"Now, as regards the expense of maintenance, in our Appendix, No. 4, will be found a copy of the Table prepared by the Commissioners, showing the averages, which refer only to first-order dioptric lights, or catoptric lights of the largest description. In this instance we have the old absurdity repeated, of a totally fallacious estimate by averages. In what way, by means of estimated averages, when some lighthouses have thirty lamps, and some only two, can precision be arrived at?

"We entreat our readers, however, to cast their eyes at the Table No. 4, where they will find that the excessive cost of maintenance of a first-class dioptric light in Scotland, viz. £380, is contrasted with the cost of the same class light in England, viz. £265. The cost of maintenance of the catoptric light in Scotland is £385; in England it is only £340.

"The relative charges of the dioptric and catoptric lights differ materially; but the Commissioners say that 'it is evident at a glance that as the Scotch dioptric lights burn a larger amount of oil than the English or Irish, they are more expensive in that item; but in this particular expense becomes a measure of efficiency.' We have impeached, in the strongest terms, the correctness of the statement that the alleged excessively greater consumption of oil is necessarily



the standard of efficiency. As regards the alleged saving of £1,300 by lighting and extinguishing the lamps at tabulated periods, the practice would not be usefully available in a more southern latitude. Until the matter of the discrepancy of the quantity of oil consumed is cleared up satisfactorily, it is evident, to use the profound remark of the Commissioners, there must exist 'a greater discrepancy than exactness would warrant.'

"As regards the expense of maintenance compared with foreign countries, we shall content ourselves with pointing out that the total average expenditure of four French lights on the mainland, given by the Commissioners, is £320; the cost of similar English lights is given at £265 5s. 1d. : showing an economy in favour of England of £54 14s. 11d."

We add Table No. 4, alluded to, for the reference of the reader:—

*Table of the average expense of maintenance of Lighthouses, referring only to 1st ord.r Dioptric Lights, or Catoptric Lights of the largest description.*

Country.		Oil.		Wicks.		Keepers' Salar es.		Repairs of Building.		Repairs of Apparatus.		Painting.		Total Expenditure (as returned).	
		£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.
England,	D.	76	18 01	14	2	126	10*9	29	6 2	13	2 4	24	2 8	265	5 1
	C.	127	6 21	6	5	141	8*4	30	8 0	15	0 6	21	1 8	340	5 0
Scotland,	D.	133	3 21	1	0	116	15†7	1	8 8	8	13 0	2	0 0	380	9 6
	C.	136	5 02	13	6	109	13†1	2	13 3	8	6 4	2	1 4	385	12 7
Ireland,	D.	75	10 02	5	0	119	17 5	3	6 11	7	19 4	34	5 6	405	9 5
	C.	140	9 02	4	9	110	15 4	9	11 2	23	5 7	44	5 1	485	11 3

(To be continued.)

PIRATICAL ATTACK ON THE SCHOONER "GOOD HOPE,"—and  
*Passage of the Crew across the Desert of Arabia Petrea.*

We find in the *Bombay Gazette* the following account of a journey across the African desert performed by the crew of a wrecked vessel, indebted for their preservation to the friendly protection of the Imaum of Muscat.

The schooner *Good Hope*, owned by Messrs. Lawrence and Co. of this port, and bound to the Kooria Mooraa Islands, which sailed from this port last month, was seized by pirates off Cape Fatask, who, after dismantling and breaking up the vessel, landed the captain and

\* Two suits of clothes, coals, &c.

† And land.

crew and left them in a desolate state. The natives treated them with kindness, but they suffered much from weakness and from privations.

The following narrative of the events thus briefly described has been furnished us by Mr. Cooke, late master of the schooner *Good Hope*, of Bombay :—

“ We sailed on the 5th March from Bombay, bound for the Kooria Mooraa Islands, with the object of fetching away some Europeans and natives left there to watch over the machinery, &c., belonging to the lessees of the islands, as it was no longer judged expedient to maintain a staff there. The crew consisted of myself, another European, and a Lascar only, as I knew we should have a fair wind to run across, and should have as many passengers as we could conveniently stow on the return voyage. We made the Arabian coast at two a.m. on the 16th March, and at daylight made sail to the southward; but shortly afterwards we were overhauled and boarded by an Arab boat, full of men, who seemed thievishly inclined. I managed to get rid of them with a few presents of clothes, potatoes, &c., and they left, but only to return with fresh demands. We drove them off, however, and proceeded on our course.

Shortly after this, the schooner was chased and surrounded by a fleet of ten Arab boats, each with a crew of ten to fifteen men, who boarded us and soon completely gutted the schooner, even to cutting down the masts. We were then turned ashore through the surf, and passed the night on the beach in charge of some Arabs, who having now nothing that they could take but our lives, did not further maltreat us, after having taken away our shirts and trousers, and substituted some of their own rags to cover our nakedness. Next morning they gave us about five pounds of our own ship's bread, and intimated to us that the road to Muscat was before us, and that we were to start off; which we did. The bread and three handsful of dates were our sole provision for a journey of about 400 miles across the arid stony desert of Arabia Petrea.

We journeyed for eleven days, scorched by the blazing sun, which fell upon our almost naked bodies and shoeless feet by day, and chilled by dews at night, which cramped us and brought on bowel complaints. To avoid losing ourselves in the desert, we usually travelled along the coast, catching crabs and sea snails, which we eat raw, for sustenance. For water—precious water—we had every day to recover the camel track, sometimes finding a water hole or well, sometimes not, near the road. At times we were two days without water; and when it was obtained, it was very brackish and dirty. Occasionally, two or three times during that terrible journey, we met with a travelling family of Arabs or Seedies,—the former invariably searching us closely, while the latter, the women especially, gave us water, the only thing we asked for, as our mouths and tongues were so sore and swollen that we could hardly swallow anything solid, and their poverty was almost as great as ours in the matter of food. At

last, on the eleventh day, with blistered feet, with tongues swollen, lips bleeding, and totally exhausted, having forty-eight hours previously divided the last drop of water, which was carried in a boot, we lay down under a scrub bush to die, as we thought. Blank hopeless despair was at our hearts, and we felt unequal to make another exertion for life. At this moment we heard a donkey bray, and scrambling over a low range of sand hills near, we saw the welcome sight of a drove of camels and donkeys with seven or eight natives, picketed for rest. We hailed, and made signs for water, which was freely given, and they treated us kindly.

These people proved to be a party of Bedouin Arabs, and, with significant gestures, they asked if the coast people had not robbed us. By signs they inquired if we wished to go to Muscat, and understanding that we did, they gave us fish, rice, and milk for supper, and mats to sleep on. Never was refreshment and rest so sweet or so acceptable. With gratitude and thankfulness at our hearts to God for his watchfulness and protection to us poor castaways, and to these Bedouin Samaritans for their kindness, we slept that night. We were all suffering from gripes and bowel complaints, and to alleviate this, the Arabs applied the cautery freely to our stomachs, the scars of which we still can show. Next day they packed us upon camels, and after eleven days' journey, (and more scarrings of stomach cramps and spasms,) passing through some long and precipitous mountain passes, and one populous village nestled in a palm grove, we arrived at Muscat, where Mr. Rassam, the acting consul, kindly supplied all our wants, and engaged a passage for us in a bugalow for Bombay.

I had an interview with the Imaum of Muscat, who spoke kindly, and said that, had he possessed a steamer, he would have sent to look after the pirates and the stolen schooner. The pirates\* were undoubtedly the fishing boats' crews of the coast, and nothing would please me more than to go again in a small craft, and being well prepared to lay a trap for these rascals, which would make them more careful in boarding strange craft for the future. At present, owing to their kind attentions, I stand possessed of what I have on my back, having lost nautical instruments, clothes, and all I was possessed of. Messrs. Lawrence and Co., too, have lost their schooner and all in her. It is to be hoped that the residents at the island, whom I went to bring back, may speedily be relieved in some other way, or their position, cut off from all communication with the world, will soon be a critical one.

CHARLES H. COOKE.

*Late Master of schooner Good Hope.*

*Bombay, April 22nd, 1861.*

\* This should not be lost on any of our cruisers which may happen to visit that part of the African coast.

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XIX.—  
*Aspect of Affairs ample subject for Remark.—The Coast Guard  
 Exertions in Saving Life.—Sailors' Homes.—The Warring  
 States.—Reasons for the War.—Letters of Marque.—Chinese  
 Regulations for British Trade in the Yang-tze River—Coast  
 Navigation.—The Earthquake at Mendoza.*

A glance at the world at the present moment, observed the Chairman, that is, the world outside of England, is anything but satisfactory, if an earthquake in the South, civil war in the West, and a famine in the East, can make it so, while the fever of political events, and among them counter revolution, in the nearer East, seems to warm up as the sun gets higher in northern latitudes, threatening as usual a war of nationalities. Let us hope there are wise heads and strong powers holding the reins of each government, bent on peace, and that difficult as the task is at the present moment they will steer clear of the rocks of "Discord." But in happy England, which has gone through her ordeals of this kind long ago, the political horizon is lightened by the rays of national fraternities,—our masses of the working classes are crossing the Channel in large bodies, invading the territory of their neighbours, not with arms in their hands as if to deal with their enemies, but with open hands and warm hearts, to see those who will no doubt receive them with cordiality. And others who are not thus employed among us, are busy in the pursuits of peace, picture-gazing, encouraging the arts and sciences, planning national exhibitions, leaving to their rulers the charge of State matters, the adjustment of the balance of power in Europe, the decision of iron or wooden ships, and the rivalry of ordnance. But in all and each of these subjects there is abundant source for remark and observation, and he would content himself with having touched them, for his friends around him to enlarge on. He would therefore acquit himself of his adopted task by commencing their business with the account he had received of the operations of the Royal National Life-Boat Institution for saving the lives of British seamen, those men who in time of need, whether in ships of wood or iron, were our best friends, and made of the kind of stuff which our country then most needed, for of all other stuff there was abundance.

He would call the attention of the Club to the gratifying illustrations that were often brought under their notice through the records of the operations of the National Lifeboat Institution, especially of the indomitable and persevering exertions of officers and men of the Coast Guard service in saving life from shipwreck under the most desperate circumstances. At the meeting of the Life Boat Institution, on the 2nd May, Vice-Admiral the Duke of Northumberland, K.G., in the chair, the silver medal was voted to Captain Goss, R.N., inspecting commander of the Coast Guard at Queenstown, who had previously received the gold medal of the society for distinguished services, and to John Starke, together with £2 to the latter, and £16

to their boat's crew of eight men, for putting off in a Coast Guard boat, on a most awful night, and rescuing by means of the rocket apparatus, which was fired by them from a rock, over which the sea was occasionally breaking heavily, twelve out of thirteen of the crew of the Austrian brig *Uredon*. It appeared that the brig, endeavouring to make in the night for Cork Harbour, during a heavy gale of wind from S.W., upon a dead lee shore, drove on some isolated rocks off Guilleen, about a quarter of a mile from the shore. The seas in their fury leaped up the masts on which the crew were crowded, and death in one of its most appalling forms stared them in the face, for it seemed impossible for help to reach them. Indeed, the fury of the storm, the lateness of the night, and the apparent inefficiency of the means of succour at hand,—for the nearest lifeboat of the Institution was about twenty-five miles distant,—were enough to appal the stoutest hearts to attempt a rescue under such circumstances. However, the attempt was made, and the rescue, after six hours of ceaseless toil and imminent risk, was successfully accomplished, to the amazement and delight of twelve of the ship's crew, one of their mates having previously thrown himself overboard in despair and been lost. The vessel in a few minutes afterwards went to pieces.

The silver medal of the Institution was also voted to Lieutenant Hutchinson, of Kingstown, and Lieutenant Parsons, of the 35th regiment, in testimony of their gallant services in aiding to save three out of four of the crew of the brigantine *Industry*, of Whitehaven, which, during the memorable gale of the 9th of February last, was wrecked off Kingstown, on which occasion Captain Boyd, R.N., and his brave crew, unhappily but nobly perished, as we have already noted. Lieutenant Hutchinson, in rushing into the surf to save the master's life, was severely injured and rendered insensible, in which state he was himself rescued by some other men.

A reward of £6 10s. was also granted to the crew of the Institution's lifeboat stationed at Middlesborough, for saving the crew of four men of the schooner *Oregon*, of Stonehaven, which, during cloudy and boisterous weather, had sunk in Tees Bay. Some steam-tugs had previously attempted to approach the wreck, but found it impracticable to come near it.

Rewards amounting to £19 10s. were also given to the crews of the lifeboats of the Institution stationed at Margate, Drogheda, and Arklow, for putting off to vessels in reply to signals of distress, but which, after the arrival of the lifeboats, had got out of their dangerous positions, and proceeded on their voyages.

It was reported that the Institution had, during the past month, sent new lifeboats and transporting carriages to Whitby, in Yorkshire; and to Irvine, in Scotland. A powerful lifeboat would also be sent in a week or so to Selsey, near Portsmouth. Lifeboats were also being built by the Institution for Tynemouth, in Northumberland; Scarborough, in Yorkshire, and other places. Altogether the Institution would soon have a hundred and twelve lifeboat establishments under its charge, towards the continued maintenance of which, in a

state of efficiency, the support of the public was earnestly solicited. Messrs. Forrest had received orders to build another powerful lifeboat and a transporting carriage for the government of the Cape of Good Hope, on the plan of those of the Institution. A legacy of £500 was announced to have been received by the Institution from the late Mrs. Shedden Watson, who wished it to be appropriated to the purchase of a lifeboat, to be called *The Brave Robert Shedden*, in memory of her late son, who was a lieutenant in the royal navy, and who had been round the world in his own yacht.

The Committee decided on exhibiting, at the Great Exhibition of 1862, one of its first-class lifeboats on her transporting carriage. Payments amounting to £1,050 were ordered to be made on various lifeboat establishments.

Albert, 'experienced as he might be in sea matters, congratulated the worthy Chairman on his just appreciation of England's first requirement for her safety, one that would always be so while she maintained her character of being an island, therefore to be defended by her seamen,—whether they were in ships of wood or iron. And he would have gone into the subject of Sailors' Homes and the praiseworthy exertions of Sir Henry Stracey in Parliament of endeavouring to obtain a government recognition in the shape of a subsidy for those establishments. No one could have done more than he did, seconded as he was by the gallant Admiral Walcot in his place in the House of Commons. It certainly did appear invidious that one or two of such Homes, as Dover and Portsmouth, were to be encouraged with government aid, which, although explained as it was by the Secretary to the Admiralty, would always have the appearance of favouritism. But he would go more into this subject on another occasion, and would now advert to one or two of the important subjects mentioned by the Chairman, and that was the civil war in America.

He considered this as the most important political movement going forward, as it was difficult to foresee what might ensue from it. When deliberate determination was the leading feature of each party, the old Federal States and the new Confederation, backed by the strong feeling that each had its cause founded in justice, it was difficult to see the ultimate result. The North were bent on conquering their rebel States, and these no less determined on resistance,—as may be seen by the counter proclamation of Mr. Jefferson Davis to that of Mr. Lincoln, which was read at our last meeting. The real cause of the secession, however, has been very clearly defined by Mr. Seward, when he made his important speech at Dubuque, in which he said:—

“The controversy is between two classes of white men,—one having Negroes, an aristocratic class, that wants to extend itself over the new territories, and the other the people, who have no Negroes and won't have any, and who mean that the aristocratic section shall not be extended. It is an eternal question between classes, the eternal question between the few privileged and the many unprivileged, between aristocracy and democracy, and the nation that is willing to submit to

such an aristocracy, the riding of the privileged, booted and spurred, over the unprivileged, deserves no better fate than that which befalls the cowardly and the unworthy. Every man arriving here from Austria, Hungary, and Naples, finds in another form the irrepressible conflicts which crushed him out an exile from his native land."

This seems to be the real question at issue,—slavery, which the North will not have and which the South will have.

You will ask in England, it has been justly said, could not this war have been prevented?—might not separation have been peaceable, and the world have been spared the spectacle of a war, brother against brother? The answer is there was no possibility of peace except by the North yielding everything, and then awaiting the next humiliation which a people fully armed and emboldened by success might see fit to require. If the South could rule us, they would submit to a union and peace. If Fort Sumter had been surrendered, Fort Pickens would have been next demanded, then Tortugas and Key West, and so the slave-holding slave-trading confederacy would have had every facility for the beginning of their career of conquest. Washington would, of course, have been required, as being within the limits of the slave states. A powerful confederacy would thus have been inaugurated, founded on the principle that slavery is the true basis of a social system—to use Mr. Stephens's words—upon the idea with regard to the Negro that "slavery, submission to the superior race, is his natural and normal condition;" a confederacy, too, which has a military leader at its head, and which considers that, like the republics of antiquity, the chief business of its freedom will be the work of government and the duties of war, the tilling of the earth and the ordinary labours of life being performed by slaves. You may say these are mere conjectures, and that it will be time enough for the North to take up arms when danger really threatens. The reply is that, in regard to the intentions of the Southern people there can be no doubt, when one considers who their leaders are, and further, that for years past scarce a day has gone by that some Northern man has not suffered indignity at their hands. Five years ago, from one end of the South to the other, the people rose up to approve of the brutal attack on Mr. Sumner in the Senate Chamber at Washington. An act like this to be applauded in a community, shows a spirit and temper which is sure to result in aggression on a neighbouring people and in war.

Meanwhile, movements of troops, blockade, and all war proceedings are going forward, arms and ammunition are sought for in European markets, and we read that the American government is taking most energetic measures to carry out the blockade of the ports of the Seceded States. All the available war vessels are put into service. Mercantile steamers are also taken up, and such as are not used for purposes of transportation are being fitted out as gunboats, to cruize off the coast and run up shallow waters. In a few days, therefore,

the ports of the seceded states, from Baltimore to New Orleans, will be effectually closed. When this is done, and the line of the Potomac guarded by a strong *corps d'armée* of 100,000 men, the rebellion may be safely allowed to sting itself to death, unless more energetic means of crushing it be resolved on and carried out.

Then again, the Southern Confederacy are no less here than in America, for even at Liverpool it is stated that there are at present in that port several vessels undergoing repairs and being fitted up for the purpose of privateering. These vessels are now awaiting the return from America of parties interested in this buccaneering business, with the necessary "diploma" from Montgomery, the seat of the government in the South.

Then again it is said that a joint stock company, with a capital of several millions, having been formed for fitting out privateers, letters of marque, it is stated had already been issued for the *Calhoun*, the *N. N. Webb*, and the *Matagorda*, and the steamer *Havana* had been purchased and fully armed. The notorious yacht *Wanderer* had also been purchased, and was at Havana when the *Daniel Webster* touched there. These vessels are probably now cruising in the Gulf, unless they have been *taken care of* by the United States vessels there.

There is enough for anxiety in all this. But he still hoped that each party would see that it would be to its interest to respect neutral ships, and that the Queen's proclamation would prove a timely warning that no protection would be extended to British subjects who joined either party, but especially those employed in privateering.

It has been truly said that many are the cases throughout the land, like that sketched by Mr. Thackeray in the *Virginians*, where brothers have taken different sides, where families are rent asunder to meet again at the bayonet's point, where father will confront son upon the perilous edge of battle. It is a sight to make the angels weep; but this people are as yet far from comprehending the truth in its full horror. It is, alas! too probable that another week will not pass without witnessing rivers of blood reddening a land which God has hitherto signally blessed, but which the merciless passions of man refuse any longer to spare.

And as to the termination of the war it has also been observed:—The general impression of those who know the South best is that we are at the commencement of a long and bloody war, of which the termination must be long deferred, while its nature can be little predicted. That the North, with its vastly superior resources, and with the command of the sea, must get the upper hand, so soon as the vigour of its leaders shall at all correspond with its own energy, there can be little doubt; but the best judges all maintain that the South will shed its last drop of blood before it comes back into the Union.

He would now turn to another more satisfactory subject. He alluded to China,—that extraordinary country, where at length rebellion had sprung up and civil war was devastating.

It had been happily observed by Lord Elgin of the natives of the



flowery land, that "at every stage of our proceedings we have offered reasonable terms and conditions, and only resorted to force when the obstinate perversity of the Chinese drove us to that alternative."

Now it is the doctrine of some that nations have a right to exclude themselves, or rather foreigners from their land; but the Americans broke the charm of this supposed right when Commodore Perry left his presents with the Japanese, leaving word that he would revisit them that day six months, and if we have done more with the Chinese than the Americans with Japan, the fault has been theirs and not ours,—for our trade had long been established with them, and it was but going a step further to get an Ambassador at Peking. Lord Elgin has truly observed on this whole subject, when addressing the Lord Mayor of London:—

"That question opens up a wide field for speculation. If we can succeed in establishing friendly relations not only with the government but with the people of China—if we can persuade them to adopt some of our tastes and habits, and though they are very averse to change they are not, like many other Oriental nations, cut off from all communion with us by the inveterate prejudices of caste—if we can succeed in those objects it is impossible to put a limit to the amount of trade which is likely to grow up between two nations so industrious and commercial.

"But there is one particular advantage which is likely to arise from having an Ambassador of the Queen at Peking, and it is remarkably illustrated by what has lately occurred in Japan. A serious crime was perpetrated in that country. An European—not a British subject—was murdered under circumstances which showed culpable indifference on the part of the Japanese government. What followed? Our minister, acting with excellent judgment, retired a short distance from the capital. He did not threaten war, but he threatened what we all understand in Europe by the cessation of diplomatic relations. If our former experience in China is any guide to us, we may conclude with absolute certainty that if such a threat were made to a subordinate Chinese functionary it would be of no effect whatever. That subordinate would report to his superiors that he had kicked the barbarians out, and would claim all manner of honours and rewards for his services. But Mr. Alcock was resident in the capital of Japan, and in relation to the supreme government, and, seeing their danger, that government took alarm at his menace, and in a few days they talked of his departure as one of the greatest calamities which could possibly befall Jeddo. They implored our minister to go back again, and offered him any guarantee for the future which he chose to demand.

"I am quite aware of the wide difference between Japan and China, and that the advisers of the Emperor of China are not such intelligent people as those of the Emperor of Japan; but I feel confident that the threat of suspension of diplomatic relations will now have the same effect at Peking in the prevention of war and the preservation

of peace as it has recently had at Jeddo. At the same time I must say that the misconduct of our own countrymen in China is perhaps one of the greatest difficulties with which a British representative there has to deal. We send out honourable merchants, devoted missionaries, who scatter benefits in every part of the country they visit, and elevate the standard of civilisation; but unfortunately there slips out from among us dishonest traders—ruffians who disgrace our name and set the feelings of the people against us.

“Public opinion in this country can do much to encourage the one class of persons and to discourage the other, and I trust that the efforts of this great city will be directed to that end. When addressing the merchants at Shanghai I told them it was my intention to obtain a treaty at Peking, but that, when force and diplomacy had effected in China all that they could legitimately effect, the work which we had to do in that country would be only at its commencement. That statement I repeat now. General Grant has returned his sword to his scabbard, and the diplomatist has, so far as treaty-making is concerned, placed his pen on the shelf; but the work of combination, of bringing China, with its extensive territory, its fertile soil, and its industrious population, into the community of nations, and making it a fellow-labourer with ourselves in diffusing over the world happiness and well-being—that is a work which has still to be accomplished. No persons are more entitled or fit to take part in that work than the merchants of this great city, and from the bottom of my heart I pray that their efforts may be attended with success.”

These were sentiments worthy of a British statesman, and he was certain that they would be cordially seconded by the Club. They are those which led evidently to the proceedings of the Chinese in framing the recent regulations for trade in the great river Yang-tse-kiang which have been promulgated by H.M. Consul at Shanghai in his notification, which he would submit should be recorded among the papers.

#### *Notification.*

*H.M.S. Coromandel, Yang-tse River, March 9th, 1861.*

Referring to the Notification of his Excellency the Earl of Elgin and Kincardine, K.T.G., C.B., &c., dated Hong Kong, 1861, informing her Majesty's subjects in China of the measure then being taken to give effect to the arrangement concluded between her Majesty's Plenipotentiary and the Imperial Commissioner for opening the Yang-tse River to British Trade, the undersigned is now authorised by his Excellency the Naval Commander-in-Chief, to declare the river above Chin-kiang, and as far as Hankow, to be open in accordance with that arrangement, to British vessels, under the accompanying regulations, which are provisional until they have received the sanction of his Excellency the Hon. Mr. Bruce, C.B., and the Peking government.

His Excellency the Naval Commander-in-Chief has furnished the undersigned, for the information of her Majesty's subjects in China,

with the annexed extracts of a communication made by Commander Aplin, of H.M.S. *Centaur*, on the 1st inst., to the insurgent authorities at Nanking, and of their reply, together with a copy of the pass to be used by British vessels passing Nanking. It will be observed from this correspondence that the free navigation of the river by British vessels is not to be interfered with by the insurgents, but that all intercourse held with any place in their possession, will be conducted under such conditions as the insurgent authorities, with the approval of the senior naval officer, shall think proper to prescribe; and the undersigned is further desired to call attention to that regulation of the insurgent authorities, which is concurred in by the Commander-in-Chief, requiring merchant vessels not to approach nearer to Nanking at night than the Pingshan Pagoda, nor to enter at any time the Tsaouhea Creek.

The positions at present selected for consular establishments on the river above Chingkiang are the cities of Hankow and Kiu-kiang, and his Excellency the Naval Commander-in-Chief has stationed vessels of war at these ports, as well as at Chinkiang and Nanking, for the purpose of protecting British interests, and giving due support to her Majesty's Consuls in the performance of their duties.

HARRY S. PARKES.

*Provisional Regulations for British Trade in the Yang-Tsze River.*

Art. I.—Every British vessel wishing to proceed up the Yang-tszé River beyond Chinkiang, must apply to the British Consul at Shanghai for a pass, to be called the "River Pass," authorising the vessel to trade as high as Hankow, which will be issued by the Shanghai customs, and only by the customs at that port, on the application of the Consul, as soon as the customs are satisfied that all the dues and duties due upon the vessel and her cargo have been paid. The Consul will deliver the river pass to the vessel, and will retain in his hands her register or sailing letter, and on the return of the vessel to Shanghai the river pass must be surrendered to the Consul, and returned to the customs.

II.—Every vessel proceeding up or down the river shall be permitted to carry for her protection such an amount of arms and ammunition as shall appear to the customs at Shanghai to be reasonable, and this amount of arms and ammunition shall be entered in a certificate to be called the "Arms Certificate," which shall be delivered by the customs, through the Consul, to any vessel applying for the same; and the said vessel shall be bound to bring back to Shanghai all the arms and ammunition she is thus authorised to carry, or, if she has expended any portion of them during her voyage up or down the river, then to account for the manner in which such portion has been expended. Any vessel returning to Shanghai without any portion of the arms or ammunition stated in her arms certificate, and being unable to account satisfactorily for such missing portion, or being discovered trafficking in arms, munitions, or implements of war, at any port or place in the river, or carrying any arms or munitions in excess

of the amount stated in her arms certificate, is liable to have her river pass withdrawn, and to be prohibited from trading upon the river.

III.—The Shanghai customs may if they see fit, appoint one or two of their officers to accompany the vessel as far as Chinkiang, and the master of the vessel is bound to receive these officers on board, and to provide them suitable accommodation, but not their food or expenses. Trading of any kind between Shanghai and Chinkiang, being an infraction of the XLVII Article of the Treaty of Tien-tsin, may be punished as is therein provided.

IV.—No vessel is allowed to pass Chinkiang without anchoring, and being reported to the British Consul and the customs at that port. The master, on arriving at Chinkiang, must deliver to the Consul his river pass, arms certificate, Shanghai port clearance, and a list of all passengers and persons not forming part of the registered crew on board, and if he wish to proceed up the river immediately, the Consul will forward all the papers above-named to the customs, who may board and inspect the vessel, and if the customs have no claim upon the vessel, or there be no cause for her detention, they will at once grant a new port clearance, and give this, together with the river pass and arms certificate, to the master, who will then be at liberty to continue his voyage. But if the stay of a vessel at Chinkiang exceed twenty-four hours, she must be reported within that time to the British Consul, and by the Consul to the customs, in the manner provided in the XXXVII Article of the Treaty of Tien-tsin, and a manifest of her cargo and a copy of her passenger-list furnished to the Consul; and if she land any portion of her cargo, or take on board any cargo, she must do so in the manner provided in the said Treaty; and the Consul will retain in his possession her river pass and arms certificate until she receives her port clearance from the custom-house, and is again ready to depart. Any British vessel proceeding up the river above Chinkiang without a river pass, arms certificate, and Chinkiang port-clearance, duly obtained as provided in these regulations, commits infringement of the XLVII Article of the Treaty of Tien-tsin, and is liable to the penalty therein provided.

V.—Every vessel must be reported to the British Consul at Kin-kiang and Hankow, within twenty-four hours after her arrival at either of those ports, and the master must lodge in the hands of the Consul the vessel's river pass, arms certificate, and Chin-kiang port clearance, and must deliver to the Consul a manifest of her inward cargo, and a list of all passengers and persons not forming part of the registered crew on board; and the Consul will retain in his possession the river pass, arms certificate, and Chin-kiang port clearance, until the vessel is again ready to depart, and until he has received the manifest of her cargo outwards, and a list of all passengers and persons not forming part of her registered crew, and intending to leave the port in the said vessel; and before returning the said papers to the master, the Consul will endorse on the Chin-kiang port clearance the respective dates on which it was lodged in his hands and returned to the Master. No report, however, need be made in the case of a vessel passing Kin-kiang without anchoring, nor is it requisite that a

vessel passing that port without discharging or taking in cargo, should deliver a manifest to the Consul.

VI.—Every vessel coming down the river must anchor at Chin-kiang, and be reported to the Consul, and cleared by the customs, in the manner provided in the fourth article of these regulations; and the customs may, if they see fit, appoint one or two of their officers to accompany the vessel to the port of Shanghai, where the vessel is bound to proceed without touching at any other port or place, and these customs officers must be received on board, and treated in the manner provided in the second article of these regulations.

VII.—The payment of all import and export duties due by all British vessels, duly authorised to trade on the river above Chin-kiang, being secured to the Chinese government by Articles I, IV, and VI, of these Regulations, Articles XXXVIII, XXXIX, XL, and XLI, of the Treaty of Tien-tsin, will not apply to such vessels, after they have passed Chin-kiang inwards, and any vessel so authorised may therefore discharge or load legal merchandise, at ports or places on the river above Chin-kiang, without being required to obtain custom-house permits, or to pay export duties until the vessel returns to Chin-kiang.

VIII.—The manifests of cargo that are to be delivered to her Majesty's Consuls at the various ports, as provided in these regulations, must be made out in the form of a summary, stating the quantity of each description of goods on board either in dimensions, weight, or value as the case may be.

IX.—The breach of any of these regulations may be punished by the withdrawal from a vessel of her river pass, and by prohibiting her from further trading on the river, and if this penalty be awarded when on the river, she may be sent or taken to Shanghai, and also, and in addition to the preceding penalty, by any other pains or penalties that may be incurred by the same offence for a breach of treaty. And it shall be competent for any of her Majesty's Consuls to detain any vessel trading on the river under these regulations, against which any other complaint or claim may at any time be laid, until the same shall have been heard and determined by the Consul, and his judgment carried into execution.

X.—These regulations may at any time be suspended or annulled, added to or amended, as, and in whatever way may be judged expedient by H.B. Majesty's Minister Plenipotentiary in China, and the high Chinese authorities in communication together.

HARRY S. PARKES.

It would appear that to profit by this unreserved opening of a country hitherto closed against all European intercourse, a company had been formed, entitled, "The China and Japan Coast and River Steam Navigation Company," which has for its object to establish a regular, speedy, and safe means of communication along the extensive line of coast, and in the inner waters of China, and ultimately to extend the operations of the company so as to embrace the trade between China and Japan. As the coasting trade there is enormous, there is

every reason to believe that a large and successful business will accrue to the company, as they will construct a fleet of suitable steamers, whilst the present trade is conducted by the Chinese in unwieldy junks, which can only sail with the favourable monsoon, whilst European commerce is almost entirely carried on in sailing vessels. The capital of the company is to be £300,000, but it is proposed that the first issue shall be only £150,000 in 15,000 shares of £10 each, on a deposit of 5s. per share must be paid on application, and 15s. per share on allotment. The calls are not to exceed £2 10s. per share, nor to be made at less intervals than three months. The direction comprises the names of commercial men of high standing, and associated with them is the Hon. T. C. Bruce, brother of the Earl of Elgin, and Mr. H. B. Loch, C.B., the private secretary of his lordship during his late special visit to that part of the world.

Rodmond had no doubt that these papers would prove of service, and in reference to the remark of their Chairman on the subject of the earthquake in the South, submitted that the account of it which he had obtained should be also preserved among their papers.

It took place on the 20th of March, and destroyed one, if not three, populous cities of the Argentine Republic—namely, Mendoza, San Juan, and San Luis. The former has certainly been destroyed, and very few of its population of 15,000 souls have escaped to tell the fearful tale. The news was sent by telegraph to Valparaiso, and was confirmed by the subsequent arrival of a mail courier from the ruined city.

The latter stated that he arrived at Mendoza on the morning of the 20th; that at half-past eight p.m. a brief but excessively violent shock of earthquake, lasting but six or eight seconds, destroyed every building, public or private, in the city, and that the number who were enabled to escape was very limited. The streets being narrow, the buildings high, and the inhabitants totally unused to such phenomena, were paralysed with terror, and neglected to seek refuge in the open courts of their dwellings until too late. The postmaster was buried beneath the ruins of the post-office, the governor was missing; and when asked why he brought no certificate that the mails were lost, the messenger replied, "There was no one left to write it, nor materials to write with."

The aspect presented by the city after the first shock was terrific. Hoarse subterranean thunders deafened the air; animals of all kinds rushed frantically through the open spaces, howling; the earth opened and vomited forth floods of water; while, to crown the scene of horror, flames burst from the ruins and consumed nearly the entire business portion of the city, with its dead, its dying, and its wounded.

On the 28th a number of letters were received at Valparaiso and at Santiago, by relatives and friends of Chileans residing in Mendoza, but the hope until then entertained, that the earlier accounts were exaggerated, soon gave way to the dreadful certainty that the calamity had not yet been painted in colours sufficiently vivid. The earth still continued to tremble; the few walls that had resisted the first shock one by one fell, until now no vestige of a building remains. The

mountain roads are in a most dangerous condition, not only on account of the huge masses of rock that have already fallen and obstructed the road, but because the vibration of the earth is still hurling them down from the heights above into the valleys.

The *gauchos*, or natives of the surrounding country, hastened to the spot, not to assist the needy or aid in rescuing the wounded from a lingering death, but to seek for plunder among the smoking ruins, and to snatch the little saved from the wretched survivors. One gentleman writing from thence, after describing these horrors, says:—"I believe that in a few days we shall have no other law here but that of the poignard."

The prison was destroyed: out of one hundred inmates ninety-two perished. The remaining eight, who were already hardened villains, formed themselves into a band of freebooters, and had gone, it was supposed, to the mountain passes, to intercept and rob the parties sent from Chili for the relief of the sufferers. One woman was found robbed and murdered by the roadside. She was recognised as one who was on her way to Mendoza to see her family. They too had all perished on the 20th.

In the Jesuit church there was preaching that night. The service had just concluded, and the congregation was about dispersing, when the shock came. The few who had reached the plaza were saved, but the walls and roof of the building fell inward with a crash, and priest and penitent together were hurried into eternity.

The latest advices from Mendoza represent the suffering to be extreme, there being neither food, clothing, nor shelter for the survivors, everything being buried beneath the ruins. They also state that San Juan and San Luis, two other populous cities of the Confederation, have shared a like fate, the San Juan river having, after the shock, left its bed and swept over the town, utterly destroying what the earthquake had spared. This news is not, however, fully confirmed.

As soon as the disastrous news was rendered beyond question, the government and private individuals vied with one another in energetic efforts to send immediate relief to their suffering brethren. Without waiting for the completion of the work, on the 30th a party of physicians and others left for the scene of the disaster, bearing medicines, food, and clothing, and accompanied by a small body of troops.

The gloom and terror spread throughout the republic of Chili by this awful calamity may be imagined. "Situated upon an eminently volcanic region," says a letter from Valparaiso, "we have constant evidence of the insecurity of our tenure of existence. Separated but by a chain of mountains from the scene of destruction, and taught by sad experience the frightful and irresistible force of the unheralded earth-storm, we retire each night with a feeling of terrible insecurity. The coast has been frequently visited in past years by earthquakes. Chillan has been twice destroyed; Concepcion once; while Valparaiso, Santiago, and Copiapo have suffered severely. No amount of human foresight, no precaution avails against the mysterious visitor, who comes at dawn, at noonday, or at midnight, and in a few seconds levels to the ground the proudest monuments of human skill."

## Nautical Notices.

### THE DANUBE,—*Sulina Mouth.*

It is stated that the Sulina mouth of the Danube continues improving under the effects of two piers extending out from it, but that off the southern pier a bank extends seaward in the direction of the channel to a distance of about half a mile from the pier-head, and on which there is not more than 10 feet. The outer end of this bank is marked by a buoy, but being much exposed to the effect of a violent sea, in bad weather it may be washed away or swamped, and ships should therefore on entering or leaving the river keep well to the northward, so as to avoid the bank.

BUOY UPON THE ROUAUDIERE,—*Jersey.*—The new Buoy was placed upon the Rouaudiere Rocks, off the port of St. Helier, on Monday the 13th of May.

CHINCOTEAGUE LIGHT,—*Virginia.*—*New York, May 8th.*—The lighthouse at Assateague, (commonly called Chincoteague,) on the coast of Virginia, was seized on the 3rd of May by a party from the mainland and the means of lighting it removed. It has remained extinguished since.

### LUNAR EQUINOCTIALS,—or, *the Past and Future.*

23rd May, 1861.

Sir,—As my views upon the question of weather changes have been not only unopposed but greatly encouraged by the assertion of a distinguished professor of the University of Dublin, (a high authority on meteorology,) viz., that *no antecedent objections exist as to my theory*, I with much pleasure place myself again before your readers, and offer the promised monthly references to predictions and their fulfilments.

*The Past.*—In your number for May I gave the following in advance as periods of probable atmospheric disturbances and changes, and acquainted your readers that the months of May and June (and probably July) are usually periods of feeble electric action.

April 27th or 28th.

May 4th—12th—19th—25th.

June 1st—8th—15th—21st—28th.

*In fulfilment* I have to state as follows:—

April 27th.—Great fall of temperature and snow in London, Kent, &c., on 26th heavy gale and fall of snow at Uist, Shetland, with strong N.E. winds on 27th.

May 4th.—Strong N.E. gale with hail and great fall of temperature.

12th.—Dead calm, notwithstanding which the scud came very



swiftly from the S.W. (Thunder and lightning on the previous evening.)

19th—Total change from cold to splendid "Whitsun" weather, which (23rd) continues.

*The Future.*—In addition to the above predictions I beg to add,

July 5th or 6th—12th—18th or 19th—25th.

August 2nd—8th or 9th—15th—22nd—29th.

I trust the discovery of these periods of change can no longer be considered doubtful, but shall continue my observations.

I have, &c.,

S. M. SAXBY, R.N.

*To the Editor of the Nautical Magazine.*

### New Books.

**WINDS AND THEIR COURSES,**—*a Practical Exposition of the Laws which Govern the Movements of Hurricanes and Gales, &c., &c.*—By G. Jinman, Master-Mariner. Philip & Son, London.

Above a quarter of a century has now passed away since Redfield communicated to this journal the discovery he had made in the constitution of the hurricane;—that it was a huge whirlwind of variable size and form, travelling onwards along a special track over the ocean at a variable (but not extraordinary) rate, while the whirl of that atmosphere by which it is formed is dealing destruction on everything in its way. There stands his chart\* by the side of his own words, exemplifying what he has said, and showing by several special tracks the path followed by the centres of several storms. Redfield is gone from among us, but has left behind him abundant proof of the valuable service he has done for seamen, and many a one there is who has profited by his labours and honours his name.

Since those days, as the readers of the *Nautical* well know, the views of Redfield have full often been followed up in these pages, and certainly upwards of twenty years is a tolerable amount of time in which the seamen of the day may find opportunity for acquiring the necessary knowledge of hurricanes, that will enable them to decide as to their proceedings when overtaken by them. We have full often recorded them, and shown the accounts of commanders who have not only profited by the theory in avoiding the hurricane, but who have made a fair wind of it,—besides others, too, who have looked into the raging circle, or whatever figure it might be, and having satisfied themselves of what is going on there, then stood out again. All this, as we have already said, has been done long ago. By a curious coincidence, the *Cruiser*, one of H.M. ships coming home from India, a short time ago, availed herself of the fair wind of one of these storms and had the good fortune to reach that part of the Indian Ocean where they recurve to the S.E. (after their S.W. course) just before it, and avoided the foul wind which she would have found on its northern side, her commander (Captain J. Bythesea, R.N.) knowing the nature and habits of the phenomenon with which he was dealing. Since then also we see in the *Athenæum* an account of Lieutenant L. Rokeby, R.M., having met with a similar circumstance and equally well managing it. In fact, the subject being understood, and the peculiar whims and fancies of these scourges of the seas being allowed for, let them be stationary for a day

\* See *Nautical Magazine*, 1836.

or two or travelling with a moderate or accelerated velocity, seamen can take care of their ships and the disasters of former days are no longer heard of.

But this would appear not to be sufficient for all of us, and, among others, the author of the little volume before us, seems dissatisfied with the circular theory; and yet he is not so, for the figure he assumes for the course of the wind is in the form of two segments of the same circle. With these he reasons as best he can, but for a wind to make a tolerably good angle at two opposite points of the figure it describes one part must be above the other or why should the curve be more sudden there than at any other part. It may be that it is the foremost and hindmost part of the meteor. But Redfield never led us to suppose that the figure described ever was a perfect circle; nor is it necessary for his theory that it should be so. Enough for us that it was discovered to be approaching to a circle to enable us to deal successfully with it as we now do. And the whirling course of the *Charles Hedde*, in our volume for 1846, shows no circle, but that Redfield was right in the main part of his argument, that a hurricane was really a revolving storm, and from the very fact of progression forming a part of its constitution, all idea of a perfect circle being formed by it would at once vanish.

We are by no means dissatisfied that Mr. Jinman should advance his theory, and we consider that the seaman should look into it for himself, with the allowance to be made for the *locality* to which this gentleman alludes; for we are quite satisfied that whatever figure the meteor may assume for the sake of convenience in adapting itself among other circumstances to those of position, the beautiful theory of Redfield will never be displaced by any other, and that, if carefully attended to, it will guard the seaman from danger and enable him to come out of the fray which he may get into with credit to himself and the safety of his ship.

MAGNETIC VARIATION.—Table showing the Mean Monthly Westerly Declination of the Magnet and the Mean Monthly Dip at the Royal Observatory, Greenwich, in the year 1860.

1860.	Variation, W.	Dip.
January .....	21° 14' 38"	68° 28'
February .....	21 13 2	68 29
March .....	21 14 53	68 30
April .....	21 15 4	68 29
May .....	21 17 10	68 29
June .....	21 16 1	68 31
July .....	21 15 44	68 32
August .....	21 15 27	68 32
September .....	21 12 44	68 31
October .....	21 13 28	68 31
November .....	21 12 49	68 28
December .....	21 11 30	.....

The mean variation has been found by the application of corrections (deduced by Mr. Glaisher from two-hourly observations taken during the seven years 1841-7) to the means of readings taken at 9h. a.m., 1h., 3h., and 9h. p.m. daily.

G. B. AIRY.

#### TO CORRESPONDENTS.

The Equal Altitude Table just received: Mr. Gordon. The pages of the *Nautical* are open for discussion. *Standing Navy* received.

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle.

---

JULY, 1861.

---

THE REEFS OF PERNAMBUCO.

The North coast of Brazil is provided by nature with a reef or border, which, like a wall, stands at a short distance from it. There are but very few places where this wall rises above the level of the sea at high tides; but there are many in which it is above that level at low water, and even some where it is above the mean level between high and low water. But about those parts where it is above the level of high water there are some where its distance from the coast is deep enough for large ships, and here there are openings in the reef that admit of a ready passage to and from sea. These are natural harbours, and perhaps the most important of them at present is that of Pernambuco, and, seen from the northward, it presents a most picturesque appearance.

To the left is the long wall formed by the reef stretched along like a huge cord, marked by a line of white foam, from the sea breaking incessantly over it; then the two lines of shipping anchored within it along the shore, displaying flags of all nations, contrast well with the magnificent foliage of the cocoanut palms of Isle Noguera, which forms the interior limits of the port and completes the picture.

To the right is seen first the naval arsenal with the tower of the observatory, and behind it the town of Pernambuco, which is built on the alluvial deposits of two large but shallow rivers, the Biberibe and the Capiberibe, which fall into the harbour. These two rivers

divide the town of Pernambuco into several sections, and afford a communication by water between them that has obtained for this important town the name of the American Venice.

It is an interesting fact in the study of alluvial deposits that the action of the waves (before the opening in the reef forming the entrance to the harbour of Pernambuco) has composed, with the materials brought down by the Biberibe, a coast embankment of sand-hills, one which has caused the mouth of the river to recede gradually towards the harbour, where the natural mouth was before the opening in the reef. Thus arrested in its course, the Biberibe is forced to flow to the southward in a direction parallel to the coast, and separated from it simply by a bank of sand, until it reached a place sheltered from the action of the waves at high water. But we will return to the reef, which without doubt is the most remarkable and interesting of all natural curiosities, and of which no important details have as yet been published.

Much has already been said of those reefs and islands formed in the equinoctial regions of the globe by polypi, particularly in Oceania. M.M. Leroy and Gaymard, in their voyage round the world, have done justice to these formations, showing that these animals can only live in shallow waters, and that below no traces of them are met with. It is on rocks ready for them that the coral insects fix themselves, and all their work consists in progressively elevating the upper surface by the addition of their *détritus*. The reefs to the North of Brazil completely confirm the conclusions of these two naturalists, for everywhere where the reefs are always covered by the water, their surfaces are covered with fine polypi. Merely for my own gratification I passed over these reefs in the jangadas or canoes (the native boats), and was delighted with the beautiful submarine gardens formed by the madrepores and their companions.

I have also found the same animals, as well as numerous seaweeds or marine plants, on the reefs which are uncovered at half-tide; but only on the sea-coast, where they are perpetually subject to the action of the waves and covered by the surf. Yet on the same reef, on its landward side, in the channels found between the natural wall of the coast, no traces of them are seen; and on the shore the *détritus* only of the coral insects forms a thin stratum varying from nine inches to three feet at most. The rocky formation of the polypi is easily distinguished from the rock of the reef covered by it, which is formed of freestone of a leafy structure, composed of quartz, felspar, and fragments of shells, united by a silico-calcareous cement.

The rock composing the reef bears evident traces of upheaval subsequent to its formation. The strata are generally inclined at the different points of the coast about 45° seaward. At some places the inclination is less but in others it is greater, and South of Point Serambi I have seen a portion of the reef where the strata has become vertical.

In one part the rock of which the reef is composed is one formed of sediment in the sea. This is proved by the numerous fragments

of shells that it contains, and which have preserved their natural state; proved also by the whole shells still preserving their colours, and apparently of similar kind to those that are still found on the same coast. On the other hand we know that the marine sediments are deposited in horizontal strata or those slightly inclined. The rock composing the reef has been disturbed since its formation and has been replaced in one of the disturbances of the surface of our globe of which geology furnishes us with so many instances.

At present the work of the polypi consists in protecting the reef from the destructive action of the waves, which action is very evident. It is seen on the upper surface of elevated parts which are exposed by the ebbing tide, and which, on the land side, not receiving the foam of the waves from the sea does not supply the madrepores with the necessary means for their subsistence. At high water this exposed part of the reef is battered by the waves and its surface wrenched into numerous cracks and even furrows, formed by the retreating waters. In certain places there are thousands of holes thus formed, and it is curious to see at low tide in each of the crevices containing a small quantity of water a sea-hedgehog that may have taken up its abode there;—these useful animals, thus profiting by the portion of the reef which is abandoned by the coral insects.

Along the North coast of Brazil the reef does not form a continuous line, but is broken from place to place by openings, which are a series of very straight and parallel lines,—that is to say, when one line of the reef ceases it is often taken up further out in the same direction, and often takes another parallel line at a less distance. These different lines are perfectly straight, the reef never being curved. In places where, at a distance, there appears to be a curvature we see on approaching it that the portion of the reef that thus seems curved is formed of perfectly parallel strips. At Pernambuco the direction of the reef is from N. 20° E. to S. 20° W.

This regularity of direction, to which is often added a nearly uniform height, continues in some parts for two or three leagues and gives to the reef an appearance of walls, which at a distance would appear to have been built by the hand of man. A really straight line is so rarely found in nature that when it is we are ready to attribute it to art, and we must appeal to reason to distinguish here the work of nature, which alone can compete with human industry in producing this regularity.

When from the summit of the hills of Cape St. Augustine, remarkable in themselves from the ancient upheavals of which they bear traces, and for the picturesque character of their vertical sides, owing to modern landslips produced by tropical rains,—when from the summit of these hills one contemplates the magnificent and extensive panorama spreading from North to South, the beautiful line of the reef is the first to engage the attention. It resembles a wall standing out of the sea for three or four miles, suddenly formed by a rapid effort of nature, and well contrasts with the irregularity of the

numerous bays of the coast, these appearing to be the slow but ever constant effect of the restless waves during ages of time.

Along with the reflections suggested by this magnificent view, which carries the mind back to the primitive history of our globe, we must not omit to observe that the least increased resistance of the crust of the earth has sufficed to stop the progress of one of the lines of the reef: thus, the southern wall close up to Cape St. Augustine immediately ceases near the submarine base of its hills, and is resumed to the northward a short distance beyond the cape on other parallel lines. This single fact is sufficient to prove that the reef is posterior to the mountains of the coast, independently of comparing the nature of the rocks by which both are formed.

By studying the order of superposition of the sedimentary rocks, and considering the horizontal layers that are formed, which are already inclined by eruptions after their formation, and then by considering the fossils formed in the rocks, which differ in each of the strata and which are the remains of animals and vegetables, geology is enabled to carry back the history of our planet anterior to man.

The relative conditions are thus determined, or, in other words, the order in which the different strata have been formed. We thus know also the different kinds of animals and vegetables which have inhabited the earth at the time of the formation of each stratum, a great number of which no longer exist.

Space will only permit us to observe here that the stratum of which the hills on the coast of Pernambuco are formed is for the greater part composed of plastic clay. They contain *lignites*, *succin*, and *websterite*: these are often white. In several parts it is coloured by the yellow oxide of the limonite iron. Where this oxide has lost its crystallised water the clay has become a red ochre. In the North part of the province we find limestone, containing numerous marks of marine shells; and everywhere the clay contains rounded flints, alternating with sand. All these characteristics are contained in the hills of the coast, along with plastic clay, with which they appear to be contemporary.

In some parts, as on the shores of Rio Una, there is granite; in others porphyry, as in the island of St. Alexis, at the point of Black Rocks, &c., that has made an irruption in the midst of the deposits; but these irruptions are more modern, as is shown by the action of the crystallised rocks on the sedimentary deposits, which are modified in their vicinity. The eruptions of the granite rocks are, without doubt, contemporary with those of the deposits which they have crossed.

The formation of the reef appears to have been subsequent to all these, and to have happened even at a modern date. It is everywhere prior to the formation of the wall of rock of the shore and the downs which here and there cover it. The rock composing this reef is no longer formed in mid-ocean; on the contrary it tends to destroy it, and its presence is only due to the polypi which protect it.

The direction of the reef gives rise to a curious remark. Continued

along the surface of the globe, this direction would pass near the Western Alps, to which they would be parallel. This similarity of direction seems to establish a relation between the upheaval of the reef, that of the coast to which it is nearly parallel, and that of the Western Alps, according to the remarkable discovery of M. Elie de Beaumont that parallel chains have generally been formed about the same period. The date of the Western Alps is indeed subsequent to that of the deposits of plastic clay.

Now, on the part of the South American coast which is under discussion, these deposits not having been covered by others subsequent to them, there is every reason for believing that they were formed at the same time as the Western Alps. M. E. de Beaumont had already noticed the parallelism of the coast of America with this chain of mountains. The nature of the rocks of the coast proves that the inferences that he had deduced from this parallelism are quite correct. As to the reef itself, it has been subsequently raised parallel to the coast by a second effort, probably following the broken lines left outside the first dislocation.—*Moniteur de la Flotte.*

---

#### THE EXPLORING VOYAGE ON THE YANG-TSZE RIVER, CHINA.

The Report of the recent exploration on the Yang-tsze River by a deputation of the Chamber of Commerce at Shanghai is an important document and one that will much interest our readers. It gives a general view of the state of the principal towns on that river in reference to commerce and the ill effects produced by the rebels. We prefer giving the whole document entire, as it will form a useful reference hereafter. Admiral Hope penetrated the river to a distance of 570 miles from the sea without accident, the vessels drawing about twenty feet water, and it is stated to be navigable 157 miles further. The Yang-tsze is therefore the largest river of the old world, although it is surpassed by the Mississippi and the St. Lawrence. The expedition was in the Yang-tsze in the months of February and March, the period of its lowest condition. The rains occasion a rising of twenty to twenty-five feet, greatly increasing the current, which is stated not to exceed three and a half knots when the river is low; but in its swollen condition would far exceed this, although it might at all times be overcome by steam. The Report runs thus:—

*Shanghai, 30th March, 1861.*

Sir,—We have the honour to transmit to you for the information of the Chamber of Commerce our report on the voyage which we have just completed up the Yang-tsze River as far as Hankow, dividing our remarks under separate heads.

1. *The Navigation of Yang-tsze.*—The chief difficulties are below Nanking, and the most critical part of the river is the Lanshan cross-

ing, forty-two miles from Woosung, where the channel is crossed from the southern to the northern side of the broad bed of the river. A small staff of permanent pilots will probably be required for this portion of it. Beyond Nanking it is quite possible to make the way up to Hankow by aid of the chart and sailing directions alone; but as strangers, especially such as are unused to river navigation, would be very likely to fall into mistakes, we would recommend that pilots should be taken by masters of vessels until they shall have made themselves personally acquainted with the land-marks.

At this season the current is moderate. It has not been found to exceed at any place three knots and a half an hour, and the average is about two. The waters however begin to rise early in the year, and by July or August an immense extent of land about Hankow is flooded until September or October, and the depth of the river increased, certainly by as much as twenty feet, and occasionally by twenty-five to thirty feet above the level in December, when it is at its lowest.

We have had no means of obtaining any specific information regarding the effect of this rise on the force of the current, but from all we can hear, there is no season in which junks cannot ascend, aided, no doubt, by the favourable winds which blow steadily during the summer.

Local pilots might be of essential service in taking vessels through channels where sufficient water might be found without meeting the full force of the stream.

The distances to the chief places are—

To Chin-kiang .....	188	naut. miles.
„ Nanking (from Chin-kiang 43·5 m.) ....	182	„ „
„ Kiu-kiang (Nanking 251 m.) .....	433	„ „
„ Hankow (Kiu-kiang 137 m.) .....	570	„ „
„ Yoh-chow (Hankow 157 m.) .....	727	„ „

2. *Chinkiang*.—Trade at this place is completely at a standstill, the city only being in the hands of the imperial government,—the rebels ranging over the country on either side of the river. The Grand Canal also is obstructed in its southern course, but to the northwards as far as the old bed of the Yellow River it seems to be open to commerce, and is to be entered from Itching, Kwachow, opposite to, and a large creek leading directly to Sin-new-miow, below Chin-kiang.

The rich country to the eastward of this portion of the canal and traversed by its branches is still undisturbed, and the security afforded by the British flag may enable dealers to come to this port who could not venture on the longer voyage to Shanghai.

We append a statement of market quotations obtained here, which is significant, both as showing the nature of the demand, which is from the camp only, and that prices here and at Nanking are quoted the same. There is reported to be a place on the river between the two, which is practically neutral ground for such traffic.



3. *Nanking*.—There seems no prospect for the development of commerce with this city, or the districts controlled by it, while under its present rulers. The people are enslaved. The soldiery, unpaid but habituated to plunder, are little likely to engage in any industrial pursuits. The rulers, so far from being able to govern the country, do not even admit within the walls of their capital the shop-keepers necessary for the supply of the daily wants of the residents.

The proclamations which occasionally appear, apparently designed to encourage trade, must be read with regard to this state of affairs. Their design can at present extend no further than to bring in provisions at cheaper rates, or supply a market for the soldiery, which, commercially speaking, can only be on a very small scale.

It remains to be seen how far these evils can be mitigated by foreign influence. The present design of the Taipings seems to be to seize all places where British settlements have been made, to enforce the recognition of their pretensions.

4. *Kiu-kiang and Hu-kow*.—Both these places were visited and examined with regard to their capacities for the site of the second new port on the Yang-tsze. The latter is just at the mouth of the Poyang Lake, but the place is small, and the steepness of the hills on which it is built gives no space for the requirements of a trading depot, while on the opposite shore the alluvial soil is liable to be flooded in the summer. It is not, nor has it ever been, a place of trade.

Kiu-kiang has always been a port of some consequence, though even before it was devastated by the rebels it was somewhat on the decline. Both equally command, practically, the navigation of the Poyang Lake.

Into this lake fall numerous navigable streams running through the rich black tea districts to the westward: the rivers Fu and Kan, which run through Kiang-si from the neighbourhood of the Mei-ling Pass, the great high road to Canton; and, what under existing circumstances is more important than all, the rivers flowing from the eastward are connected by canals with the creeks traversing Fychow, Moyune, and, in short, the whole of the green tea districts, which are thus as accessible from this lake as from Souchow and Shanghai. It is, in short, a centre of a most extensive and important network of river and canal communication, brought to a very high state of perfection by the Chinese in more prosperous times.

The chief commercial city on it is Woochow (or Wochin) on the western side. The dealers speak of this as of another Souchow, and those who visited it describe it as exhibiting every sign of prosperity. Nanchang, the provincial capital, is not spoken of as a place of much importance.

The partial running survey of the lake shows that it is generally shallow; but the bed of the river running through it is sufficiently deep, but so narrow that it would not be easy to navigate in vessels of any size.

As regards the goods likely to be in demand here we need only say that all that the green tea dealers have hitherto taken from Shanghai they would equally be able to take from Kiu-kiang, were these districts approached from the latter instead of the former port. The dealers speak very confidently of being able to bring teas to Kiu-kiang, notwithstanding the presence of the rebels in the districts, saying that they "know the roads;" and it is obviously very unlikely that an irregular force could cut off communication with places to be approached from so many different directions, though we have most ample testimony that the presence of these rebels most grievously impoverishes and depopulates the districts which are subjected to their visitations.

The following distances have been given to us:—From Kiu-kiang to Ningchow, by land 300 le, by water 500 le; from Kiu-kiang, by land, to Fychow, 500; Moyune, 480; Tingkai, 570; Taiping, 600 le. But by water, through rivers and canals, the distance to all is said to be about the same, viz., about 1,000 le. Three le are nearly equal to an English mile.

If peace were restored throughout the country this port would be of less importance, but will always be useful and desirable, securing as it would do to a great extent a competition between native boats and foreign vessels for the conveyance of tea to Shanghai, and further affording a check on attempts to enforce an extortionate levy of customs duties in the interior, by the choice of routes which would be kept open to foreign settlements.

We append a list of prices, which may be found of some interest but can afford no criterion of what they may be when trade is fairly opened. The exchange is in favour of imports, 100 taels of sycee in Kiu-kiang being equal to 102 Shanghai taels. The tael was worth 1,640 cash; Mexican dollars did not pass freely at 1,000 cash each.

Coal of good quality is said to be procured near Woochow, where it is largely used by distillers and others, who have large factories in and near the city.

Weights appear to be the same as those used in Shanghai and Canton.

There was a small consumption of silk in the neighbourhood for the manufacture of braid for local use. The supply was drawn from Hu-chow.

5. *Towns and Places on the River.*—Regarding these we had no opportunity of obtaining reliable and specific information. Speaking generally, from Chinkeang to Nanking, where the rebels are now being besieged by the imperial troops, we saw everywhere traces of misery and destruction, few, if any, of prosperity. Beyond this, signs of improvement gradually began to appear, and the towns marked on the chart showed indications of activity and revival, which warranted the expectation of a large demand from local dealers in support of our trade in the larger depots. Numerous well-built junks were seen above Kiukiang.

6. *Hankow*.—We shall proceed to lay before you the imperfect results of our investigations in this most important emporium of Central China.

The Poyang Lake, as we have already shown, is the centre of one extensive system of water communication which has always been connected with Shanghai. Hankow is the head of another and probably larger system of communication by river and land routes, both up the Yang-tsze and its tributaries, including those running into the Tung Ting Lake, to which more special reference is made hereafter, and up the River Han, called also Seyang, from the city of that name about 250 miles up its course, which is the port of transshipment on the route to Tiensin and Peking.

The town of Hankow itself is situated on an alluvial plain, which, though more broken by isolated ranges of hills, seems hardly less extensive than that around Shanghai, and which is accessible in numerous directions by the branches and tributaries of the Great River. The appearance of the town was not merely that of a wealthy place of residence, but we saw ample proofs that it actually was, as it has generally been supposed to be, the great commercial centre of the Chinese Empire.

Woohang-foo, on the opposite, the right bank of the Yang-tsze, is a large provincial city which is regaining its prosperity, but it has no special connection with commerce.

Hany-ang is a place of no importance.

Our reception has been entirely satisfactory. The treaty of Tientsin has been duly published, and supported by other proclamations. The dealers were free in giving information, and were looking forward to a rapid extension of their trade in the coming season.

You will already have heard that these three places were deserted on the 19th and 20th inst., on an alarm consequent on the advance of a rebel army to Hwangchow, within forty-five miles of Hankow, on the same—the left or northern—bank of the river. The abandonment was most complete: not a house nor a shop was open, and it became equally impossible to purchase goods, to check quotations, or pursue inquiries upon any subjects of doubt or interest.

This most sudden and unexpected change will account in some measure for the deficiencies of the following portion of our report, which in all matters of detail refers to a state of affairs which, at least for the present, has completely passed away. The last reports are up to the morning of the 22nd inst. The measures taken by the authorities for the protection of the deserted property seemed sufficient to secure it from plunder by local robbers; but no confidence can be restored while it is threatened by an insurgent army.

*Currency*.—It is impossible to get exact and reliable information without entering into actual transactions, but we believe 100 taels sycee in Hankow will give 103 to 103.3 in Shanghai taels. So many different accounts are given of the way in which this is made up that we cannot venture to put forward any explanation. Some even make

the outturn less by about one per cent. The sudden flight prevented any of the party securing a set of bullion scales.

Should it appear, when business is resumed, that different methods are used, we would strongly recommend the first residents to insist on one uniform scale for transactions in foreign commodities.

*Weights and Measures* are as in Shanghai and Canton. The *che*, or foot, of fourteen inches is in common use, and woollen goods are retailed by it.

*Exchange* was 1,600 to 1,650 cash per tael; 1,040 to 1,100 cash per tael for the Mexican dollar, not however current.  $15\frac{1}{2}$  taels sycee = 1 tael Pekin gold.

*Cotton Goods*.—Foreign. The supply this year was chiefly drawn from Canton. Last year the communication seemed more open with Shanghai, which would probably be by river and canal to the Poyang Lake, to Wochin and Kiu-kiang, and thence by junks up the river. The former part of this route would be closed when the rebels took Souchow.

The goods coming from Canton are mostly repacked in boxes containing about half the original package, but we saw all the marks and chops of English fabrics and American drills with which we are familiar in the sea ports.

The prices, considering that they were quoted in a market avowedly bare of stock, are not excessive, and would rebut the impression that British goods have been subjected to any heavy "squeeze" in transitu, in addition to the necessary cost of conveyance.

Both staples and chintzes, handkerchiefs, damasks, and other fancy goods command attention. A list of prices is appended. They are such as dealers said they would give; and of staples they seemed quite prepared to make large purchases.

We further lay before you musters and descriptions of the native made staple grey cotton cloths; the prices cannot be considered low as compared with British manufactures. Native made yarn is quoted 30,000 cash for white, 20,000 to 26,000 cash for yellow. Cotton, which is of very good quality, 16,000 to 18,000 cash; all per picul of 113 catties. The spinning-wheel is to be seen in every cottage in the neighbourhood.

We did not hear of nor see any British yarn.

*Woollens*.—It cannot be denied that our manufacturers have strong competitors in the Russo-American and the Amoor companies, who have a monopoly of the Russian trade with China. The descriptions they supply compete directly with our medium and army cloths, and Spanish stripes are injuriously affected. Some samples accompany this report, from which members will be able to judge of their quality.

The best is 72 inches within the list,  $19\frac{3}{4}$  yards long (5 chang),  $30\frac{3}{4}$  lbs. weight (23 catties), the price of which was given as taels 27 per piece or taels 1.37 per yard, or by retail 7 mace per che, or taels 1.8.0 per yard. The second quality measures 70 inches only within the list, but is about the same weight and length. The price was

taels 23 per piece, taels 1.18 per yard, or retail 6 mace or taels 1.54 per yard.

The route for these goods is from Tientsin partly by river and partly by land; in which transit we hear of pack horses, carrying loads of about 300 catties each, are used to Seyang on the Han River.

Long ells are largely used and do not seem to be interfered with by Russian cloths. Camlets also are a staple, but the better qualities only seem to be liked.

*Japanese Seaweed.*—Even so bulky an article as this has found its way to Hankow and is quoted taels 4.7.5 to 8.0.0 per picul.

*Coal*—Is to be had of various qualities. 300 to 700 cash per picul (the latter an absurd demand) is asked for it. That it can be used for steam purposes is certain, but its value and quality can only be ascertained by experiments.

*Silk.*—The crop of Sz'-chuen silk we heard estimated at from 1,000 piculs to 2,000 bales. The quality quoted at about taels 200 is very low, equal at best to Leyangs or No. 3 Taysaams. We hear also that the silk used for embroidery, a branch of village industry followed in the neighbourhood of Woo-chow-foo, is brought from Huchow, which is a strong confirmation of the general assertion that finer qualities, at all events at present, are not produced in Sz'-chuen.

*Tea.*—Dealers are unanimous in saying that if Hankow be opened, that hitherto grown and prepared in the neighbourhood of the Tungting Lake would be sent there instead of to Canton. We learn that the great industrial centre of this district is Siang-tan, about 500 le from Hankow, at the mouth of the Siang-suey, running from the southward. Here teas are collected for manipulation and packing for Canton. Chang-teh, up a small river to the West, and Chang-shah, on the East of the river and South of the lake, being subsidiary depots, all drawing considerable supplies of English goods from Canton. Yoh-chow, close to the entrance of the lake, is in the midst of a rich tea growing district; but it was devastated by the rebels in 1853, 1855, and 1857, and has never recovered from the last blow, and is so poor a market for imports that silver has to be sent there generally for all the tea collected in the neighbourhood. Sin-te, on the left bank of the Yang-tsze, thirty-seven miles below Yoh-chow, is described as a large and flourishing city.

We do not hear of any green tea grown in this direction. Nor is any tea grown in the vast alluvial plains about Hankow, nor, as far as we could hear or observe, in the isolated hills rising up above them.

We can afford no special information about any field which can be regarded as actually new to European trade in this or any other branch of commerce, though there can be no doubt that a rapid expansion will be the result of our free intercourse with Hankow, if it be not crippled by the operations of the insurgent army.

*Opium.*—Native drug is so much cheaper than Indian that it commands the market. There are three kinds, viz.:—Szetu, grown in Shan-si and Shen-si, is very strong but not liked, worth taels 25; Nantu, grown in Kwei-chau and Yun-nan, taels 23; Chuentu, grown

in Sz'-chuen, taels 20·6 per 100 taels, weight about 8½lbs. avoirdupois, but, owing to the sudden panic, we were unable to get the exact weight by a known scale. Malwa is worth taels 20 a 21 per bag of three catties, but the high price checks the sale. Patna is not appreciated.

Of the native produce the Nantu is most liked, and some say is also most largely used; while other reports state that the lower price of Chuentu secures for it the larger sale.

We are told also that the Nantu gives 60 per cent. of extract used for smoking; Chuentu, 70 per cent.; Malwa, 75 per cent.: but have no means of verifying the statement.

*Native Products.*—Iron is largely produced, but the quotations obtained differ very widely, and, owing to the sudden exodus of all those who could give explanations, are now quite inexplicable. Rough iron in small bars or “pigs” was variously rated at taels 1½ a 3 per picul. Steel at taels 9 a 18 per picul. Lead, from Sz'-chuen, was quoted taels 5½ a 7½. Copper, from the same quarter, taels 23 a 29, and white copper at taels 42. It likewise supplies sugar, quoted here at taels 4 for brown up to taels 6½ for very good white and candy at taels 8 a 8½, all apparently from the cane.

Excellent vegetable tallow is to be had at taels 3·9 a 4·5 per picul, but we could not ascertain in what quantities. Flax of superior quality is abundant, and is largely made into cordage of a very good description. The manufacture and consumption of oils also is very extensive.

A large trade is done with Canton in the produce and manufactures of the South of China. The fabrics of the unfortunate city of Souchow were common in the shops. Merchandise of the most various kinds and from all quarters of Ohina were to be found in this so lately flourishing port, and the losses entailed by its abandonment must be felt throughout the whole empire.

It is to be apprehended that the expected advance of the rebels westward along the south bank of the Yang-tsze may seriously affect the trade with Canton, and we cannot conclude our report without expressing our strong opinion that this movement can in no just sense be considered political, still less patriotic or constructive; but, unhappily, in the present lamentably weak and corrupt state of the imperial government it is impossible to foresee how far the ruin, desolation, and actual depopulation which have hitherto marked the course of the Taiping rebellion may be extended, or how long the advantages reasonably expected from the opening of the Yang-tsze may be counteracted by the anarchy and disorganization which entail such dire evils on all classes of society in the Chinese empire.

We have, &c.,

ROWLAND HAMILTON.

A. MICHIE.

T. FRED. BALLANCE.

To R. C. Antrobus, Esq., Chairman, British  
Chamber of Commerce, Shanghai.

*Memorandum of Prices at Chin-kiang.*

Saltpetre .....	Tls. 20 per picul, 100 catties.
Gunpowder, fine, in tins .....	" 2 " tin.
" common .....	" 4 " tub (28lbs.?)
Guns, Caps, Spy-glasses, Pistols, &c., much wanted,	
Opium, Malwa, retail .....	Tls. 48½ per bag, 3 catties.
Souchow Crapes, Silk, much wanted at very dear prices.	
Shirtings, Grey and Bleached, not wanted.	
" Red, Yellow, Blue ..	Tls. 4 per piece.
Other foreign goods not wanted.	
Canton Silk, 16in. 40ft., Tls. 8 per piece. (Worth there about 4½ doll.)	
Colours, Chinese, for house-painting, wanted.	
Salt (in Sin-new-meow about half) .....	Tls. 2 per picul.
Sugar .....	" 12 "
Rice, common broken .....	" 4 "
Carolus Dollars, 1,450 cash, same as the Tael of Shanghai Sycee.	
Mexican " 1,000 "	
Coal, not to be bought.	
American Drills, said not to be wanted, though we saw them in use for Tents.	
Provisions all very dear:—Fowls, 300 cash per catty; Ducks, 250; Beef, 150; Mutton, 160; Fish, 20 a 60 cash per catty; Eggs, 10 cash each.	

These quotations are only for retail sales. The same prices at Nanking.

*Quotations at Kiu-kiang.*

Grey Shirtings, 6½ catty .....	Tls. 1.8.0	per piece.
" 7 " .....	" 2.0.0	"
" 8 " .....	" 2.7.0	"
White Shirtings 60 reed .....	" 1.7.0	"
" fine .....	" 2.0.0 a 2.2.0	"
American Drill .....	" 3.0.0	"
Brocades and Spot Shirtings, White ..	" 2.4.0 a 2.8.0	"
" Assorted colours .....	" 2.8.0 a 3.4.0	"
Chintzes (old patterns) .....	" 1.6.0 a 1.8.0	"
Handkerchiefs, Blue and Bronze ..	" 70 a 100 cash each.	
Long Ells, Scarlet .....	" 8.0.0 per piece.	
" Assorted .....	" 7.0.0 "	
Spanish Stripes .....	" 0.9.0 per yard.	
Camlets, inferior to common .....	" 15.0.0 a 21.0.0 per piece.	
" best .....	" 21.0.0 a 22.0.0 "	
Lastings .....	" 14.0.0 "	
Opium, Malwa .....	" 24 per bag of 3 catties.	
" Patna .....	Not in demand.	
Cotton, good .....	Tls. 10 per picul of 140 catty.	
Rice, common .....	3,600 cash "	145 "
Sugar .....	14,000 " "	100 "
Flax, clean yellow .....	11,000 " "	100 "
Gold, 20,000 cash per Tael same as Soochow Tael.		
Sycee, 1,640 "		
Mexican Dollars, 1,000 cash each.		
102 Shanghai Taels = 100 Kiu-kiang Taels.		
Wages of Carpenters, Bricklayers, &c., 160 cash a day.		
" Coolies for earth work, 20 cash per picul weight.		

35,000 cash per Mow asked for land for building purposes.

Wood for building to be had in abundance at Woochow.

These quotations represent only transactions on a very limited scale.

*Prices at Hankow.*

Grey Shirtings, 6½ catty	.....	Tls. 2.5	per piece.
"    7    "	.....	" 2.6	a 2.7 "
"    7½   "	.....	" 2.7	a 2.8 "
"    8    "	.....	" 2.8	a 3.0 "
White "do. 56 reed	.....	" 2.2	a 2.3 "
"    60   "	.....	" 2.4	a 2.6 "
"    64   "	.....	" 2.8	" "
T-Cloths, Grey, common	.....	" 1.8½	a 2.2 "
"    fine 64 reed	....	" 2.4	a 2.6 "
American Drills	.....	" 3.0	a 3.2 "
Spot Shirting, White	.....	" 2.4	a 2.5 "
"    Assorted colours	..	" 3.2	a 3.4 "
Brocades, White	.....	" 2.5	a 2.6 "
"    Assorted colours	....	" 3.2	a 3.4 "
Damasks	"	.....	" 6.2 a 6.4 "
Long Ells, Scarlet	.....	" 9.5	a 10.0 "
"    Assorted colours	.....	" 8.0	a 9.0 "
Camlets, inferior and common	....	" 16.0	a 18.0 "
"    Best BB	.....	" 21.0	a 22.0 "
Lastings	.....	" 14.0	a 16.0 "
Spanish Stripes, Scarlet	.....	" 1.0	a 1.1 per yard.
"    Assorted	.....	" 0.85a	0.9.0 "
Chintzes, inferior	.....	" 1.3	a 1.8 per piece.
"    common	.....	" 2.0	a 2.4 "
"    cochineals	.....	" 2.7	a 2.8 "
Handkerchiefs, Blue and Bronze	..	" 0.7.0a	1.0 per dozen.

N.B.—The above were given as prices which dealers would be willing to pay, without discount or allowance.

Oils	.....	Tls. 6.0	a 6.4 per picul 95 catties.
"    Common sorts	.....	" 3½	a 5.0 " "
Flax, White	.....	" 6.0	" "
"    Best Yellow	.....	" 6.2	" "
China Paper	..	Tls. 15.0	a 16.0 per bale 80 sheets of 35 piculs.
Black Pepper	.....	Tls. 11.0	per picul.
Rhubarb, very coarse	.....	" 7½	a 9.0 "
Sz-Chuen Varnish, good lacquer	..	" 25½	" "
"    Common	.....	" 19½	" "
Bee's-wax	.....	" 30.0	" "
Tallow, Vegetable, good quality	..	" 3.9	a 4.2 "
Sugar, Sz-Chuen, Brown	.....	" 4.0	a 4½ "
"    White	.....	" 6.0	a 6½ "
"    Candy	.....	" 8.0	a 8½ "
Silk, Sz-Chuen, very coarse yellow.	.....	" 19.2	" "
Lead, Sz-Chuen	.....	" 5½	a 7½ "
Quicksilver, Sz-Chuen	.....	" 55.0	" "
Copper, Common	.....	" 23.0	" "
"    Red	.....	" 29.0	" "
"    White	.....	" 42.0	" "
Steel, 1st quality	.....	" 18.0	" "



Steel, 2nd quality .....	Tls. 14.0	per picul.
"   3rd   "   .....	"   11.0	"   "
"   4th   "   .....	"   9.0 a 10.0	"   "
Ginseng.....	"   11.0	per catty.
Japanese Seaweed, 1st quality ....	"   8.0	per picul.
"   2nd   "   .....	"   6½	"   "
"   3rd   "   .....	"   4½	"   "
Cotton .....	Tls. 10 a 13	per picul 118 cattie.
Wool .....	8,000 a 13,000	cash 100 "
Yarn, Native, White .....	30,000	cash per picul 113 "
"   Yellow .. 20 a 26,000	"   "	"   "
Russian Cloth, 72in. 19½yds. 23 cat., 1st qual.,	Tls. 27 p. piece.	
"   70   "   2nd   "   "   23	"   "	"   "
Native Cloths, 18in. 12yds. 1lb. 15 oz. Kinkow ....	780	cash.
"   15½-16   "   1   18½   Kufung ....	650	"
"   14½-15   "   1   11   Janlow ....	610	"
"   15   "   1   4½   Manghan ..	480	"

We had no means of checking these quotations of produce, nor of ascertaining whether the picul by which they were sold contained more or less than 100 cattie. Discounts amounting to a very heavy per centage are allowed on some articles; but of these, owing to the flight on the 19th, we could obtain no reliable information.

---

THE STRENGTH OF IRON SHIPS. *By John Grantham, Esq., Member Council I.N.A. Read at the First Meeting of the Opening Session of the Institution of Naval Architects on Thursday, March 1st, 1860.*

(Concluded from p. 205.)

I cannot, however, forget that it was only a few years since the Committee for Lloyd's Book looked with dislike and suspicion upon iron ships; and this feeling was entertained by some of their surveyors. The judgment of those who advocated the adoption of the system was called in question; and had the subject of iron ships depended for its adoption on those who were ship-builders by profession, it would probably to this day have had no existence; and those who, like myself, have for twenty or thirty years steadily advocated the employment of iron, having proved by the result that we knew what we were about, may now fairly claim to be heard in the suggestions we may offer for their improvement.

But to return to the more immediate object of this paper.

The *Royal Charter*, whose loss the whole country has so lately deplored, is a remarkable type of those defects which have been already alluded to; and I feel that I shall be excused if I quote a passage from my own published work on iron ship building, which passage was written after having examined that vessel in the graving-dock.

"Ships are elastic bodies, and one great element of their strength.

consists in a uniform elasticity throughout. Imagine a beam, which is also an elastic body, being made unduly stiff at the ends; the elasticity or spring which is so essential in sustaining shocks or unequal weights is confined to the weaker points, and that which should have been sufficient, had the elasticity been uniform, is insufficient when this peculiarity is not attended to. On these grounds it is important that the strength of a ship should be distributed with equality throughout; it will also be evident that the weight of the ship as well as of the cargo should be distributed with reference to the form of the hull, and the consequent buoyancy which has to sustain each portion of it. Nothing can be more injudicious than the plans which are often to be seen in regard to this subject, and may be observed very strikingly in some of our long fine ships, where the weight of fore-castle, bowsprit, anchors, chains, &c., is placed without reference to the amount of buoyancy under them. The immense leverage thus occasioned acts immediately on the midship body of the ship, and is no doubt the origin of derangements frequently ascribed to other causes. I mention this here as being especially applicable to iron ships, in which fineness of form has been carried to a much greater extent than in wooden ships."

Now this suggests three questions: first, the form and proportions to which the use of iron in shipbuilding tends; secondly, the important bearing which form and proportion have upon strength; thirdly, how these tendencies should be dealt with in iron ships.

The tendency which the employment of iron in shipbuilding has given rise to, is evidently the adoption of the form of reduced resistance to an extent that would be quite impracticable in wooden ships. How far this will be carried in steam-vessels, time alone can decide; but it will probably not rest where it is. The vessels building for the Holyhead and Kingstown line, and for the Galway Packet Station, will give a fresh impulse to those questions. In sailing vessels this tendency to fine lines has of late rather retrograded,—not because of deficiency in strength, but from the desire on the part of the owners to increase the stowage at the expense of speed, some iron vessels having been built with too little regard to their carrying qualities.

It is well known that many iron steam-boats are now employed in carrying heavy cargoes, whose length is eight times the beam, and I have frequently examined one vessel, that has sailed round the world, whose length is nine times the beam; nor is there anything in these vessels which would lead to the conclusion that such proportions are excessive. On the contrary, with improved construction, a much greater length may ultimately be attained, especially in large vessels. The maximum of length in wooden ships has often been attained, and probably a proportion of six times the beam has seldom been exceeded, without showing unfavourable results, when heavy weights had to be carried. This leads to the second question, the important bearing which form and proportions have to strength.

I shall best explain my views by describing the result of a calculation I lately made, for the purpose of giving evidence in an important

trial. The object sought was, to ascertain whether a vessel loaded as this was would rise or fall at the ends, or, in popular language, whether she would sag or hog. This ship was built of timber, with fine lines, rather light ends, and the cargo very evenly distributed; she was 225 feet long, and 42 feet beam. For the sake of the calculation, the longitudinal elevation was divided into ten equal parts. The displacement of each section, the weight of the ship and cargo also of each section were calculated, when it was found that the ends were depressed by a force of 220 tons, and thus threw a strain on the centre equal to that weight multiplied by the leverage.

The tendency, as before observed, is to build iron ships, especially steamers, much longer and finer than this vessel; it is clear that the excess of weight over displacement at the ends will increase in the same ratio, unless precautions are taken to reduce the weight there. Great attention has been paid to this subject in the timber built steamers of America; and it is found that vessels which to us appear dangerous, from the extreme height of deck-houses and machinery amidships, are plying throughout the year on their wild Atlantic coast with comparative safety.

Now it is quite clear that a vessel should be so constructed and, if possible, so loaded, that when in smooth water the weight should as nearly as possible correspond with the displacement of every portion. She will evidently then be in the best condition to sustain the action of heavy seas, and the unavoidable strains which these occasion will be reduced to a minimum. The same reasoning will also obtain when the condition of a ship taking the ground is considered.

The *Royal Charter* unavoidably forces itself upon our notice as we reflect on this subject; and indeed the sudden breaking up of that ship, has made so strong an impression on the public mind, that it is quite necessary to throw as much light on it as possible. The report of bad iron having been used has been clearly refuted; and I can myself bear testimony to the good character of the workmanship, having had to superintend two vessels that were built in the same yard, and therefore having frequently inspected her during her progress. But I do not hesitate to give it as my opinion that there were faults of construction, such as I have before described, which would tend to hasten the catastrophe that befell her, though no one can doubt that her ultimate destruction was inevitable.

Many of the peculiarities of a sailing vessel were to be observed in this ship,—a wide expanse of deck forward, with fore-castle, windlass, bowsprit, anchors, and deck-hamper, all placed a long distance forward of any adequate buoyancy to sustain them. Lloyd's regulations for iron ships were not in force at the time she was built; but as these require a still greater weight of iron at the ends, they would only have increased the evil. I have imagined it probable, judging by the example given above, that the excess of weight over the displacement, at the ends of this vessel when the coals were burnt out, might have been from 500 to 1000 tons.

Having early shown a weakness in the centre, great additional

strength was given her. Two stringer-plates of three feet width, and each composed of two half-inch plates, were added; but these were snapped asunder like packthread.

Many arguments are used to justify the errors that are committed on these points; but they are probably all easy of solution. The wide deck and expanded bow are supposed to be necessary to sustain the vessel when pitching deeply in the sea; but, in reply, may they not augment the evil they are supposed to remedy, and by their excessive weight cause the ship to pitch more than she would otherwise do?

Again, the heavy plates and framing required by Lloyd's regulations at the ends of ships, are supposed to counteract the tendency to collapse which has been experienced in fine iron ships. The true way to meet this, however, is to keep weight from the ends, and to apply the strength in the direction required, viz., from side to side of the ship, by the adoption of crutches and other wellknown fastenings of this description. Some men who have of late years come fresh to the subject fancy they have made wonderful discoveries in iron ships upon points well known to iron ship builders for many years, and which have been met as they arose. New beginners have again fallen into the same errors; but loading ships with iron where it is not wanted, and in a form not the best suited to remedy the defects, is not the way to counteract these defects, or to improve their construction.

The strain of the anchor has been considered one argument in favour of increased weight of iron in the fore-body of the vessel: but it may be asked, who has seen any tendency in well-built iron ships to strain from this cause? The leakage of a defective hawse-pipe has been a frequent source of annoyance, but one not arising from weakness in the plates.\*

\* Since the above was written, Mr. Fairbairn, of Manchester, read a paper at the Polytechnic Society of Liverpool bearing the same title as my own, viz., "The Strength of Iron Ships." The following is an extract from the newspaper report of Mr. Fairbairn's remarks.

"He commented upon certain requirements of Lloyd's, which he showed were based upon no proper calculation, nor with any accurate knowledge of the compression and tension of iron ships. They required the greatest strength at either end of the vessel, whereas it ought to be amidships. It was of no use to put a large quantity of material where it was not wanted. A ship should be constructed with the same proportion of strength upon her upper deck as at her keel. Thick plates, or large masses of iron, were not wanted at each extremity; that plan was only a waste of material, and added nothing to the safety of the ship, but rather the contrary. Plates of the greatest thickness were required in the centre of a vessel; and with the exception of the ribs and sheathing-plates, they might be reduced in thickness from three-quarters of an inch amidships to half an inch or less at the bow and stern. He wished to impress upon the shipowners and shipbuilders that the centre was the place where they wanted the material, and good material too."

In the discussion which followed,

Mr. John Vernon said: "He was very glad to hear, from such an authority as Mr. Fairbairn, such opinions as that gentleman had expressed. He himself felt strongly the same views, especially with regard to making iron ships stronger in the midship portion. The same quantity of material that was

Having complained of the faults in construction of our iron ships, I shall be naturally asked for a more precise opinion upon the various proportions of the plates, frames, and fastenings of which they are composed; this, however, is more than I contemplated in this paper; such a course would extend it to a length much beyond what the occasion would admit. It would be found that the art of iron ship building, in fact, the whole range of the science, would be involved in this question. I can but deal with general principles. I have, in a small work on iron ship building, and by a series of engravings, shown what is the usual practice; and there are now various standards set up, amongst which Lloyd's regulations take the first place, as exerting the most powerful influence upon these points. I simply proposed to myself to show where the present practice is defective. Naval architects and builders must in detail modify existing plans as their own judgment may guide them. Upon one point I have always felt strongly. I believe that the committee for Lloyd's Book began to legislate too soon; that they have practically narrowed the sphere of improvement; they have set up an arbitrary standard whilst the system was in an infant and progressive state. On the other side, I am quite aware of the difficulties of their position, and feel great reluctance to raise objections to their plans. I am aware, also, that the subject of iron ships meets with much more favour at Lloyd's than it formerly did, and that the committee would not willingly obstruct its progress.

It will be argued that rules must be laid down as a guide to surveyors, that some degree of consistency may be attained to for the information of underwriters. This is reasonable; but more than this is now done; the system has in practice all the weight of a legislative enactment, and by many of our best builders is felt as an oppressive burden, cramping their energies and retarding improvement. I think a middle course may be safely adopted. Let Lloyd's Committee issue their regulations from time to time as *recommendations*, leaving much at the discretion of scientific men trained as iron ship builders, and give or withhold the classification upon their reports; abandoning for the present the classification for *years*, which I consider to be false in principle as applied to iron ships. This mode of surveying and classing ships is in part recognized by the underwriters of Liverpool, who have a special surveyor for iron ships, and by whose report their measures are regulated.

sufficient to produce a good merchant ship on the present plan, would produce a still better ship if it were differently distributed. . . . But as the case stood, this could not be done on account of Lloyd's, which, by table G, that had been referred to, would not permit of a ship being made lighter at the ends than in the midships. The great defect in Lloyd's rules was, that the strength of the vessel was required to be in proportion to her tonnage, without any reference to length or breadth, whereas it was quite obvious that if we must have better ships, the strength should be very much in proportion to the length, the same as in an iron bridge."

In drawing attention, therefore, to general principles, I may observe that the whole question rests on a few simple considerations. 1st. The enormous strain which a flat plate of iron can sustain when exerted in the direction of the plane of the surface; and that plates of iron, unlike the planks of a ship, may be so united as to form one entire shell, and to be nearly as strong as if it had no seams. 2nd. The necessity of preserving the form thus given to the shell; and that this is done by applying other plates or bars at right angles to it. For convenience of securing these to the shell, bars of an angular form have been made, called angle-iron,—the form best adapted for attaching them to the plates they are intended to stiffen, that the projecting portion having the principal office to perform, the other should be as small as possible, so as not to add unnecessary weight. 3rd. The importance of bearing in mind that the chief strain which the ship, when built, has to sustain, is similar to that which is required in an ordinary girder, and that any serious departure from this principle will lead to errors of construction.

Of course there are numerous minor considerations which have already been alluded to in this paper, and which give occasion to various beams, stringers, keelsons, stanchions, and other supports and fastenings; but the leading features are simply as above stated.

I have frequently, in other places, pointed out the inconsistency of classing iron ships for *years*, on the principle now laid down. Plates of iron, unlike timber, are durable in proportion to their thickness; whereas the same term is given to a vessel of 100 tons with  $\frac{7}{16}$  plates, as is given to a 3,000 ton vessel with plates of 1 inch in thickness.

How, then, is the constantly increasing length of iron ships to be dealt with? I think I shall best serve the cause I have so long advocated by saying distinctly that in my opinion a large proportion of the material now used in iron ships is worse than useless. I use this strong expression with the hope of arresting attention to this subject, and not from a desire to find fault with any particular system, as all have much to learn, and many false impressions have to be abandoned. Experience has confirmed the impression which would arise upon any unbiassed mind on reading the specifications of many of our finest iron ships, viz., that they would first show weakness in the centre, the scantling given to the ends being in general out of all proportion to that of the midships. The natural inquiry would be, why not increase the strength amidships? The answer now usually given is, that the ship is already too heavy as a whole, and a reluctance is shown to increase the weight, even where it is known to be requisite, as no latitude is given to diminish the weight where it is in excess. Some persons have taken alarm at the accidents which have occurred to iron ships in falling over on their beam-ends when light; and instead of blaming their own negligence, have sought for a cause in the weight of the upper works of the ship, and have therefore felt inclined to lighten the stringer-plates and other deck-fastenings; if, however, more attention were given to lighten the ends of the ship, especially

aloft, and add weight to the stringers amidships, we should have less of open seams in that part. The *Great Eastern* is perhaps the only large vessel where this question has been fairly dealt with, the only one where the girder principle has been effectually applied; and though the exact form there adopted could only be employed in very large ships, yet the principle is correct, and probably the proportions also.

The necessity of a ship being heavier in the bottom than at the upper works is not overlooked, as, in addition to longitudinal strains, she must have strength to take the ground; but this is in part provided for by the floors, the transverse strength of which is very great.

From what is here stated, it is evident that as vessels increase in length, and the lines become finer, an essential change takes place in the strains to which they become liable. This has not been noticed in Lloyd's regulations for iron ships, though some trifling modifications have been made in the regulations for wooden ships.

It has never been denied that iron ships have disadvantages. One of these is, that the shell is more easily fractured by a blow from a hard-pointed substance than a wooden ship; but I maintain an opinion, formed from long experience and observation, that under all other circumstances iron far surpasses wooden ships in strength, and admits with greater facility the introduction of water-tight bulkheads as an element of safety.

In conclusion, therefore, I strongly recommend iron ship builders to consider the nature of the strains a ship has to encounter, and fearlessly to use their judgment in meeting them, by proportioning the weights to the buoyancy, greatly to increase the strength of the upper sides amidships, and to lighten the ends, substituting for heavy plates and frames a judicious system of stringers, cross-beams, and crutches, and especially to extend these precautions in proportion as the ship is increased in length.

I next respectfully recommend that the Committee for Lloyd's Book should materially and fundamentally alter their regulations to meet this most important question, and one which I am confident has been of late more fertile in mischief to iron vessels than any other; or, what would perhaps be the best course, to suspend the *regulations*, as such, altogether for the present, and substitute a series of *recommendations* in their place.

Lastly, I may observe that in this paper I have refrained from insisting on the necessity of good workmanship and materials being employed in iron ship building. The importance of this is so self-evident, and is so often urged, that it is needless here to repeat it; and I will merely on this point remark that well-fitted joints and well-closed rivets are indispensable, and that quality is ever to be preferred to quantity.

ON REPLENISHING THE LOWER RANKS OF THE NAVY FROM THE  
MERCANTILE MARINE.

Those who are old enough to remember the great changes which have taken place in the naval service of this country, when looking over the Navy List for the last few years cannot fail to notice the great accumulation of officers of the higher ranks in comparison with those of the lower. They cannot fail to observe that these have dwindled down to a mere fraction of what they were in former times. For instance, the list of mates, deducting from it those who are superannuated, has fallen off to about thirty in the April list; and the lieutenants, deducting those over twenty years standing, do not number above 600. They will also see that at least ten of the seagoing ships of the line in commission appear without a single mate among them.

Now this is a state of things that with about 400 ships in commission would cause great confusion should a war suddenly break out, for every lieutenant fit for sea service is already employed, and several years must elapse before the numerous naval cadets lately entered can be of any use at sea. The deficiency of this useful class of officers (the mates, now sublieutenants,) has been long felt, and no doubt a good deal of the defective discipline which has occasionally shown itself in some of our large ships, may be attributed to the want of them; the men being now left entirely to the petty officers in carrying on duty below.

In order to trace the falling off of this active class of officers, (the mates,) we must refer back to the period when the navy was reduced, at the close of the war in 1815, from 136,000 seamen and marines to 29,000. There were then about 600 mates employed, who were mostly promoted to lieutenants, and the names of 154 of them still remain on the reserved list of lieutenants of that year. Of the unfortunate midds about 2,000 of them were turned adrift, without any remuneration whatever, and for several years after this there was so reduced a navy as to have scarcely a line of battle ship in commission excepting the guard ships. The stock of young officers was consequently never kept up in sufficient numbers to supply any increase of the fleet.

The consequence of this was that in discipline and smartness the service gradually fell off; there was no emulation and no competition; and when the war with Russia broke out, we had everything suddenly to pull up again, both as to officers and men. The rising stock of the former was completely exhausted, and at the present time at least 400 mates are required to make all the ships now in commission in an efficient state. In fact, should a war break out, the want of officers would be felt far more severely than the want of men.

For several years to come, as the navy will not be able to supply the class of officers most wanted, there is no resource but to supply the want, if possible, from some of the best officers of the merchant ser-



vice. The Toulon fleet, under Sir Edward Pellew, (1813-14,) when the navy had attained the highest perfection of order, smartness, and discipline, had a proportion of mates to lieutenants as 2 to 5, and that class of officers was considered almost as necessary to the service as the lieutenants themselves. In that fleet of ten three-deckers and six two-deckers, the former had always three mates each, and the latter two;—old hands, from twenty to thirty years of age. If we ever intend to arrive at one half the efficiency of that fleet, a thoroughly practical set of seagoing officers must be obtained by some means or other.

Good officers make good men, and without them no improved armament will uphold the prestige of the service. Should the authorities ever entertain a scheme of entering mates from the merchant service, the greatest care must be taken to form such a plan under the advice of experienced men of both services as will secure for the navy the best officers, or the plan will fail. When officers were invited to join the navy as second masters, it was considered there was not sufficient encouragement held out for securing the best to be had.

Let us now consider what should be the qualifications of officers of the mercantile marine who might be taken on the list of mates of the navy, and to serve three years in that grade, with the understanding that they would then be promoted to the rank of lieutenants on period of service being completed, unless disqualified by misconduct. The selection should be made from the best class of merchant ships, such as the Blackwall ships and other vessels from London, Liverpool, or the outports; employed in the East India or Australia trade. The candidates should be from twenty to twenty-six years of age, and to have at least six years sea service, certificates of competency to be produced of the examination of chief or second mate having been passed. It would not be desirable to select officers from paddle steamers unless they have served four years in square rigged vessels.

The examinations passed by this class of officers are precisely the same, for all practical purposes, as those passed by mates of the navy, with the exception of gunnery. To obtain a knowledge of this, a month or six weeks' service in a gunnery ship would be requisite previous to joining a seagoing ship. There can be no doubt that officers of this description might at once be entrusted with the charge of a watch if required, or could handle a ship in the worst of weather, being accustomed to be at sea far more than many naval officers under the system of the present day. Examinations without adequate service at sea will no more make sailors than the expensive cramming schools about Woolwich will make soldiers, although those who keep such schools make rapid fortunes, and do all they can to profit by the education movement.

As to the mode of selection of officers from the mercantile marine, an Order in Council would first be requisite, which would show the encouragement held out to join her Majesty's service. A captain of the navy, under the authority of the Admiralty, might attend at some

office two days in the week for the selection from the candidates, and two commanders in the merchant service, who had served in the navy, might make up the committee to examine certificates.

It should be left to that committee to select or reject without stating any reasons for considering the parties suitable or not for the naval service. A similar committee might be formed at Liverpool, and they should be remunerated for their services, which would probably terminate in six months. By these means the deficiency of mates in the navy might be filled up, the want of whom must even in times of peace be detrimental to the service, occasioning much inconvenience. The measure would no doubt be unpopular with the young naval officers coming forward in the service, as the Admiralty now promotes these rapidly, as there are no others of more experience to fill up the vacancies of the lieutenants. Considering, however, the very small amount of actual sea service which now falls to the lot of a junior officer, there can be no hardship in serving three years as mate, when so many in times of really hard work and privation have served six or eight years in that rank. It is, however, a measure only to be justified by necessity, if the efficiency of that service is to be preserved which must, in time of need, prove the greatest safeguard of the country.

TRIDENT.

REMARKS ON THE DEFECTIVE EXPLANATION given in the "*Nautical Almanac*" for 1861. By James Gordon, A.M.

1st.—*Definition of Astronomical Time.*

"The day adopted in this Ephemeris is supposed to begin at mean noon, or at the instant when a clock or chronometer shows 0h. 0m. 0s. Greenwich mean time, and is continued through 24 hours, to the following mean noon, when another day begins. It may therefore be called the mean astronomical day." *N.A.* p. 510.

A chronometer never shows 0h. 0m. 0s.: it shows 12h. twice during 24 hours. But granting that 12h. may be taken as 0h. 0m. 0s., or that a clock is used showing 0h. 0m. 0s., how is the day of the month fixed?

2nd.—*Definition of Civil Time.*

"In the civil or common method of reckoning, the day is supposed to commence at the preceding midnight."—*N.A.* p. 510.

There is no occasion for *supposing* the commencement of the civil day, as every one knows when it commences. But here it is made to depend on the commencement of the astronomical day, which day has not been fixed by the definition of astronomical time.

This surely is putting "the cart before the horse."

3rd.—*Greenwich Time to be used for taking the Elements from the "Nautical Almanac."*

*N.A.* p. 510.—After showing how Greenwich time is found from ship time, the explanation states:—

"It is for this Greenwich time that we must deduce the quantities required from the Ephemeris."

Again, after showing how Greenwich time may be obtained from a chronometer, the explanation states:—

"And this will be preferable in all cases for obtaining the requisite data from the Ephemeris."

If we apply to the above rule the following example, we shall find the result to be erroneous.

*Example.*

On June 6th, 1861, about 10h. a.m. civil time at ship, in longitudo 90° W. by account, the meridian altitude of the moon was observed. Required the correct time of the moon's meridian passage.

*Solution by Rule in N.A.*

Before using the *N.A.* we are directed to find the Greenwich tin.e.

Ship astronomical time, June .....	5d 22h
Long. 90° W. ....	+ 6
	Greenwich astronomical time, June ... 6d 4h

And as the rule states "this is preferable in all cases for obtaining the requisite data," we must take the meridian passage for the Greenwich date, and correct it as directed in the *N.A.* p. 517.

Moon's meridian passage at Greenwich .....	23h 2·1m
Daily diff. 62·0m. gives for long. 90° W.....	+ 13·0
	Moon's meridian passage at ship .....
	23 15·1

*Correct Solution.*

Moon's meridian passage at Greenwich, June	5d 22h 12·3m
Daily diff. 49·8m. gives for long. 90° W.....	+ 12·4
	Moon's meridian passage at ship, June.....
	5 22 24·7
Ditto by rule in <i>N.A.</i> .....	23 15·1
	Error .....
	50·4

The rule therefore given in the *N.A.* does not apply in finding a meridian passage.

It may be replied that the mistake would have been easily detected had the day of the month been inserted in the solution by the rule in the *N.A.*, as the result would have been June 6d 23h. 15·1m, or June 7th 11h. 15·1m. a.m. civil time.

That this would not be a sufficient excuse for the defective explanation given in the *N.A.*, appears evident from the fact that in the treatises on Navigation by Norie, Raper, and others, the same mistake is made when the passage happens a.m. at ship.

Although the *N.A.* condescends to give rules for such simple operations as converting civil time into astronomical time, and *vice versa*, also ship time into Greenwich time; all of which are given in every treatise on navigation, there is not the least intimation given in the directions for finding the meridian passage of the moon or a planet to guard the calculator against making the mistake above referred to. And if such men as Norie, Raper, and others, have been misled, what can be expected of practical men!

#### 4th.—Notation of Time.

In reckoning time we have civil, astronomical, and nautical time. It might therefore have been presumed that mathematicians would have devised and the *Nautical Almanac* explained some notation whereby each particular mode of reckoning would at once be recognized, or at least confusion prevented. Instead of which we have the following various ways of expressing such instant of time as 4 o'clock in the morning of the first of January, 1861:—

##### *Civil.*

- 1st.—11|61 at 4h. a.m.
- 2nd.—Jan. 1, 1861, at 4h. a.m.
- 3rd.—4h. a.m. on Jan. 1st, 1861.
- 4th.—1861, Jan. 1st, at 4h. a.m.
- 5th.—1861, Jan. 1d. 4h. a.m.

##### *Astronomical.*

- 6th.—1860, Dec. 31st, at 16h.
- 7th.—16h. on Dec. 31st, 1860.
- 8th.—1860, Dec. 31d. 16h,
- 9th.—16h. after mean noon of Dec. 31st, 1860.
- 10th.—1860, Dec. 31<sup>st</sup>. 16<sup>h</sup>.

In the *Nautical Almanac* nearly all the above notations are used. The last expression certainly is not used, and it happens to be the only correct one for the astronomical time as explained in the *N.A.*

If Horace's painter painted a horse so badly that he thought it necessary to write under his picture—"This is a horse," surely the calculator who uses such notations as the above ought to write after each—"This is civil time," or—"This is astronomical time," as the case may be.

#### 5th.—Date of an Observation.

In the *N.A.* questions are given for civil time, for astronomical time, and for time which may be taken either as civil or astronomical.

Nautical men always note an observation as on the proper *civil date*. It is therefore improper to tell a nautical man that an observation was

taken on Jan. 15th, (at same time meaning the astronomical date, without saying so,) when such observation was actually taken on Jan. 16th, a.m., civil time. Such vagueness in expression leads to inextricable confusion.

*6th.—Correcting the Sun's Declination.*

*N.A. p. 512.*—The sun's declination is here directed to be corrected for Greenwich time by means of the change in 24 hours: it is surprising that no reference is made as to the use of the *diff.* for 1 hour. Although the example is given for South declination, the rule for applying the correction is with propriety given the same as for North declination. The explanation is therefore intelligible to nautical men, but what follows is not.

*7th.—Correcting the Declination of a Planet or Fixed Star.*

*N.A. pp. 528, 529.*—If the explanation has been written by a Scotsman, we must infer that he is fond of "hotch potch," for we have here a jumbled mixture of algebraical notation and arithmetical language.

For the planets, algebraical notation is used; for the fixed stars, the explanation is expressed in a compound of algebraical notation and arithmetical language: being an attempt to speak at the same time to mathematicians or astronomers and arithmeticians or nautical men. The writer of this explanation should have recollected that a practical man uses + for *add* and - for *subtract*; but when he is told that + denotes *subtract* and - *add*, he looks upon this with much the same surprise as if he were told that he must take *black* as *white* and *white* as *black*.

*8th.—Variation for 1 Hour of Longitude.*

*N.A. p. 528.*—The explanation directs for the example which is given for East longitude to take  $22''\cdot4$  as the variation of the declination for Nov. 23: this should have been the mean of the variations for Nov. 23 and Nov. 21, or  $20''\cdot7$ . Again, for Nov. 24 the variation is stated to be  $24''\cdot0$ , whereas it should have been taken for Nov. 23 or  $22''\cdot4$ .

Opposite any given day the *diff.* for 1 hour in the case of the sun, and the *var.* of declin. in 1 hour of long. in the case of a planet, are given as from that day towards the following day. Consequently, as in correcting for East longitude, the Greenwich time is between the given day and yesterday, we must take the hourly *diff.* or *var.* opposite yesterday.

If a young man passing his examination as Second Mate at the Marine Board used the above method as given in the *Nautical Almanac*, for working a meridian altitude of the sun observed in East longitude, he would almost to a certainty be rejected.

*Notation of Time.*

Having shown that great confusion arises from not properly noting

time according to the different modes of reckoning ; we trust that the Astronomer Royal, as our first mathematician and astronomer, will condescend to give the subject his consideration, and will establish some notation which will effectually remove all ambiguity. In the mean time we beg to offer the following suggestions:—

Take for example the instant of time which is called 4 o'clock in the afternoon of the first of January, we would propose to note it as

1st.—Jan. 1st 4h. p.m., civil time.

2nd.—Jan. 1, 4h., astronomical time.

3rd.—Jan. 1d. 4h., nautical time, or the time which should always be used in nautical calculations.

The 1st notation to be used in practical questions for nautical men.

The 2nd when using the *Nautical Almanac*.

The 3rd when calculating with time in nautical problems.

English astronomers would certainly be obliged to note it as Od. 4h.

To remove this anomaly M. Bessel proposed to make the epoch of the astronomical tables, instead of noon of Jan. 1st, civil time, noon of Dec. 31st (last year); that is, the commencement of the year according to nautical reckoning. So that Jan. 1 astronomical reckoning would be really Jan. 1d. (January 1 day complete), the same as it is in nautical time.

By M. Bessel's proposal, the astronomical and nautical days would be assimilated. But whether astronomers choose to change or retain the epoch of their tables, we trust they will not perplex nautical men in their *Nautical Almanac* by saying that Jan. 1 is Jan. 1d. astronomical time, when it is Jan. 1st or Od. astronomical time, but Jan. 1d. nautical time.

We may be allowed here to remark that Mr. Bell, the nautical examiner London Marine Board, has with great propriety adopted a notation similar to what we suggest, so that no one can be in any doubt whether he means civil or astronomical time (or rather nautical time). But as candidates for examination at the Marine Board have been for years studying the *Nautical Almanac* and the usual epitomes on navigation, they cannot be expected at once to adopt a correct mode of notation: consequently, many hundreds of candidates for certificates of competency have been rejected entirely from being misled by the defective explanations given in the standard works referred to.

#### *Transits.*

The errors committed in taking out the time of transits arises from the calculator using the Greenwich instead of the ship's astronomical date, being led to do so by what is said in the *Nautical Almanac*.

The same remark applies to the time of high water.

#### *Planets and Fixed Stars.*

The remedy for the defects complained of is easily seen from our remarks.

We trust that sufficient has been said to induce the Astronomer

Royal to lend his powerful assistance towards having the explanation in the *Nautical Almanac* completely remodelled, and then epitomes on navigation would follow the example of such high authority.

A great benefit would then be conferred on practical men as I have known many nautical men who have neglected planetary observations owing to their being perplexed by the mixture of algebraical notation and arithmetical language used in the *N.A.*

---

### IRON SHIPS AND THEIR DOCKS.

Whatever may be the result of experiments at present going forward as to the adoption of wood or iron, or a combination of both, for the construction of our ships of war, one effect of them is before us in the appearance of the *Warrior* and *Black Prince*;—vessels of such enormous dimensions as far to surpass in size any previously built for war purposes, and requiring docks and basins for their equipment which as yet are not prepared.

It is well known that at the present time the subject of wooden and iron ships is dividing our attention with that of the Armstrong and other guns to be used in and against them. That the ships of the old school are fast becoming only a type of our men-of-war is no longer a matter of doubt; and it is no less certain that a class of huge iron floating-batteries is coming forward to take their place in the navies of Europe.

It is not, however, our present purpose to discuss the question of wood or iron for the construction of ships, or the convertability of those already afloat by such alterations as they are now undergoing, and of which they may be quite capable. The dock and basin accommodation for the iron ships that we already have and are to have is the subject before us, and it certainly is one of very grave importance.

We are not at all indifferent to the necessity of cautiously abstaining from unseemly criticism of official action; and are equally aware that a flippant discussion of such subjects may not only prove extremely embarrassing to the government, but may have a mischievous tendency of unnecessarily directing attention to weak points, which are better provided against by a watchful executive. In the present instance, however, we are released in a great measure from the possibility of a charge of indiscretion, inasmuch as a committee is already formed which must take the whole question into its consideration in a public manner. We allude to the committee on the improvement and extension of Chatham Dockyard. Considering, therefore that this journal is specially adapted, from its unpolitical character, to discuss this matter with the professional world, we shall at once proceed with

the few observations which we have to make on this great nautical question.

Perhaps the best mode of illustrating the paramount necessity of considering the resources of Great Britain in dock and basin accommodation for an iron fleet, is to assume that we are suddenly plunged into a war, and as suddenly brought in contact with an enemy's fleet on their way to our own shores.

We may justly presume, when we look around us and perceive the gigantic efforts that are being made by a powerful neighbour, that in any future maritime war he will not be far behind us in naval strength,—that in any collision which may take place, force will be pretty equally balanced,—that the conflict will be short and sharp,—and that the advantage must remain with that side the ships of which can the most readily and most efficiently re-appear in a prepared condition for a renewal of the combat!

If we desire to view this great national problem dispassionately and without prejudice or over-confidence, it is obvious that we must not overlook the important fact that we have entered on a new era in naval affairs,—that a complete revolution has taken place in the great art of naval architecture, affecting thereby the main source of England's strength—her navy.

Now, whatever mistakes we may have made in this oft disputed subject,—however ill-formed may have been our models of former years,—however we may have borrowed, copied, converted, and even followed wholesale the productions of our neighbours on all sides to make up for any deficiencies in our specimens of naval architecture,—our seamen have managed to find pre-eminence. With their superior nautical skill they have fought the battles of their country in every sea; and the result of those battles we all know has contributed to place England in her present exalted position among the nations of the world. Her senators have followed up the principles which have been the springs of her maritime power,—they prepared and gradually completed her naval arsenals for that navy in which they well knew their safety consisted, because with that power predominant no enemy could land on her shores. But the scene is changed. Another and more formidable class of ship has appeared, for which those magnificent arsenals are totally unfitted. They answered well enough for our *Victories*, *Caledonias*, and *Tcméraires* of old, but for an iron *Warrior* or *Black Prince* not only are they unfit, but our principal arsenals of Portsmouth and Devonport cannot give them dock room; nor can such ships as these even enter them at all times. England, then, is now in this extraordinary and novel position, viz., that of having no dock or basin for her ships which are already afloat and are hereafter to form the principal models of her navy—the main sinews, indeed, of her maritime strength.

Now, what is the duty of England in this state of things. Is it not to look at the fact in its fullest extent, to see the evil which will assuredly arise from it, and to set to work and repair it effectually at once at any cost? Or is she to shut her eyes to it, to let things alone,



or to go on with half measures because it will be expensive? Let her beware of such kind of parsimony. It is a question not to be trifled with. Time flies fast, and England may find herself suddenly obliged to supply the deficiency hastily, which she might do now deliberately and judiciously. Her South and Eastern coasts should no longer remain in their present condition, for either of them are in a state of exposure to powerful neighbours, who in an unlooked for moment may become our foes.

We will now proceed with our illustration, and assume that an engagement has taken place between the hostile squadrons in mid-channel, say South of the Isle of Wight—perhaps the most likely place where it may occur, and it is found necessary with the utmost possible despatch to repair the damage received by three or four of our large iron ships:—Where shall they be sent to in order to get them out to sea again in the least possible space of time? We have to look about for docks that will hold a ship 400 feet long. It must be evident that in such a case the ships should be able to go straightway into their docks, be repaired, and taken out again at once, so that the time employed in landing armaments and stores will be saved as much as possible.

We naturally turn first to Portsmouth, as the nearest port at hand, or we might hesitate between it and Devonport, which has greater resources at Keyham. But, although Keyham may be more modern and commodious than Portsmouth, we may spare ourselves the run of 100 miles there, for Keyham cannot receive either the *Warrior* or *Black Prince*. Portsmouth again, although only forty-five miles from our scene of action, is out of the question, for there is an ugly bar to cross there, for which our disabled ships must wait tide; but why should they do that, for there are no docks fit for our purpose there. The convenient proximity of Portsmouth is therefore lost for us.

Much has been said lately about Chatham. But here again we shall look in vain for a prompt and certain remedy; for without hesitation we affirm that, apart from its out of the way position, owing to a complication of adverse circumstances, it would be next to impossible to render Chatham a fitting place for a dock establishment for our iron ships.

It would certainly be marvellous if England, whose first and greatest pride has always been the dominion of the sea,—whose very existence as a nation consists in the command which her navy has of her coasts, should remain with the whole breadth of her land unprovided with so indispensable an establishment as proper docks and basins for her iron ships. And this too in the face of an active and vigilant neighbour. It would be marvellous, we repeat, that such should be the case without expensive and doubtful alterations in our present arsenals and at out of the way places, where already we have not more than sufficient accommodation for the other portion of our fleet.

This is not so in France. Our neighbours, to obtain one at Cherbourg, have taken from the heart of the rock that which nature de-

nied. Let not this example be lost on maritime England, who must not be content to slight such matters, by attempting to do at the wrong place what she will not do at the right one. Let her also beware of postponing these matters until it be too late to prevent a blow, which, though it may not be fatal to her as a nation, will, if it does come, assuredly bring with it disgrace as well as disaster.

But to return to the consideration of Chatham. After a run of 170 miles, through the Strait of Dover, we arrive at the entrance of the Princes Channel, where we must anchor, the voyage so far having cost us a day. We must now tide it and only run in daylight, for we are in close pilot water, and must wait a whole tide to cross into the Swin, our proper channel for the Nore. Two days are gone and we are no further than Sheerness. Here, again, to add to our troubles, we must land guns, stores, &c., to lighten the ship, as we have to pass over thirteen feet at low water in three or four places to get up to Chatham, involving the loss of days, the number of which who can venture to say;—this, too, with a ship or ships perhaps obliged to be towed throughout the whole voyage, probably in a half sinking state, unequal to withstand the effects of any bad weather; and, after all, on reaching our destination we find only one dock capable of receiving our ships, over the sill of which there is no more than twenty-three feet at high-water spring tides.

With such difficulties as these to overcome, when may we expect that our disabled ships shall be repaired, re-embark the guns and stores they were obliged to land, and again appear on their stations, in a state fit for sea, off the enemy's port? While in the mean time that enemy may be following up a successful encounter with a re-organized squadron of ships of war, from having her resources so much nearer at hand.

We have begun in earnest with iron ships, and they are costly enough, but that is only half the business. The other half consists in finding receptacles for them, where they can be treated as our line-of-battle ships were of the old school; and, however costly this may be, we must not shrink from undertaking it if England intends to maintain her former supremacy at sea, under the new order of things.

Let us now review the facts before us. We have Plymouth about one hundred miles from us, but with nothing that would meet our wants even at Keyham. We have Portsmouth about forty-five miles distant, but equally incapable of receiving our crippled *Warrior*; and we find ourselves obliged therefore to make the best of our way over 170 miles of sea, then to tide it over twenty-five more to Sheerness; there to lighten our ship to take her up the Medway ten miles more to Chatham, into one dock only at present, but where certainly more than one might be prepared.

Our opposite neighbours have spoken out on these subjects. They look at matters in the proper light, and do not haggle about expense when their existence as a nation is at stake. True, they feel the effects of this transition in the enlarged class of ships of war; and, although they are really something better off in point of dock room

than we are, they see at once the necessity of providing for this altered state of things, and have found a place on their northern coast, near the entrance of the Channel, that it has been proposed should at once be appropriated to the purpose of a steam naval arsenal, for which they consider it so well adapted. In former pages of this work, which appeared last month, we meet with the following remarkable passage. It is one that cannot receive too much attention, and for this reason we reproduce it now. In alluding to the deficiency of harbours on the North coast of France, M. la Tour, the author of the paper which we quote, and who is a Member of the Legislative Council, says:—

“Again, between Cherbourg and Brest there is not a single retreat for our navy or commercial shipping. There is, however, at a point precisely half way between these two distant ports an admirable position for watching the Channel, a shelter formed entirely by nature for the rendezvous of our fleets, namely at Port Lezardrieux. Vauban was the first to point to its advantages. This place was in competition with La Hogue and Cherbourg for the establishment of an arsenal in the Channel; but its long narrow entrance, so ill adapted for sailing ships, was the cause of its being abandoned.

“In the event of war, that part of the Channel that lies between Brest and Cherbourg would necessarily be the theatre of frequent collisions. It is commanded by Jersey, Guernsey, and Alderney. To avoid danger and to seize the favourable moment for attack it is necessary that our ships should be always able to find security easy of access and egress in a position as far North as possible. The only place which unites these conditions is the mouth of the Trieux, which forms the roadstead of Lezardrieux. The Brest Railway is not more than a few kilometres from it, and to make a branch line to it would not be difficult; by Napoleonville it could be connected with L'Orient.

“All the conditions desirable for a port of refuge would be found in that arm of the sea at Lezardrieux. The approach is easy, and the light of the Heaux, the northernmost point of Brittany, indicates its entrance, which may be effected at any hour of the day or night. The principal channel is straight, clear of dangers, and has deep water. The second channel is equally deep, and opens more to the North than the former; with the assistance of experienced pilots, other channels are available for small vessels. The length and contracted breadth of the first channel, formerly grave obstacles, in these days become rather important advantages, for they render it easy of defence. Steam will enable our ships readily to navigate this defile, and a few fixed and moveable defences would render it impregnable.

“The sea is perfectly smooth within it—a wave there is never seen. Another great advantage which it has is that throughout the two channels and at the anchorage of Isle au Bois, in the Trieux, for three miles, the depth at low water of equinoctial springs is more than is necessary for the largest ships. With the assistance of a dam and

sluice, the same depth may be obtained for a length of seven miles in the upper part of the Trieux; and this work would much diminish the rapid current which rather interferes with the entrance channel. The expence would not exceed 6,000,000 francs (£240,000)."

After alluding to all these excellent qualities in favour of a new naval establishment at Lezardrieux, for steam purposes especially, M. la Tour concludes them with this pithy remark as to OUR views on such matters:—

*"If England possessed this admirable harbour it would soon be covered with forts, magazines, and store-houses. But we, on the contrary, have neglected it, so that nothing ever has been done for it beyond a recent preliminary project."*

And are we really so ready to cover a proposed place for steam purposes with "magazines and storehouses"? We confess that our discoveries have not yet enabled us to confirm this opinion of M. de la Tour. And yet if, like him, we look about for a place to supply the important deficiency we have been pointing out, there is a place superior to Portsmouth itself,—one at which there is no want of deep water for iron ships,—one that can be entered readily at all times of tide,—one affording abundant space for the magazines and storehouses alluded to by M. de la Tour,—one that is in immediate proximity to Portsmouth, while it is more difficult for an enemy to assail, from being less accessible to hostile ships,—and one that is even nearer than any other to our scene of action, and therefore, with all these qualities, pre-eminently adapted as the place for the steam naval arsenal of maritime England on her southern coasts. Shall we see this place realizing M. de la Tour's opinion of us? Shall we see it shortly covered with magazines and storehouses? We trust that we shall do so, and that some plan for such an establishment in Southampton Water will soon be taken up in the spirit which it well deserves. Should it receive that attention to which all these qualifications well entitle it, and to which there is no other that has the shadow of a pretension—not excepting even Portsmouth itself,—our *Warriors* and *Black Princes* and their giant companions in course of construction, instead of going more than two hundred miles to the distant and difficult arsenal of Chatham, for which they would have to unload, and lose precious time, would, after an easy run of five hours, find themselves in a secure basin, whence they would move at once into their docks with everything standing, as they should do, and be again at their stations off the enemy's port before they could even have got ready for their dock at Chatham.

---

## JAPAN, -- THE AMOOR AND THE PACIFIC.\*

Look at the fact which way we will, there is a spirit of candour if not of liberality on the part of the Russian authorities, to embark an English gentleman in a little squadron of circumnavigation, apparently for the mere purpose of writing a narrative of the voyage, and that, too, which should include those important distant parts in which they are adding to their already extended territories, exciting jealousies of all kinds. Whatever motive there may be in the measure, interested or disinterested, we shall not stop to inquire, as it is said we should "never look at the teeth of a gift horse," and we are therefore content to receive this gentleman's account of the *Rynda's* voyage with her companions; who, on being applied to, as he tells us, volunteered one day, and was off nearly on the next, to accompany an expedition round the world, and to whatever place that might be visited on the voyage.

Accordingly, we find the author of the little volume before us speedily installed among his new companions, the Russian officers of the *Rynda*, and making their acquaintance while the ships were making their way to Tenerife, looking in at Rio, refitting at Simons Bay, peeping into Anjer, Batavia, Singapore, Manila, and Shanghai, and eventually dismantling, for a thorough refit, at the interesting harbour of Nangasaki, in Japan. Here our author is comparatively speaking on new ground,—the heat and filth of Batavia, the mercantile dealings of Singapore, the disgusting cockfighting of Manila, are old oftold tales from the days of Cook to those of the *Rynda's* visit; and although of late we have had some pretty stories about the Japanese and their odd ways, we may accompany Mr. Tilley on shore, and have a look at a part of the world that will be new to English eyes and ears for some years to come. Meanwhile, the *Rynda* is refitting; and we shall find here and there something worth noting, as to how the Russian people contrive to win the good wishes of the people they visit, and the strong contrast afforded by their mode of proceeding and our own towards foreigners; and why we do not make the same progress as they do in the good graces of people that inhabit distant lands, who have prejudices and habits as strong and deep rooted as our own.

The Russian frigate *Ascolde* was lying under repair in a cove opposite our anchorage, where she had been already eight months, having been almost lost in a typhoon in September, 1858, when returning from Japan. This occurred between Van Diemen Straits and Shanghai; a fact to be noticed, as it is stated that such storms are seldom or never met with so far North as the latter place. She lost fore and main top masts besides being so strained that every knee in the ship had to be replaced. As soon as the weather moderated she rigged

\* JAPAN, THE AMOOR, AND THE PACIFIC: *with Notices of other Places comprised in a Voyage of Circumnavigation in the Imperial Russian Corvette, "Rynda," in 1858-60. By Henry Arthur Tilley. Smith and Elder.*

jury masts, and having experienced tolerably fine weather, afterwards reached Shanghai in a most pitiable state, whence she came up to Nangasaki. Her officers were housed in a Buddhist temple opposite the town, while barracks were erected close by for the men. Thither I proceeded as soon as possible to pay a visit to the officers; and as long as our vessels remained I was almost entirely a guest among those gentlemanly and amiable men.

The temple which they inhabited was a curious old building, ornamented with grotesque carvings in stone and wood of the various beings, earthly or unearthly, which Buddhism has consecrated. After climbing the steep and muddy path which led from the landing place, a sight of the Russian flag directed us to our destination. On one side of the gate stood a Russian sentry, on the other, in a box-like house, sat on their mats the two or three policemen appointed as spies or watchmen. The sailors were comfortably housed in two large wooden buildings erected for them by the Japanese, while the captain and officers were located in the temple itself, and the priests were confined to a centre building or sanctuary.

The *Ascolde*, bearing the flag of Admiral Putiatin, a name well known in these seas, as also that of her captain, now Admiral M. Unkofsky, had only a few months before been at the Peiho and at Yedo, for the ratification of the two treaties. M. Unkofsky had commanded the *Pallas* in 1854, and a map of the coast of Corea will show the names of himself and nearly all his officers marked on the various capes and gulfs of that peninsula. Many of the officers had served during the war in these seas, some in the *Aurora*, others in the unfortunate *Diana*; one or two had been prisoners to the English, and all had something interesting of the campaign to make the hours grow late over the mess table. They seemed to live, all of them, a very jolly life in this old temple. Plentifully supplied with all the necessaries and luxuries of life from Shanghai, they had formed quite a little farm about them, and oxen, sheep, and pigs were slaughtered, much to the disgust, no doubt, of their shaven hosts. They had made themselves quite at home, many had formed liaisons with some pretty Japanese women, and had their own menage in the town. Nearly all spoke Japanese sufficient to make themselves understood; a few had made such progress as to speak with facility, and even to write and read,

To this they were in a measure indebted for their popularity among the people; but especially because they were very observant of their customs, and careful not to offend their little scruples. I saw one or two instances of men speaking the English language, entering the clean, mat-spread rooms of the Japanese in their dirty boots, in spite of the protestations by words and signs, and the looks of despair of the owners. To shout at and abuse the people, tiresome and procrastinating though they be, is ill calculated on the part of foreigners to gain their willing services; yet I witnessed many instances of such violations of civility during my stay in Nangasaki. I wish my countrymen and Americans would remember that to treat the people of

Japan, with whom they may have to do, as they would a Hindoo servant or a Chinese coolie, will be the very worst manner of having their wants or wishes attended to. On the other hand, kindness and attention not to violate their prejudices, and, if possible, to enter into their social life, will be the best method of having everything that may be required.

This was the way in which the Russians, during their stay of nine months in Nangasaki, contrived to gain the affections, not only of the people but of the higher authorities. Captain Unkofsky, and through him his officers, had only to express a wish to have it satisfied, where it was possible; his name was known for miles around, and called aloud to us in the streets as we passed. The officers in their walks through the town, were surrounded by laughing children, backed by a circle of pretty girls, with the men peering over their shoulders. One officer especially, Prince Ouktomsky, the Grand Duke's aide-de-camp, knew, I think, all the children in Nangasaki, for they would crowd round him, shake him by the hand, and in their gentle pretty little way, talk to him till he arrived at his destination.

All the trading classes in Japan are considered contemptible by the higher authorities, government *employés*, and feudal retainers. Formerly few or no Russian traders had ever come to Japan, while numbers of English, American, and Dutch had at different times touched at their ports. This circumstance has given the Japanese a high idea of Russia, and a great respect for its officers; which prestige of course the latter endeavour to support. Such was the explanation given me by an intelligent Japanese, an officer of the government at Nangasaki.

The finest buildings in Nangasaki are the temples, and then, with one or two exceptions, undoubtedly the tea houses. These temples are situated in the most beautiful sites of the beautiful environs of Nangasaki, surrounded with trees and gardens, which in great measure supply the food of the bonzes; and here these shaven headed and often portly gentlemen seem to lead a very easy life. One was always on duty at our temple for four hours at a time, reciting prayers continually to a sing-song tune, and beating time upon a gong placed by his side.\* Whenever I paid a visit to the barrack temple there was always one or another of them thus praying. But the evening seemed to be their season of recreation, for then the saki flowed, and the childish laughter of the women might be heard from within as they helped the reverend fathers to kill time. Poor Bonzes! this irruption of barbarians at the different ports has caused them to be put to sad inconvenience. They are turned out of their houses to make way for the strangers; if a consul comes he has a temple; hospital, bazaar, or barracks, all are found in the temple. They are the more incommoded because they cannot follow their usual habits under the eye of strangers. In Nangasaki, however, they became accustomed to the

\* The Bhuddist ritual is in the Pali language, literally copied out in Chinese, Japanese, Mongolian, or other character, according to the language of the country. The priest reads off the words, without understanding the sense. The beating of the gong is supposed to arouse the attention of the god.

Russians, and after a short time threw off restraint and acted in their usual way.

The head bonze of this temple was a fine old man, and made himself very useful to the officers in many ways, especially in helping them to acquire the language. He took great trouble with me during two or three days, to teach me a few hundred of the most common words, and wrote me a long vocabulary, to which I put the English sounds, as he pronounced them in Japanese. Then it was I first remarked the richness and precision of the Russian language in consonant sounds. There are many in the Japanese language which no one Latin or Saxon consonant can express, while the Russian character gives the exact pronunciation. While I waited one day at the custom-house for a boat, an officer begged me to pronounce certain English words of which he had the sounds before him written in Japanese character; one which puzzled him the most was the word *stop*. They had no Japanese character to express the final consonant *p*, but made two syllables out of the word—*sto-pee*. When I had practised him in the sound of the word, he was unbounded in his thanks. Some of the officers whom I met in Japan had acquired one or two European languages merely from visiting English, American, or other ships, learning a few words at a time in their intercourse with officers and men, and carefully noting down such words in Japanese for future use.

In Kanagawa and Hakodadi many of the shopkeepers had learned so much Russian as to make themselves intelligible to the Russian sailors.

Crossing the bay in one of the simple yet swift boats of the country,\* propelled by oars from one to half a dozen in number, we reached the broken flight of steps near which are situated the custom-house and the other Admiralty buildings. It was at these steps that the landing of Europeans for years past took place, when they came to spy out the land; but the captains of men-of-war, yea ambassadors and their suites, when once on shore, found themselves surrounded by a police—guards of honour, said the Japanese—to protect their honoured guests, and prevent their being annoyed by the too great curiosity of the people. Their short walk was only to the governor's house and back again to those steps. A few words with an interpreter; a glimpse of the people; the pleasure of seeing the Japanese governor and his officers smoke their miniature pipes, and drink their tasteless tea, and all was over for the traveller in those days. Things are changed now. A foreigner is as free to go where he likes in Nangasaki as at Shanghai; he may visit temples and houses, and wander anywhere in the neighbourhood within the prescribed distance, without an escort of spies; if troubled at all it is only by the pertinacious curiosity of the people. The weather, however, during the month of June was so abominable that I had little wish to attempt any excursions; the S.W. monsoon had brought up the rain, and day

\* The boats in Japan are formed of fir planks, one for the flat bottom, and two on either side. The prows are sharp, and the sterns broad, partly open, with two small beams projecting on either side.



and night the leaden sky poured down its ceaseless torrents, and soon rendered any way but the paved streets impassable.

Everything, however, is so stereotyped in Japan, that one description suffices for the whole empire. The towns, houses, dress of both sexes, and manner of living, will be described, therefore, in different parts of the book, as occasion may require.

It must be remarked that Nangasaki has the most foreign, mixed, and changing population of the whole country. Natives from all parts of the country visit it from curiosity and for traffic. Some forty or fifty ships of different nations, between which and Japan treaties had been made, were in the port, waiting for or rather forestalling the opening of the trade on the 1st of July. Despite the threat from the home government that they must abide the consequences of the illegality of trading before the time fixed, the agents of English houses had long ago made matters right with the governor of Nangasaki, had disposed of their cargoes, and taken others in return to realise 400 or 500 per cent. in Shanghai and Hong Kong. This rate of gain I heard from the chief agent of a well-known China firm, had been realised on seaweed cargoes alone. The great difficulty, however, to the free carrying on of commerce was in the monetary exchange. The circulating medium was at this time paper, called taels, of which 4.65 went to the Mexican dollar. The natives were prohibited from taking foreign specie, as I was several times made to understand by pantomimic signs of losing their heads or being well bamboozed when I offered them coin to pay for any purchases. Those merchants therefore who could obtain a sufficient supply of paper money were enabled to buy their cargoes, and immense sums of money were, no doubt, made by them in the first days of the trade. Wax, camphor, seaweed, were the chief cargoes; copper was still the monopoly of the Dutch alone; but on the expiration of their term, all copper would, I heard, be submitted to public auction. The Russian officers informed me that, on their arrival eight months before, the prices of all things had been less than one half of what they were in the month of June, and even then they were increasing. And yet Nangasaki is much cheaper than any other place I visited in Japan, infinitely more so than Yedo.

The manufacture of lacquered articles is carried on to a great extent, but they are much inferior in richness and beauty to the manufactures of Miako and Yedo. The porcelain is certainly the best in the empire, superior to any I saw afterwards in Yedo, both in the fineness of the clay and in design; it is as thin as a wafer, beautifully transparent, and nowhere else to be found but in Nangasaki.\*

The foregoing is a good sample of Mr. Tilley's narrative, to which we shall return in our next.

\* The clay brought up by anchors and cables in the bay of Nangasaki is a gray, smooth, fine marl, and from this is manufactured that beautiful ware called *Eggshell China*, in England.

LUNAR EQUINOCTIALS,—or, *the Past and Future.*

Sir,—I have the pleasure of continuing my monthly report.

*The Past.*—In your last number I gave the following as probable periods of change in the weather, viz. :—

May 25th.

June 1st—8th—15th—21st.

Such periods have since passed, and with the following verifications, viz. :—

May 25th.—Great atmospheric disturbances, which commenced on 23rd, ended on this day. (Query,—Was the period of change *accelerated* by the moon being in perigee? I think it was.)

June 1st.—Very heavy rains and thunder-storms, with marked fall of barometer.

8th.—Change to dull weather and very heavy rains, with change of wind from N.E. to South at noon; clouds coming very strongly from the South.

15th.—7h. p.m.—The clouds began to rise from the westward, against the easterly wind. 16th.—The very fine weather of previous days changed to cloudy and gloomy overcast. The scud very rapid from N.E. A very sultry period of change, attended by destructive thunderstorms in the West of England on 15th (Yeovil, &c.)

21st.—Every appearance of atmospheric uncertainty. Very sultry. Much speculation as to *what weather is coming*. (This letter is posted on the 21st.)

*The Future*—Periods of atmospheric disturbance I may give *ps* under, viz. :—

June 28th.

July 5th or 6th—12th—18th or 19th—25th.

August 2nd—8th or 9th—15th—22nd—29th.

Were I to detail intermediate weather, the facts which I offer would be more prominent. I can safely re-assert what I first mentioned in the *Nautical* in January, 1860,—that the moon's orbital position *does invariably* affect the weather, and that I have discovered the times of such disturbances, and can announce them beforehand with every confidence.

If farmers only knew it, the cutting, making, and carrying of hay,—the cutting and carrying of corn and crops, might be regulated so as to avoid much chance of inconvenience. I am ready to send printed notices in advance to any clubs, &c., engaged in agriculture (postage being paid me). Farming is rather out of my latitude.

I have, &c.,

S. M. SAXBY, R.N.

*To the Editor of the Nautical Magazine.*

## SAXBY'S LUNAR EQUINOCTIALS.

*Port Louis, Mauritius, 6th May, 1861.*

Sir,—Do the same rules apply to the barometer in the southern hemisphere as in the northern, in regard to lunar equinoctials?

I find in one of your late magazines that a great change of weather was expected to take place on the 4th, 7th, 11th, 18th, and 25th February, and 7th, 15th, 21st, and 27th March.

In February last we experienced one of the most severe cyclones which has been felt for many years. The barometer commenced falling on the 6th February and continued going down till the 16th, when the centre passed about forty or fifty miles to the North of us, and curved between this island and Bourbon.

On the 26th February the barometer again commenced falling, and continued so till the 2nd March, when the centre of another cyclone passed to the S.E. of us.

On the 8th, 9th, and 10th March it fell considerably; rose on the 11th and 12th; and then fell again on 14th, 15th, and 16th: during these last three days the centre of another cyclone was in  $94^{\circ}$  E., where it was encountered by a Dutch ship, which was dismasted and nearly foundered.

On the 19th, 20th, and 21st March there was another considerable fall in the barometer. Again, on the 3rd, 4th, 5th, 6th, and 7th April; on which days there was a cyclone raging in  $14^{\circ}$  S.,  $76^{\circ}$  E., as proved by ships arrived here having encountered it. Also on the 11th, 12th, 13th, and 14th April the barometer fell gradually, showing a disturbance in the S.E. Trades.

On the 5th December, 1860, there was a cyclone in  $8^{\circ}$  S. and  $80^{\circ}$  E.; and between the 11th and 19th January, 1861, another passed to the N.W. of us, the barometer at its minimum, 29.684, at 3h. a.m. 19th January.

This season has been most remarkable for the number of cyclones, and I trust shortly to be enabled to forward you the proceedings of the Meteorological Society here, showing their courses, &c., as far as they have been traced by ships that arrive here.

I am, &c.,

A MEMBER OF THE METEOROLOGICAL SOCIETY  
OF MAURITIUS.

*To the Editor of the Nautical Magazine.*

[We shall be obliged by hearing again from our correspondent. In the mean time we refer his letter to Mr. Saxby.—ED.]

## TIME FROM THE SUN'S ALTITUDE.

25, *Cambridge Square, May 30th, 1860.*

Sir,—In your number for March, 1860, is inserted a method of deducing time from the sun's altitude, devised by Mr. E. Hebden. This method is certainly not so simple as that given in *Galbraith's Mathematical and Astronomical Tables*, page 98, second edition.

I subjoin Mr. Hebden's two examples worked by Galbraith's method; in which the "zenith distance" is used instead of the "nadir distance."

It will be seen that in Galbraith's method *sines* are used instead of *cosines*, and though there are two numbers to be halved instead of one, there is a saving of *subtractions*, which when the figures are not entered one under the other is a constant source of error. When the latitude and declination are of the same name, both these amounts have, by Mr. Hebden's method, to be subtracted from the "half sum."

*Example 1. Latitude and Declination of contrary names.*

Lat. N.....	37° 32'		sec.	0·100727
Dec. S.....	10 13		sec.	0·106941
	<hr/>			
Sum .....	47 45			
Z. D. ....	73 27			
	<hr/>			
Sum .....	121 12	Half = 60° 36'	sin.	9·940125
	25 42	Half = 12 51	sin.	9·347134
				<hr/>
		3h. 59m. 5s. = sin. squ.		9·394927

*Example 2. Latitude and Declination of same name.*

Lat. N.....	36° 54'		sec.	0·097081
Dec. N. ..	16 8		sec.	0·017449
	<hr/>			
Diff. ....	20 46			
	60 36			
	<hr/>			
	81 22	Half = 40° 41'	sin.	9·814166
	39 50	Half = 19 55	sin.	9·532312
				<hr/>
		4h. 20m. 11s. = sin. squ.		9·461008

Yours &c.,

W. H. BAYLEY.

*To the Editor of the Nautical Magazine.*

## THE EQUAL ALTITUDE PROBLEM.

30, *Aston Street, Limehouse, May 22nd, 1861.*

Sir,—The accompanying Table has been constructed by me with the view of rendering the equal altitude problem of greater service

to those interested. No logarithms are required, the "equation" being found by inspection sufficiently near for practical purposes.

The two lines of figures *a* and *b* opposite the degrees of latitude are the "equations," and they are to be used thus:—When the declination and the polar distance are *both increasing* or *both decreasing* the lines marked *a* are to be used; but when one of them is *increasing* and the other *decreasing* the lines marked *b* are to be taken.

The equation being found, it is + when polar distance is increasing, and – when polar distance is decreasing. When applied to the middle time the result is the time by chronometer at apparent noon at ship.

*Example.*—May 12th, 1855, in lat.  $14^{\circ} 40' S.$ , long.  $145^{\circ} 43' E.$ , the sun had equal altitudes a.m. and p.m. at 9h. 41m. 40s. and 11h. 46m. 11s. by chronometer,—required the error of chronometer for mean time at Greenwich.

Declination  $17^{\circ} 48' N.$  *increasing*. Polar distance is therefore (for South latitude) *increasing*. Interval between observations is two hours. Declination  $18^{\circ}$  and lat.  $15^{\circ}$  gives 6s. +, because polar distance is increasing.

	<i>h. m. s.</i>
First time .....	9 41 40
Second time .....	11 46 11
	2)21 27 51
Middle time .....	10 43 55
Equation of equal altitudes .....	+ 6
Chronometer time at apparent noon .....	10 44 1
Equation of time* .....	– 3 51
Chronometer time at mean noon .....	10 40 10
Greenwich time at mean noon, or longitude in time	9 48 8
Chronometer fast on G. M. T.....	0 52 2

*Note.*—In this case (the more frequent one) the longitude is known and the error deduced, but the longitude may be found if the known error be applied to the chronometer time at mean noon, the result is the longitude in time.

The above example is from *Riddle's Navigation*. This problem would be of great benefit when in a port at which there are no public time regulators, owing to its simplicity in operation, and not requiring a very great precision in the observations. If you think it worthy of your valuable pages I should be pleased to see it there.

I am, &c.,

J. NEWTON,  
*Teacher of Navigation.*

*To the Editor of the Nautical Magazine.*

\* See page 1 for its application.

*Interval Two Hours.*

Lat.	Declination.														
	1	2	4	6	8	10	12	14	16	18	19	20	21	22	23
0° a	0	0	1	1	2	2	3	3	3	3	3	3	2	2	1
0° b	0	0	1	1	2	2	3	3	3	3	3	3	2	2	1
5° a	2	2	3	3	4	4	4	4	4	4	4	4	3	3	2
5° b	1	1	0	1	1	2	2	2	2	2	2	2	2	2	2
10° a	3	3	4	4	5	5	5	5	5	5	5	4	4	3	2
10° b	2	2	2	1	1	0	0	1	1	1	1	1	1	1	1
15° a	4	5	5	6	6	6	6	6	6	6	6	5	4	4	2
15° b	4	4	3	2	2	1	1	0	0	0	1	1	1	1	0
20° a	6	6	6	7	7	8	8	8	7	7	6	6	5	4	2
20° b	5	5	4	4	3	3	2	2	1	1	0	0	0	0	0
25° a	8	8	8	8	9	9	9	9	9	8	7	7	6	5	3
25° b	7	7	6	5	5	4	4	3	2	2	1	1	1	1	0
30° a	9	9	10	10	10	10	10	10	10	9	8	8	7	5	3
30° b	9	8	8	7	6	6	5	4	3	3	2	2	2	1	1
35° a	11	11	12	12	12	12	12	12	11	10	10	9	8	6	3
35° b	11	10	10	9	8	7	7	6	5	4	3	3	2	2	1
40° a	13	13	14	14	14	14	14	13	13	12	11	10	9	7	4
40° b	13	12	12	11	10	9	8	7	6	5	5	4	3	3	1
45° a	16	16	16	16	16	16	16	15	15	13	12	11	10	8	4
45° b	15	15	14	13	12	11	10	9	8	7	6	5	5	3	2
50° a	19	19	19	19	19	19	18	18	17	15	14	13	11	9	5
50° b	18	18	17	16	15	14	13	12	10	9	8	7	6	5	2
55° a	22	22	22	23	23	22	22	22	21	20	18	16	15	13	6
55° b	22	21	20	20	19	17	16	15	13	11	10	9	8	6	3
60° a	27	27	27	27	27	26	26	24	23	21	19	17	15	12	7
60° b	26	26	25	24	23	22	20	18	17	14	13	11	10	8	4

*Interval Three Hours.*

0° a	0	1	1	2	2	2	3	3	3	3	3	3	2	2	1
0° b	0	1	1	2	2	2	3	3	3	3	3	3	2	2	1
5° a	2	2	2	3	3	4	4	4	4	4	4	4	3	3	2
5° b	1	1	0	0	1	1	1	2	2	2	2	2	2	2	1
10° a	3	3	4	4	5	5	5	5	5	5	5	4	4	3	2
10° b	3	2	2	1	1	0	0	1	1	1	1	1	1	1	1
15° a	4	5	5	6	6	6	6	6	6	6	6	5	4	4	2
15° b	4	4	3	2	2	1	0	0	0	1	1	1	1	1	0
20° a	6	6	7	7	7	7	8	8	7	7	6	6	5	4	3
20° b	6	5	5	4	3	3	2	2	1	1	0	0	0	0	0
25° a	8	8	8	9	9	9	9	9	9	8	7	6	6	5	3
25° b	7	6	6	5	5	4	4	3	2	2	1	1	1	1	1
30° a	9	9	10	10	10	10	10	10	10	9	8	8	7	5	3
30° b	9	8	8	7	6	5	4	3	2	2	2	2	2	1	1
35° a	11	11	12	12	12	12	12	12	11	10	10	7	8	6	3
35° b	11	10	10	9	8	8	7	6	5	4	4	3	2	2	1
40° a	13	14	14	14	14	14	14	13	13	12	11	10	9	7	4
40° b	13	12	12	11	11	10	9	8	7	6	5	4	3	3	1
45° a	15	16	16	17	17	16	16	15	15	13	12	11	10	8	4
45° b	15	15	14	13	13	12	11	10	9	7	6	5	5	4	2
50° a	19	19	19	19	19	19	19	18	17	15	15	13	11	9	5
50° b	18	18	17	16	16	14	13	12	11	9	9	7	6	5	3
55° a	23	23	23	23	23	22	22	21	20	18	16	15	13	12	6
55° b	22	22	21	20	19	18	17	15	13	12	10	9	8	8	3
60° a	27	27	27	27	27	27	26	25	23	21	19	18	15	12	7
60° b	27	26	25	24	23	22	21	19	17	15	13	12	10	8	4

*Interval Four Hours.*

Lat.	Declination.														
	1	2	4	6	8	10	12	14	16	18	19	20	21	22	23
0 <sup>a</sup>	0	1	1	1	2	2	3	3	3	3	3	3	2	2	1
0 <sup>b</sup>	0	1	1	1	2	2	3	3	3	3	3	3	2	2	1
5 <sup>a</sup>	2	2	2	3	3	4	4	4	4	4	4	4	3	3	2
5 <sup>b</sup>	1	1	0	0	1	1	1	2	2	2	2	2	2	2	1
10 <sup>a</sup>	3	3	4	4	4	5	5	5	5	5	4	4	4	3	2
10 <sup>b</sup>	3	2	2	1	1	0	0	0	1	1	1	1	1	1	0
15 <sup>a</sup>	5	5	5	6	6	6	6	6	6	6	5	5	4	4	2
15 <sup>b</sup>	4	4	3	3	2	2	1	1	0	0	0	0	1	1	0
20 <sup>a</sup>	6	6	7	7	7	7	7	7	7	7	6	6	5	4	2
20 <sup>b</sup>	6	5	5	4	4	3	3	2	1	1	1	0	0	0	0
25 <sup>a</sup>	8	8	8	9	9	9	9	9	8	8	7	7	6	5	3
25 <sup>b</sup>	7	7	6	6	5	5	4	3	3	2	1	1	1	1	0
30 <sup>a</sup>	9	10	10	10	10	11	10	10	10	9	8	8	7	5	3
30 <sup>b</sup>	9	9	8	7	7	6	5	5	4	3	3	2	1	1	1
35 <sup>a</sup>	11	12	12	12	12	12	12	11	10	10	9	8	6	3	1
35 <sup>b</sup>	11	11	10	9	9	8	7	6	5	4	3	3	2	1	1
40 <sup>a</sup>	13	14	14	14	14	14	14	14	13	12	11	10	9	7	4
40 <sup>b</sup>	13	13	12	11	11	10	9	8	7	6	5	5	4	3	1
45 <sup>a</sup>	16	16	16	17	17	17	16	16	15	13	12	11	10	8	4
45 <sup>b</sup>	15	15	15	14	13	12	11	10	9	8	7	6	5	4	2
50 <sup>a</sup>	19	19	19	20	20	19	19	18	17	15	14	13	11	9	5
50 <sup>b</sup>	19	18	18	17	16	15	14	13	11	10	9	8	6	5	3
55 <sup>a</sup>	23	23	23	23	23	23	22	21	20	18	17	15	13	10	6
55 <sup>b</sup>	23	22	21	21	20	18	17	16	14	12	11	10	8	6	3
60 <sup>a</sup>	28	28	28	28	28	27	26	25	23	21	19	18	15	12	7
60 <sup>b</sup>	27	27	26	25	24	23	21	20	18	15	14	12	10	8	4

*Interval Five Hours.*

0 <sup>a</sup>	0	0	1	1	2	2	2	3	3	3	3	3	2	2	1
0 <sup>b</sup>	0	0	1	1	2	2	2	3	3	3	3	3	2	2	1
5 <sup>a</sup>	2	2	2	3	3	4	4	4	4	4	4	3	3	3	2
5 <sup>b</sup>	1	1	0	0	1	1	1	2	2	2	2	2	2	2	1
10 <sup>a</sup>	3	3	3	4	4	5	5	5	5	5	4	4	4	3	2
10 <sup>b</sup>	3	3	2	2	1	1	0	0	1	1	1	1	1	1	0
15 <sup>a</sup>	5	5	5	6	6	6	6	6	6	6	5	5	4	4	2
15 <sup>b</sup>	4	4	3	3	2	2	1	1	1	0	0	0	0	0	0
20 <sup>a</sup>	6	6	7	7	7	7	7	7	7	7	6	6	5	4	2
20 <sup>b</sup>	6	6	5	4	4	3	3	2	2	1	1	1	0	0	0
25 <sup>a</sup>	8	8	8	9	9	9	9	9	9	8	7	7	6	5	3
25 <sup>b</sup>	7	7	7	6	5	5	4	4	3	2	2	1	1	1	0
30 <sup>a</sup>	10	10	10	10	11	11	11	10	10	9	8	8	7	5	3
30 <sup>b</sup>	9	9	8	8	7	7	6	5	4	3	3	3	2	2	1
35 <sup>a</sup>	12	12	12	12	12	12	12	11	10	10	9	8	6	3	1
35 <sup>b</sup>	11	11	10	9	8	7	7	6	5	4	4	3	2	1	1
40 <sup>a</sup>	14	14	14	14	14	14	14	14	13	12	11	10	9	7	4
40 <sup>b</sup>	14	13	13	12	11	10	9	8	7	6	5	4	3	2	1
45 <sup>a</sup>	16	17	17	17	17	17	16	15	13	12	11	10	8	4	2
45 <sup>b</sup>	16	16	15	14	13	13	12	11	9	8	7	6	5	4	3
50 <sup>a</sup>	20	20	20	20	20	20	19	18	17	16	15	13	11	9	5
50 <sup>b</sup>	19	19	18	17	16	15	14	13	12	10	10	8	7	5	3
55 <sup>a</sup>	24	24	24	24	24	23	22	21	20	18	17	15	13	10	6
55 <sup>b</sup>	23	22	22	21	20	19	18	16	15	12	11	10	9	7	4
60 <sup>a</sup>	29	29	29	29	28	28	27	25	24	21	20	18	15	12	7
60 <sup>b</sup>	28	28	27	26	25	24	22	20	18	16	14	13	11	8	5

*Interval Six Hours.*

Lat.	Declination.														
	1	2	4	6	8	10	12	14	16	18	19	20	21	22	23
0 <sup>a</sup>	0	0	1	1	2	2	2	2	3	3	2	2	2	2	1
0 <sup>b</sup>	0	0	1	1	2	2	2	2	3	3	2	2	2	2	1
5 <sup>a</sup>	2	2	2	3	3	3	4	4	4	4	3	3	3	2	1
5 <sup>b</sup>	1	1	1	0	0	1	1	1	1	2	2	2	1	1	1
10 <sup>a</sup>	3	3	4	4	4	5	5	5	5	4	4	4	4	3	2
10 <sup>b</sup>	3	3	2	2	1	1	0	0	0	1	1	1	1	1	0
15 <sup>a</sup>	5	5	5	6	6	6	6	6	6	6	5	5	4	3	2
15 <sup>b</sup>	4	4	4	3	3	2	1	1	1	1	0	0	0	0	0
20 <sup>a</sup>	6	7	7	7	7	7	8	7	7	7	6	6	5	4	2
20 <sup>b</sup>	6	6	5	5	4	4	3	3	2	1	1	1	1	1	0
25 <sup>a</sup>	8	8	9	9	9	9	9	9	8	8	7	7	6	5	3
25 <sup>b</sup>	8	7	7	6	6	5	5	4	3	3	2	2	1	1	1
30 <sup>a</sup>	10	10	10	11	11	11	11	10	10	9	8	8	7	5	3
30 <sup>b</sup>	10	9	9	8	8	7	6	5	4	4	3	3	2	1	1
35 <sup>a</sup>	12	12	12	13	13	13	12	12	11	10	10	9	8	6	3
35 <sup>b</sup>	12	11	11	10	10	9	8	7	6	5	5	4	3	3	1
40 <sup>a</sup>	14	15	15	15	15	15	14	14	13	12	11	10	9	7	4
40 <sup>b</sup>	14	14	13	12	12	11	10	9	8	7	6	5	4	3	2
45 <sup>a</sup>	17	17	17	17	17	17	17	16	15	14	13	11	10	8	4
45 <sup>b</sup>	16	16	16	15	14	13	12	11	10	8	7	6	4	2	2
50 <sup>a</sup>	20	20	21	21	21	20	20	19	17	16	15	13	11	9	5
50 <sup>b</sup>	20	20	19	18	17	16	15	14	12	11	10	9	7	5	3
55 <sup>a</sup>	24	25	24	24	24	24	23	22	20	18	17	15	13	10	6
55 <sup>b</sup>	24	24	23	22	21	20	19	17	15	13	12	11	9	7	4
60 <sup>a</sup>	29	29	29	29	29	28	27	26	24	22	20	18	16	12	7
60 <sup>b</sup>	29	29	28	27	26	24	23	22	19	17	15	13	11	9	5

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XX.—  
*The Great Fire at London Bridge—Wrecks from Ice, &c.*

Proceedings were commenced with the all engrossing subject of the recent calamitous fire at London Bridge.

The Thames had been on fire indeed, observed the Chairman, at a cost of nearly two millions of money! It was a well known saying amongst us, but the price of it had never been even guessed at, and would bear heavily on many individuals. In such cases the origin of the evil was the subject of much observation, and an opinion was given in favour of spontaneous combustion; but he could not help thinking that proper attention to naked lights had not been generally paid. Whatever might have been the cause, it would be long before the effect could be forgotten. Their Secretary would read the account of it which best suited their records.

Much animated discussion followed on the high character of Mr. Braidwood, which terminated with the following account of the whole transaction, from one of our leading journals:—



At four o'clock on Saturday afternoon, the 22nd of June, some of the labourers employed at the extensive wharfs and warehouses known as Cotton's Wharf and Depot, Tooley Street, London Bridge, discovered a quantity of smoke issuing from a warehouse immediately over the counting-house. They immediately obtained a ladder, and having ascended to the place, found a mass of smouldering fire. Some buckets of water were at once sent for; but before their arrival the heat became so intense that the men were compelled to descend the ladders to avoid suffocation. In a few minutes the warehouse and its contents were in flames. Expresses were sent off immediately for the brigade engines and the floating engines. The latter on their arrival were unable to get into play for want of sufficient water, it being, unfortunately, almost low water. By the time the brigade engines had arrived no fewer than eight of the large warehouses in the depot were burning furiously. It being evident to the firemen that nothing could save either that portion of the building or its contents, their efforts were at once directed to the remaining portions of the premises, on which a continuous stream of water was poured. All, however, was in vain; warehouse after warehouse ignited, and were, with their contents, totally destroyed. At this period a fresh wind sprang up, and the flames speedily caught hold of vast portions of the premises occupied by the firm of Scovell and Co., in which was stored a vast amount of property of all descriptions, small portions of which had been previously removed.

About this time, nearly seven o'clock in the evening, Mr. Braidwood proceeded down one of the approaches to the river from Tooley Street, between the east and west parts of the wharf, and stopped nearly half way down to give some directions to a body of firemen who were there, when a sudden and tremendous explosion took place, shaking the already tottering walls, which at this spot were of great height. A cry was raised of "Run, the wall is falling," but in less time than it took to say the words, the wall, bulging out in the middle, fell a heap of ruins into the roadway, burying beneath the *débris* Mr. Braidwood and several other persons who had not time to make their escape. One of the firemen made a grasp at Mr. Braidwood as he was springing from the spot, but the heavy masses of burning bricks tore him away, and in a second he lay buried under at least fifteen feet of burning brickwork, and any attempt to rescue, or even to recover the body, or what might remain of it, was quite impossible. Mr. Scott, of Russell Street, Bermondsey, is, it is said, missing, and as he was seen talking to Mr. Braidwood, it is feared he has shared the same fate. It is also stated that several other persons who were about that spot are also missing; but nothing positive can be ascertained until the ruins are sufficiently cooled and safe to make the necessary search. It was soon ascertained that the cause of the explosion arose from a quantity of saltpetre stowed away in one of the large vaults, over which Mr. Braidwood was standing at the time. It is stated that at the time of the fire breaking out there were up-

wards of 2,000 tons in the vaults, and repeated explosions took place during the evening.

The flames still kept on, defying all attempts to stay them, and at nine o'clock attacked Chamberlain's Wharf and the large granaries of Mr. Irons, adjoining St. Olave's Church: these were speedily reduced to ashes. Moored to the wharf were several schooners filled with barrels of oil, tar, and tallow; and attempts were made to float them into the middle of the stream by the aid of steam-tugs, but in vain. The tide being still very low, these in their turn caught fire, and in a short space of time were burnt down to the water's edge, their cargoes floating out blazing into the river. The scene now almost baffles description: the blazing barrels of tar floating in a line along the banks of the river about a quarter of a mile in length and one hundred yards across; and it might thus be literally said the Thames was on fire, for the whole of this extent of space was one blaze, forming as it were a complete fringe of flame twenty feet high to the burning wharfs and warehouses on the shore behind it.

Fortunately at this time the wind shifted, or St. Olave's Church and Fenning's Wharf must inevitably have been destroyed. The wind now carried the flames in an easterly direction, and about twelve o'clock the wharfs of Messrs. Kay, Daisy, Bontel and Ellis, and Humphery successively caught fire, and were speedily enveloped in flames. Many thousand barrels of tallow were in the warehouses of these premises, the greatest portion of which were destroyed, and the inflammable nature of the contents of which added to the intensity of the conflagration.

The fire now took a turn in the direction of Tooley Street: the branch Custom-House soon fell, and the back portions of the premises of Messrs. Dring and Fage, Stothard, Chaffey, Richardson, May, Varn and Co., were completely destroyed. At one o'clock on Sunday morning it was evident that no amount of labour or water could save any of the premises then on fire, and the engines were set to work to play on those premises in the immediate neighbourhood yet uninjured. At three o'clock the firemen were able to pronounce that the further progress of the fire was stayed, and that it would not, unless under unforeseen circumstances, extend beyond its then limits. An immense body of fire was still raging over the ruins, and explosions of combustibles were continually taking place. The length of the fire on the river banks were nearly a quarter of a mile, extending from St. Olave's Church down to Mile Lane, or Battle Bridge Stairs, where Beal's wharf is situated, and being divided by a dock or creek from Humphrey's new wharf, the last one destroyed, form the eastern boundary of the fire. The depth of ground covered with the ruins of this destructive conflagration, from the houses in Tooley Street to the river frontage of the late wharves, is about 300 yards, the whole of this large space, both in length and depth, being one huge mass of burning ruins.

During the progress of the fire an exciting scene occurred at the

dock or creek above mentioned. A large and very fine American vessel was moored in the dock, and as the fire approached her rapidly, it was expected nothing could save her from destruction, her rigging being several times on fire. Many attempts were made to draw her out of dock by the aid of the steam tug, but the depth of water was not sufficient to float her. At last, when within a few minutes of the flames attacking her, she floated, and was drawn majestically out of the dock amid loud cheers from the multitude who witnessed the proceedings.

The engines of the South Eastern and Brighton Companies were occupied the whole evening in playing upon that portion of the terminus facing Tooley Street, which at times was in great danger. Owing to the approaches to the terminus being blocked up by the people, it was with great difficulty the passengers for the various trains made their way to the booking-office; indeed for two or three hours the traffic was almost wholly suspended, and the last train did not leave the station until after two o'clock on Sunday morning.

On visiting the scene of destruction last evening at eight o'clock, the smoke was rising up in thick columns from the smouldering ruins, and from the vaults large bodies of flame were continually bursting forth, rendering it necessary for the firemen to keep a portion of the engines continually at work. It appears that under one portion of the ruins of what was on Saturday morning Cotton's wharf, is a vault containing 700 tons of sulphur and saltpetre, covered over with an asphalté flooring. The firemen last night momentarily expected an explosion from this source, as they had ascertained the fire was penetrating through the asphalté. Nearly the whole of the fire brigade had been on duty from the commencement of the fire on Saturday afternoon, and last evening were anxiously looking for relief, being almost worn out with the excessive fatigue they had undergone.

The news of this great fire spread with the utmost rapidity over the metropolis. Indeed the fire was plainly visible at Hampstead, and even greater distances, while it was yet daylight, and when it grew dusk one of the most extraordinary scenes that London ever produced was witnessed. From all quarters of the metropolis the people came pouring, on foot, in omnibus, cab, pleasure van, chaise, town carts, waggons, &c., all converging towards London Bridge. At nine o'clock, and from that hour until long after midnight, London Bridge and the approaches thereto presented all the appearance of the Epsom road on the Derby day. Cabs were plying backwards and forwards on the bridge, carrying an unlimited number of passengers on the roof, at 6d. per head. Omnibuses, licensed to carry fourteen outside, were conveying double that number at 2d. and 3d. each, and the best view of the full extent of the great calamity being obtained from this source, vast numbers of persons occupied their time thus passing to and fro. The passage over the bridge, owing to the pathway being entirely blocked by spectators, and the roadway nearly so, occupied about twenty minutes, thus affording the occupants of these elevated positions an excellent opportunity of viewing the scene.

The railway terminus and its approaches, from which a good view of what may be termed the back portion of the fire, although equal in its intensity and grandeur, could be obtained, was filled with a dense mass of people, rendering it almost impossible for the passengers to obtain egress to or from the trains, which, accordingly, were running at all sorts of times except those specified in the bills. No blame can, however, be attached to the railway officials, as they did everything in their power to obviate the inconvenience.

On the Middlesex side of the Thames the Custom-House Quay, Billingsgate Market, the various private quays, the Monument, the roof of the Coal Exchange, and every available place from which a sight could be had, was filled with people, and the strong reflection from the burning mass on the opposite side of the river on their eager and upturned faces, presented a most singular appearance to the spectator at a distance. For miles round every building of prominence stood out in bold relief by the strong light thrown upon them. The River Thames, however, presented the most singular appearance of all, as on its bosom the reflection from the flames and smoke threw itself into every shape and colour—now an inky black when the columns of smoke hung over it; then like a sheet of silver, when the moon, in combination with the flames from the sulphur and saltpetre explosions, threw its rays on the water; and again, as some fresh victim was caught by the devouring element, and the red flame rushed high up in the air, shining like a plate of burnished gold. Boats and craft of every description were moving up and down in hundreds, giving to the whole scene an appearance of a grand aquatic fête with fireworks.

About ten o'clock, as the evening wore on, and it became apparent that the fire would burn on through the night, itinerant vendors of ginger beer, fruit, cakes, coffee, and all the various articles that form the stock-in-trade of the London costermonger, began to range themselves along the pavements, and a brisk trade was carried on, especially after the public-houses had closed, many of which, however, taking advantage of the occasion, kept open door all night. The scene continued without intermission until after three o'clock yesterday morning, at which hour thousands of people were still congregated on the bridge and in its neighbourhood. Any one who could have shut his eyes to the calamity that was raging a few yards from him, would easily have imagined himself in the presence of a great national fête. It is due, however, to the people to state that there was but little of that boisterous revelry which would naturally accompany such an occasion, but that every one appeared to be toned down into seriousness by the awful and terrible destruction of life and property which was taking place before him.

During the whole of yesterday, up to a late hour of night, London Bridge, Billingsgate, the Custom-House Quay, and all the approaches to the fire where the slightest glimpse of it could be obtained, were crowded with spectators.

The scene of the calamity presents all the appearance of an earth-

quake, rugged masses of brickwork and mounds of rubbish meeting the eye in all directions. In one direction may be seen a huge pile of Cayenne pepper bags, sugar, cochineal, and hams; in another, mountains of half consumed barrels of tallow, emitting a most noxious effluvia, and on turning round you confront a burning and smouldering barricade of jute, hemp, leather, cordage, sacks of potatoes, cheeses, sides of bacon, all intermingled in chaotic confusion.

A great number of boats have been busily occupied since the fire in scooping from off the water the large floating masses of tallow; one of the crews of these boats sold the amount thus obtained for £30, another £18, and so on, while that portion of the river-side population commonly called mudlarks were filling old sacks, saucepans, baskets, and other utensils, with the same materials. The value of the tallow shovelled up from the road and pathways in Tooley Street and taken away by the dust contractors, is estimated to amount alone to several thousand pounds. The whole of Sunday and yesterday was occupied in carting it away.

The subject of conversation turning on recent wrecks, much animated discussion ensued, in which opinions were freely expressed on the impropriety of the practice of using the strait of Belle Isle at this season of the year, so commonly adopted by our steamers from Quebec, and it was freely asked whether they should be permitted to follow a navigation so well known to be dangerous.

On this Albert remarked that he thought legislation on such a subject would be futile; but that if passengers would act for themselves and take the matter in their own hands, and not patronise those vessels that adopted the Belle Isle route at a season when those straits were well known to be most dangerous from the ice, but insist on passing South of Newfoundland, the object might be gradually effected.

There is no doubt, continued Albert, that a ship from Quebec for Liverpool will save between two and three hundred miles by passing through the strait of Belle Isle; but their great liability to ice renders that navigation as well as the Labrador coast so difficult, that it is surprising that ships will encounter the dangers from ice and currents to which they are exposed when there is a fair chance of avoiding them by passing South of Newfoundland. First—We read that

For a considerable time the most painful anxiety has prevailed respecting numerous vessels outward and homeward bound, no tidings whatever having been heard of them from the time of their sailing. During the last few days these ships have been posted at Lloyd's, the committee for managing the affairs having no hope of their ever being again heard of. All the particulars known of the respective ships may be briefly told. The ship *Queensland*, 993 tons register, chartered by Messrs. Lidgatts and Co., brokers, sailed from Calcutta for the Mauritius on the 1st of January; nothing known of her since. She was a Quebec built vessel of 1859, classed in Lloyd's register as A1 for seven years. The *City of Boston* sailed from New York on the 27th of January for Queenstown, and not since been heard of.

The *Octavius*, New York and London Liner, 1,000 tons register, left New York on the 1st of February; not since heard of. The ship *Strathfieldsaye*, 600 tons register, also from New York to the Clyde, sailed on the 21st of January; nothing known of her since. The ship *Wenonah*, Captain Ingram, left New York for the Clyde on the same day; not since heard of: and the ship *Colonist*, from Taganrog.

Then we hear, as might be expected, of much ice in the Atlantic, which will account for the disappearance of many of these ships, and then comes an account from Montreal to Liverpool underwriters in these terms, dated

May 23rd, 1861.

Sir,—It is now a most painful duty to write to you of the total loss of the *Perseverance*, about 130 to 150 miles E.S.E. of St. John's, Newfoundland, in the ice. We sailed from Hamburg March 5th. On the 9th of April we suddenly got into the ice, and could not get clear before the ship was completely cut through and foundered. We had barely time to get the boats out and take to them. I alone am left, all the other men perished with cold and starvation one after another. I was by myself for several days with two dead men in the boat, and had to bale constantly to keep her afloat. I had not a drop of fresh water on board for eighteen days and nights. On the 27th of April I was picked up by the British barque *Lord John*, Captain Browne, and afterwards landed at Quebec. No documents or papers connected with the ship were saved.—ARCHIBALD WILSON, late of the *Perseverance*.

We understand that the captain was in such a state of both mental and physical exhaustion that he was scarcely conscious of anything around him when he was rescued.

There can be no doubt that ice must be expected at this time of the year in the Atlantic; but why should vessels adopt that part where it abounded most and where from want of space and being in more compact masses it was most difficult to be avoided. Here is another of the many results of this saving of time system in the *Canadian*, which, we are told again by the underwriters, "was lost about noon on the 4th inst., about five miles off Belle Isle." The account further says,—“The weather at the time was thick and a short sea on. The ship was going ‘dead slow’ when she struck a large piece of sunken ice, the top of which was flush with the water, and which appears to have *ripped up the bottom of the vessel to a large extent.*” So says the account of the *Canadian's* loss, a considerable loss of life follows, then the character of the vessel, the serious damage which she had sustained, the boats, the passengers, the poor females, the heroism of the captain, and all is over as far as the public is concerned. All this was too often repeated. And the only way it appeared to him of suppressing it was for the public to take it up in earnest, and patronize only vessels in which those measures were adopted that were easy to follow, but which with a proper look out would obviate danger and above all to patronize those which do not use the strait of Belle Isle.

## Nautical Notices.

## PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 218.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist. seen Mls.	[Remarks, &c. Bearings Magnetic.]
17. Coruna	Spain	49° 22' N., 8° 25' 1" W.	F.	56	10	Est. 16th May, '61.
18. Port Elizabeth	Africa, South coast	.....	F.	225	12	Est. 1st June, '61. (a.)
19. Smalls Rock	England, W. coast	.....	F.	125	15	Est. 1st Aug., '61.
Skerries	Coal Rock	.....	..	..	..	From this the Skerries Light will appear red.
20. Harwich	Landguard Point	.....	F.	16	..	Est. 10th June, '61. (b.)
21. Plymouth	.....	.....	..	..	..	Time-Signal showing Greenwich Mean Time. (c.)

F. Fixed. Fl. Fixed and Flashing. R. Revolving. I. Intermittent. Est. Established.

(a.) 18.—The light is visible when bearing between N.W. and S.W., and one point at each extremity of the arc, viz., from N.W. to N.W.b.W. and from S.W. to S.W.b.W. will be *red*, the intermediate six points white.

The tower is S.½ E. from the Donkin Monument 75 feet

**Caution.**—From the elevation of this light it may be seen by vessels from the eastward before the revolving light on Cape Recife. Be careful not to bring it southward of West until Cape Recife light be clearly distinguished; which it may be by its greater brilliancy, as well as by its *revolving* once a minute.

(b.) 20.—The light is at the West angle of the keeper's dwelling, a long low building painted white, having a slated roof and tall white chimneys, about 650 yards S.W.b.W. from the cupola in Landguard Fort.

The present light in Landguard Fort will be discontinued.

**Caution.**—Masters of vessels proceeding into Harwich Harbour are cautioned not to open Harwich lights anything to the westward until the *red* light at Landguard comes open.

**Cliff Foot Shoal Buoys.**—Also that the Cliff End beacon buoy has been moved to the southward, and now lies in fifteen feet at low water spring tides, with the Mortella tower on Bull Cliff N.E.b.E.½ E., the spire of Harwich Church N.b.W.½ W. And that an additional *red* can buoy, marked "North Cliff," has been placed in eighteen feet at low water off the North Cliff Foot Shoal, with Patrick's Mill in line with the beacon on the breakwater N.W.b.W.½ W., Mortella tower on Landguard East beach E.b.N.½ N.

(c.) 21.—Masters of ships who are desirous of obtaining Greenwich mean time for their chronometers will observe that a Cone, made of canvas, 4½ feet in diameter and painted black, is suspended below the flag on the flagstaff in the redoubt on Mount Wise, at an elevation of 175 feet above the mean level of the sea; and may be seen from most parts of Hamoaze, over the whole of Plymouth Sound, and from those parts of Catwater used by sea-going ships. It may also be seen in clear weather outside the Breakwater when bearing between N.b.W. and N.b.E.

The Time-Signal is made by the collapse of a Cone, which when not in use hangs closed on the flagstaff. As a preparatory notice, at three minutes be-

fore one o'clock the Cone is expanded to its proper shape; and at the instant of 1h. p.m. of Greenwich mean time it closes on the flagstaff. At two minutes later it is again expanded; and at the instant of 1h. 5m. p.m. closed: the second signal being made in order to verify the first, or in the event of its not having been noted correctly.

This signal is not made on Sundays; and is now only adopted until a connection is established by electric telegraph with the Royal Observatory at Greenwich.

The position of the flagstaff on the Mount is in lat.  $50^{\circ} 22' N.$ , long.  $4^{\circ} 10' 15''$ , or 16m. 41s. W. of Greenwich.

---

**SURINAM,—Position of Lightvessel changed.**

We find the following in the *Moniteur de la Flotte*:—

By order of his Excellency the Governor of Surinam, mariners are informed that from the 1st of April, 1861, the position of the lightship at the mouth of the River Surinam, will be changed to that of the second buoy in 16 feet at low water of spring tides. From whence

Homsput S.  $45^{\circ}$  E. true;

Bois Brules S.  $81^{\circ}$  E. true;

and from her the last buoy will bear N.b.W. three eighths of a mile.

The lightship carries her light 20 feet above the level of the sea, and may be seen in clear weather at the distance of  $2\frac{1}{2}$  miles.

---

*CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of June, 1861, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.*

Ireland, sheet 3, Larne Bay to Bloody Foreland, Captain G. A. Bedford and R. Hoskyn, Esq., R.N., 1860. (3s. 6d.)

Ireland, N.W. coast, Bloody Foreland to Arran Island, Captain G. A. Bedford, R.N., 1854, (3s.)

Scotland, West coast, Scridain Loch, Commander E. Bedford, R.N., 1859, (3s. 6d.)

France, North coast, Morlaix Channels and Road, French survey, (2s. 6d.)

Syria, Iskanderun to Markhab, Commander Mansell, R.N., 1860, (3s.)

North America, Newfoundland Island to Halifax, English and French surveys to 1860, (2s. 6d.)

North America, Halifax to Delaware River, English and United States surveys to 1860, (3s.)

North America, Madame Island and Lennox Passage, Captain H. W. Bayfield, 1856, (3s.)

North America, United States, Charleston Harbour, United States survey, 1858, (2s. 6d.)

North America, United States, Pensacola Bay entrance, United States survey, 1857, (1s. 6d.)

United States of America, Chesapeake Bay, Hampton Roads and Elizabeth River, U.S. survey, 1857, (1s. 6d.)

South America, Ports Henry and Mardon, Fortune, Welcome, and Goods Bays, Lieutenant Skyring, R.N., 1829, (1s. 6d.)



South America, West coast, Cerros Island, Captain Kellett, R.N., C.B., (1s. 6d.)

South America, West coast, Parida and Palenque Anchorages, Captain Kellett, R.N., C.B., (1s. 6d.)

East Indies, Gaspar Strait, English and American surveys to 1860, (2s. 6d.)

China Sea, Pechili Strait, Commander J. Ward, R.N., 1860, (1s.)

Japan Sea, Manchuria, Siau-wuhu Bay, Commander Ward, R.N., 1860, (1s. 6d.)

*Hydrographic Office, 21st June, 1861.*

### THE ROYAL AND MERCHANT SERVICES.

The following are the regulations under which Masters and Mates of Merchant vessels may be enrolled as Officers of the Royal Naval Reserve under the Act, &c. :—

*Numbers, Class, and Rank.*—The officers of the Royal Naval Reserve shall not exceed the total number of 400, and shall consist of two classes :—

1. Lieutenants of Naval Reserve, whose number shall not exceed 130, and who will rank with, but after, Lieutenants of the Royal Navy.

2. Sub-lieutenants of Naval Reserve, whose number shall not exceed 270, and who will rank with, but after, Sub-lieutenants in the Royal Navy.

*Qualification.*—Masters of Merchant vessels who hold extra certificates under the Mercantile Marine Act of 1850, or the Merchant Shipping Act of 1854, and who have commanded a vessel of not less than 500 tons burthen, (gross tonnage,) for not less than three years, shall be eligible for appointment as Lieutenants or Masters of Naval Reserve.

Chief Mates of Merchant vessels who hold Masters' or Chief Mates' certificates under the Mercantile Marine Act of 1850, or the Merchant Shipping Act of 1854, and who have sailed as Chief Mate in vessels of not less than 500 tons burthen, (gross tonnage,) for at least two long sea voyages—*i. e.*, to India, China, Cape of Good Hope, South America, or the Pacific Ocean, or shall have served as Chief Mate for two years in steam vessels of not less than 700 tons burthen, (gross tonnage,) shall be eligible for the appointment of Sub-lieutenant in the Royal Naval Reserve.

Qualification for the first-class will include qualification for the second-class.

*Drill.*—The Officers of the Royal Naval Reserve will be required to undergo a course of drill and gunnery instruction on board the district or drill ships at the great mercantile ports in their respective vicinity, as named below.\*

*Discipline.*—Officers of the Royal Naval Reserve will be subject to

\* London, Shields, Sunderland, Hull, Southampton, Falmouth, Bristol, Liverpool, Leith, Greenock, Dublin, Queenstown.

naval discipline when attending drill, or when called out for actual service, and will be liable to lose their commissions for offences against the rules, discipline, or character of her Majesty's Service, in the same manner as Officers of the Royal Navy, by order of the Admiralty.

*Promotion.*—Officers of the Royal Naval Reserve of the second-class will, if qualified, be eligible for promotion to the first-class at the discretion of the Admiralty.

Officers of the Royal Naval Reserve who, when in actual service, may, by the character or length of their service, obtain the special approbation of the Admiralty will be eligible to receive commissions as Officers in the Royal Navy, of the same grade as that with which they may rank at the time.

They will then be considered as in all respects Officers on the permanent strength of the Navy.

Officers of Royal Naval Reserve, who while on actual service shall have distinguished themselves in action with the enemy, or by the character and length of their service, will be eligible, at the conclusion of their service in the Navy, for promotion to higher honorary ranks in the Naval Reserve, at the discretion of the Admiralty.

*Uniform.*—Officers of the Royal Naval Reserve may wear the uniform of their respective corresponding ranks in the Royal Navy, with such distinction as her Majesty may hereafter approve.

*Pay and Allowances.*—Officers of the Royal Naval Reserve will, while called out for actual service, receive the pay of their corresponding rank in the Royal Navy.

Officers who may receive hurts or wounds while on service, will receive the same pensions, &c., to which Officers in the Navy would be entitled under similar circumstances.

Widows of Officers of the Royal Naval Reserve, who, while in actual service may be killed in action, or die from accident resulting from the performance of their duty, will receive the same pensions as the widows of Naval Officers of corresponding rank would be entitled to under similar circumstances.

*Messing.*—Officers of the Royal Naval Reserve, while on drill, will live on shore, and will receive the following subsistence allowance, viz. :—

Lieutenants .....	5s. 0d. a day.
Sub-Lieutenants .....	2s. 6d. a day.

When called out for service they will mess with their respective ranks.

*Appointment.*—Officers of the Royal Naval Reserve, will receive their appointments from the Board of Admiralty, but applications for appointments should be made through the Board of Trade.

*General.*—The Officers of the Royal Naval Reserve shall be called out for actual service by Royal Proclamation; and the service they may be employed upon will be temporary during the continuance of any national emergency, or until they may be regularly discharged by direction of the Admiralty.

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle.

---

AUGUST, 1861.

---

THE LOYALTY ISLANDS.

About fifteen leagues to the eastward of New Caledonia is the group of the Loyalty Islands, extending in a S.E. and N.W. direction, between the parallels of  $21^{\circ} 10'$  and  $21^{\circ} 40'$ , and  $166^{\circ} 10'$  and  $168^{\circ} 10'$  E. of the meridian of Greenwich. It is formed of three principal islands, which are inhabited, and numerous islets. Being a natural dependance on New Caledonia from their position, we have considered them as annexed to this large island when we laid there the foundation of a colony, which has been done without opposition on the part of its inhabitants. For the rest, the new quality of these has not occupied much of our attention at present; but chiefs have gained a few presents by the scarce visits of our men-of-war to this little archipelago.

It is extraordinary that the Loyalty Islands should have escaped Cook when he discovered New Caledonia. D'Entrecasteaux, in April, 1793, passed a few leagues from the northernmost island of the group and only showed the small Beaupre Islets, which belong to them. It was not till 1803 that an English ship discovered the southernmost, which received her name—Britannia. D'Urville, in 1827, rediscovered this isle. Continuing his route to the N.E., he found successively two others, which he called Chabrol and Halgan. In 1840, with the *Astrolabe* and *Zelee*, he completed the survey of the archipelago, this time running along its western part. Doubtless these islands had been already much frequented by craft from Australia in search of sandal-wood. At present, some whalers and

sandal-wood traders frequent the islands,—the former carrying on a small fishery. The latter no longer go there for sandal-wood—that precious article being now no more, but to complete their crews with the natives, who are more easily managed and less exacting in their wages and food than European sailors.

I cannot say from whence the name Loyalty is derived, which is seen for the first time on Arrowsmith's chart and in the instructions of D'Urville. Likely enough a few scattered islets would have small claim to attention, so one must seek for them among the remarks made by voyagers on passing them. Yet such nautical documents would not much interest the general reader; and that which appears to be most complete is a chapter dedicated to them in a little work on New Caledonia, published in 1854. I had no intention, after a short visit to two islands of this archipelago, of describing them entirely; but now, as these little known lands have become French, and as from this circumstance alone they are entitled to attention, perhaps it will be as well to throw together what has been learned from the missionaries about them, what navigators say of them, and what I have myself observed of them.

The three principal islands, situated at a mean distance of seven leagues from each other, going from S.E. to N.W., are Maré or Nengoné, Lifu, and Uvé (according to the orthography of the missionaries the *e* sounded short and *u* as *oo*). The names are those given them by the natives, but by navigators have been changed for Britannia, Chabrol, and Halgan. Between the two last—those which I have visited—are some islets which appear to partake of their nature. Seen from a distance, the Loyalty Isles present the appearance of isolated flats, nearly of the same altitude, which is not much above the level of the sea. I do not think there is a height in them above 200 or 250 feet above the sea. Their shores are nearly everywhere steep and vertical almost over the water, seldom broken by little sandy beaches, excepting where outlying rocks have supplied a foundation for the coral insect to carry its dangerous work from them to the surface. The water everywhere is deep to the shore and there are but few anchorages, which are too near the shore for the safety of ships.

The construction of these islands, Lifu especially, reminds me of some of those near Tahiti. The soil is a carbonate of lime, abounding as much in calcareous sand as in rock of the same nature; these being perforated by the water in a manner to give the surface the appearance of coral rock, but is nothing more than a calcareous shell in which petrified bivalves are found here and there, madrepores being occasionally found mixed up in the mass and in fissures. At Lifu the horizontality of the beds is well preserved. At Uvea, especially in the northern part, the level is frequently interrupted; the soil is dislocated as if it had been subjected to strong efforts of earthquakes. There is scarcely any drinkable water to be found, and that which is obtained from wells has always more or less a chalky taste. At Uvea we visited a kind of lake at the bottom of a circular basin, the perpendicular edges of which are very remarkable; but the water,

which, according to the natives, is very deep, has the taste of sea water. In this island there is also a large lagoon of brackish water. Near the Catholic (Roman) mission of Sandal-wood Bay, at Lifu, excellent water is obtained from a natural well situated at the foot of a precipice, to which one is obliged to descend with ropes, by a ladder, and the help of the roots of trees projecting from the sides. We have remarked in our walks on this island that the ground sounded hollow under foot; from which it is not improbable that we were on those occasions passing over some subterranean grotto similar to that which we visited near the dwelling-place of the missionaries, and where the most beautiful specimens of infiltrations and calcareous concretions are to be seen,—statues, colonettes, trees, and flowers of stone, in fact everything.

I have not landed on Maré, but according to the appearance of this island there is nothing that is different from the rest in its construction. Lifu is something better off in this respect. On its western side, which is about thirteen leagues long from S.E. to N.W., is the Sandal Gulf (Wide Bay of the English), the diameter of which is ten miles, and in which are two bays, one in the North and the other in the South, affording tolerable anchorage in the fine season, from May to January, in which the easterly winds prevail. Outside of these bays, in which anchorage may be obtained on an uneven ground of sand and broken coral, the lead has not yet found bottom. Some small coasting vessels from New Caledonia nevertheless frequent the bays of the eastern coast.

Uvea is a narrow band of chalk, slightly convex on its eastern side, which trends S.S.E. and N.N.W. for twenty-three miles, having a mean breadth of two miles, except in its northern part, which is nearly eight miles across. To the West of Uvea, a series of islets, some of which are of a conical form, and which D'Urville called the Pleiades, surround a lagoon of four or five miles diameter, and to which access is easy between the islets. The bottom of this lagoon is formed of white sand mixed with coralline produce, the slope of it being imperceptible. It is here where vessels anchor: unfortunately, the sand, very loose, yields too easily to the anchor. The clearness of the water is such that the bottom is seen everywhere in twelve or fifteen fathoms. The sea is nearly always still and of a sky blue colour, and is enlivened here and there by the sails of numerous native craft.

The forests of Lifu and Uvea must be seen in order to obtain an idea of the flourishing state of vegetation produced by the joint influence of heat and humidity. Not only are cocoa-nut trees in abundance, the pandanus, vegetables which penetrate with their roots the most ungrateful soil, but at Lifu there are the most beautiful trees—the wood of which is the strongest in the world—growing on the naked rock, where one is at a loss to find how they take root. The large pines like those declivities which slope towards the sea. The fig banyan (different, I think, from that of India), the leaves of which are very large, extends everywhere its invading roots. The hibiscus,

the arbrus peccatorius, the aleuzites triloba, and a crowd of other shrubs of hard and coloured wood, the names of which are unknown, cover the island, which one may traverse in nearly all its parts sheltered by their shade from the sun's rays. The sandal-wood has disappeared; but it is said there are still some trees, which owe their preservation to their minuteness. In places where the rains have not washed it away, the vegetable detritus has formed a little soil, which has filled the fissures and cavities of the ground. These are the only parts which the natives can use for cultivating the iguano and taro, on which they principally subsist, and, unhappily, such parts are scarce. At Uvea there is more vegetable ground. The borders of the lagoon are low and sandy, instead of being precipitous, and this calcareous sand, mixed with the debris of plants, is favourable to certain vegetation, and its cultivation is more considerable and also casier. The missionaries have planted some space with the vine with every promise of success. The bananas here come on very well, and the China species has been introduced, which is the best. The papaya abounds, and its fruit is almost the only food of the domestic animals.

The fauna of so limited a land as this is necessarily of a limited kind. The only wild mamiferous animals are rats and a large seal similar to that of New Caledonia. Pigs have been introduced by Europeans, and are numerous at Uvea. This island is richer than Lifu, and can supply ships with more resources in pigs and poultry. There are three or four species of birds of prey, similar to those of New Caledonia, that destroy a good many of the latter. Birds are generally less numerous, owing to a want of water. We have seen but a few parrots, two nectarinias, some fly-eaters, and doves. The cooing of the large Caledonia pigeon is frequently heard in the woods by the sea side or near lagoons; the sultan fowl is seen, as well as other small ducks and such fowl. Sea birds, many species of gulls, frigate-birds, phaetons, &c., occupy the desert islets. Small lizards and large turtle are the only specimens of the reptile species that we have seen.

At Lifu the sea yields but few fish, for the shore is too steep and the water too deep. Uvea is more favoured; but, like New Caledonia, many species are poisonous and occasion death, according to the season; it often happens that the natives are poisoned by fish which they have eaten without harm at another time of the year. The few fish that we have taken belong, like those of New Caledonia, to the sezzan, diacope, &c.

Musquitoes are not very numerous, but it seems that in the rainy season they are intolerable. We have seen some butterflies, of which there is a beautiful kind with blue wings.

On the sandy bottom of the water the beche de mer (sea slug) is seen. Polypi of the astrea and meandrina kind cluster on the rocks of the shore and form reefs which are pretty extensive, barring up the passages between the islets. In parts that are sheltered from the disturbance of the waves handsome specimens of the branch coral are

seen of beautiful colours, the fragility of which reminds one of the most delicate flowers.

Some large animals of the cetaceous tribe frequent the Loyalty Islands, besides a great number of porpoises and others of the whale kind are also found there, which are the objects of a brisk fishery. It is but a little time since three whalers in Sandal Gulf, at Lifu, took seven or eight whales in a few days.

The year at these islands is divided into two seasons. From May to January fine breezes from East to S.E. prevail, interrupted sometimes by westerly, which at these times are never strong. At Lifu, on the 26th of September, we experienced a violent hurricane, followed by a northerly wind. The weather in this month is generally fine, the thermometer at mid-day  $22^{\circ}$  or  $24^{\circ}$ . During the other months the weather is variable, rain abundant, and hurricanes frequent. But the month of January is that in which hurricanes take place and strong N.W. winds. These revolving storms appear to be similar to those of the Indian Ocean, nothing can resist their violence.

In the fine weather season the heat is tempered by the sea breeze, and in the bad weather season the air is renovated by the rains. The climate is most salubrious. We have been informed that at Lifu, a few days before our arrival, the shocks of earthquake were felt.

According to the accounts of the Protestant missionaries, taken from the *Reporter* for the month of March, 1860, the total population of the group is 15,000 inhabitants, distributed thus:—Maré, 4,300; Lifu, 7,000; Uvea, 4,000; Tok, a little island between Lifu and Maré, 100. The Catholic missionaries make a report short of this.

These people much resemble those of New Caledonia, but in this latter country the type has been modified by mixture. Thus by the side of the black as dark as the African Negro are seen individuals with that reddish hue and more softened traits that show the infusion of Polynesian blood. The natives who seem to have best preserved the original trait (a kind of Oceanian black Desmoulines Papua race) are generally fine men, of a brownish-black or rather chocolate colour; the forehead falling back, the cheek bones somewhat projecting, the nose much less thick than that of the African Negro, the lips thick—but not too much so, and the lower part of the face not projecting. The ears are large and deformed by the practice of piercing the lower portion by a large hole, so that it reaches down to near the shoulders. Their eyes are large and not *bridés*, the conjunction is of one tint and yellowish. Their teeth are handsome, perhaps rather large. Nearly all have long hair on the breast, the shoulders, and even the back, but this, like that of the head, in tufts. Their hair is long and woolly; it is allowed to grow always, and is worn loose, or falling down on each side in long frizzly masses, or, again, it may be gathered up in a piece of cloth made for it like a cylindrical capshako. The custom of dyeing the hair with a kind of reddish chalk is very common, and some there are who by constantly doing this have it lighter, and others even nearly white. The form of the men is generally good and well proportioned; nevertheless we have ob-

served a good many individuals with short necks and high shoulders. The calf of the leg is more evident than among Negroes; and the feet, instead of being large and flat as theirs, are small, like those of the Polynesian race.

The traits of the women are not so regular as those of the men. The breast becomes flabby and pendant at an early age, the head bald, the features sottish, and their manners not winning. Scarcely any young females are exempt from this severe judgment, but the brutal treatment to which they are subject has much degraded them.

Other traits of the Negro race may be observed among these people. The tatooing by scarifying the skin and the difference of language is very little. In each of the islands a different language is spoken. That of Lifu is tolerably pleasant; that of Uvea is harsh and full of gutturals. At Uvea the population is divided into two parties, and the difference of their origin is very remarkable, notwithstanding the numerous instances of foreign blood. Those in the southern part of the island are of New Caledonian descent; while those of the North are the descendants of a colony from Wallis Island or Uvea, an island in lat.  $13^{\circ} 20' S.$  and  $178^{\circ} 32' W.$ , about 350 leagues N.E. of the Loyalty Islands, who landed on the northernmost island of the Loyalty Group perhaps about a century ago, and gave to their newly adopted land the name of their mother country. Some individuals, especially females, have preserved the primitive type,—the yellow hue, the hair nearly free from woolly appearance, the eyes almond-shaped and rather *bridés*. They speak a dialect of the Polynesian tongue, but it has been considerably altered by the *até* language of the natives of the island.

With the exception of the piece of cloth which contains their profusion of hair, the men go entirely naked; or, to speak more plainly, they find means to render themselves more indecent than if they were entirely naked. Their costume, like that of the New Caledonians, is sufficient to shock feelings the most immodest, and it is not easy to say which of the two people are most brutal. The custom of circumcision is not among the laws of the Loyalty Islands.

Their ornaments are collars of small shells, and bracelets or garters formed of two or three white shells, secured with small strips of fish skin. This ornament is very refined. They disfigure their bodies by marking them with large black lines, and another of their ornaments consists of a plume of cock's feathers surrounding others obtained from sea birds. They all carry a small cord in the right hand, which is artistically prepared and serves for throwing spears.

The women wear nothing but a girdle, or rather long fringe, which is passed several turns round their middle; but the children of both sexes go entirely naked to an advanced age.

Before missionaries appeared in the Loyalty Islands the condition of some of the population was that of perpetual warfare, robbery, and cannibalism; but now, these people, naturally of a mild character, under the influence of the missionaries live mostly at peace. Cannibalism is no longer known, except at Maré, the natives of the southern



part of which have hitherto been proof against all attempts to civilize them; while those in the North of the same island were the first to receive the Protestant missionaries in 1845. Nevertheless, notwithstanding the state of peace, it is difficult to find in any of the islands men without arms in their hands, either in the shape of spears of hard wood or a club formed by some knotty branch without the bark. Some of these are similar to those on the coast of New Caledonia opposite, made in the form of a pickaxe, or resembling the beak of a bird of prey. A small number of them have also muskets, but these have gone off to ships and have obtained them as presents. Although they well know the effects of fire-arms, as their islands have been visited but by few ships of war, they are always astonished by great guns, and ours, not of very imposing size, produced considerable sensation,—the ricochet of the shot and our rockets were very successful in this way.

Their huts are circular, like those of New Caledonia, with a conical top, pierced by a high post, which is sculptured and ornamented with shells: the door is low and narrow, and inside of it one is suffocated by the smoke of several small fires, constantly burning. The women generally live in a separate hut, and villages are composed of a collection of these huts, their sites being chosen by the vicinity of water and land fit for cultivation. At the village of Faïaoué, in Uvea, we have seen a large building, the roof of which is supported by the trunks of enormous trees, in the middle of an extensive enclosure formed by a palisade, which building served as a place of meeting for the chiefs to deliberate on public affairs.

These wretched habitations, which are sometimes as hot as an oven, and soon after as cold as ice could make them, and which are the rendezvous of all noxious insects, are perhaps one of the principal causes of a morbid affection which makes great ravages among them, and one which is found in all these islands. A great number of the natives die from asthma before they attain the age of thirty. The immoderate use of the pipe is no less fatal to a people who have nothing but a scanty vegetable nourishment for their subsistence. Every one here is incessantly smoking. Tobacco is the article of commerce which of all others is the most sought for. A little piece of tobacco will obtain a man's day's work.

Compared with the Polynesians this race of people is a laborious one; but, like all the Indian tribes, it is difficult to keep them to a repeated work. The Polynesians live in the finest climate of the world, and find in the breadfruit a subsistence which requires only the trouble of collecting; while at the Loyalty Islands it is necessary to work for a subsistence, and that too in earnest. Iguanas are planted at the beginning of October, and require seven or eight months to arrive at maturity. The year's produce is often stinted, and then the unfortunate natives are compelled to live on cocoanuts and the papaye fruit if their fishing is unsuccessful.

To the malady abovementioned is added another from which these people suffer, common over the whole Pacific,—that is, elephantiasis.

At Uvea there is scarcely an individual to be found who is free from its commencement. As to syphilitic affections the whole population is contaminated by them. The total want of carefulness, the filth, the absence of all medical rule, aggravate more and more the unhappy children, victims of a sad inheritance, which is literally that of rottenness. And yet at Uvea particularly, the women are neither debauched nor loose like those of the Polynesian Islands. Polygamy is found among the chiefs, who take as many wives as they please. There is no such thing as marriage in the island, all depending on the consent of the parties according to their will and pleasure. The women are treated like beasts of burthen; they go and fish, they cultivate the soil, they fetch wood and water, and they have very often much to fear from an excessively jealous husband.

The natural flatness of the island renders the intercourse very easy. I have not observed any particular branch of industry followed by the people; their canoes are rough and ill formed; at Lifu they have scarcely any, for the character of the shore is not adapted for them; while at Uvea, the fine weather which nearly always prevails and their lagoon bordered with fine sandy shores, has contributed much to the developement of navigation. The people of Uvea make excursions to the Beupre Isles, about ten leagues distant, where they make plantations. The communications with New Caledonia are frequent, the mountains of which are distinctly seen from Uvea and Lifu in fine weather. A considerable number of the islanders are employed in Australian vessels, and the number who speak English after a fashion scarcely intelligible is tolerably large.

Every island is divided into tribes, who have their chiefs at Lifu; who, although not numerous, are endowed with considerable authority. Whatever their order is certain of being done, and it is owing perhaps to this punctuality of following out orders that this island enjoys so much tranquillity. At Uvea, on the contrary, thanks to a crowd of petty chiefs, without authority, anarchy prevails.

The younger brother of the principal chief is commonly the chief warrior: he directs the movements of the rest in skirmishes, &c.

I cannot say if these islanders have any idea of astronomy or other sciences, nor have I been able to find that they have but a very slight disposition for music, by hearing them sing in a low voice some canticles in the language of the Wallis Islanders.

According to the missionaries, these people are in a thorough state of ignorance, their religious ideas amount to nothing. The belief in a kind of genius called Aazie at Lifu, seems to be all that has any reference to a superior being: so that the missionaries, besides the difficulty of studying the language, are embarrassed by having to use long phrases to express ideas entirely new to these neophytes. These are sufficiently numerous, for they come without any repugnance to the missions, whether they are Catholic or Protestant.

The resources which the Loyalty Islands supply, consist of handsome wood for joiner's work, which if judiciously used in cutting will last a long time. At a very little trouble, with the excellent lime,

building would be easy, and I consider that by planting cocoanut trees enough might be reared to produce the cocoanut oil which in these days is so much sought for. The cocoanut tree grows here, but the nut is not very large, and at the present time there are not enough to supply the wants of the people between the iguanas harvest.

In the gulf of Sandal the natives are poor, and cultivate with much difficulty some taros and iguanas, in a ground which is not adapted for vegetables. Their fishing yields nothing. Fresh water is generally scarce and bad; but the Catholic missionaries have good water from natural wells at the bottom of a remarkable depression of land; but as these wells are at a considerable distance from the sea, and the road to them very difficult, this is not available for shipping. Three whalers have recently taken seven or eight whales (humpback) in the gulf in a few weeks. Some good wood is to be had in the island, as well as some sandal wood.

Although the island of Uvea, like Lifu, is nothing more than an agglomeration of chalk, it is nevertheless very rich, and has plenty of cultivatable ground. Poultry and pigs are to be had there; but fresh water is scarce, and the only well that gives good water is near the village of Faioué, but a good distance from the sea.

The principal seat of the Catholic mission is at the village of Uvea, a situation indicated by a little mondrain round it, which commands the general level of the land. The mission itself is distinguished by a large church, which is building, with the ends of its three naves towards the sea, the middle one being surmounted by a small clock tower. The house of the missionary and his attendants is a little to the right; and a little beyond it, to the northward, is a large lagoon, the water of which is very brackish.

NOTES OF A JOURNEY ACROSS THE ANDES, IN PERU.—*By E. D. Ashe, Lieutenant, R.N.*

It has been my good fortune never to have sailed in an uncomfortable vessel; but the frigate that I belonged to when I crossed the Andes, had a rare combination of those elements requisite to make a happy ship.

In the first place, we had an excellent captain; and in the next, my messmates were composed of some of the best fellows in H.M. service. We all had our own peculiar line. There was no jarring or clashing amongst us. One sang an excellent song; another told a capital yarn; a third played the violin, another the flute; a fourth played tricks upon cards, so that frequently those who have dined on board have found cards in their boots weeks afterwards. We had an inimitable Irishman, who made delicious bulls. Besides all this, we had a very good band, one of the greatest comforts on board a ship,

the master of which said band was a talented creature, but, alas! he was too fond of sucking the monkey,—he drank. I had once occasion to speak to him, and plainly told him, “Why, you are drunk, sir.” He looked at me with a fishy eye and replied, “Well, sir, I know I am; but not more so than a good musician ought to be.” And lastly, our store rooms were well supplied with the choicest wines.

Just before leaving England, a lighter came round from the Thames; and as she was being cleared, case after case was hoisted in, and the whole forenoon elapsed before she was sent away. On going to take leave of my friends, an old boatman, who was pulling me ashore, remarked to me in that free and easy way common to him as he knew his company, “Ah, sir, that will be a ’appy ship. I never seed so much lickergo aboard a ship afore in my life.” And certainly she was, albeit he was out in his reasoning though not in his reckoning.

As this happy ship was lying in Arica roadstead on the coast of Peru, several parties were formed to visit Jacna, a pretty Spanish town, containing about 7,000 inhabitants, situated in a fertile spot, watered by a rivulet formed by the melting snow of the Cordillera,—for wherever there is moisture there the ground is covered with the richest verdure, and as it never rains in Peru, the coast presents nothing but a sandy desert, saving and excepting in the immediate vicinity of these mountain streams.

One party had returned from the place, and I made up my mind to form one of another that was just about to start, and accordingly sallied on shore to find a mule that had some skin on its back. Arica is the seaport of Jacna, but roads and vehicles being in those days unknown, every thing was carried on the back of mule, a distance of forty miles across a desert, without a single drop of water or a blade of grass to cheer the way. It is truly marvellous how muleteers manage to secure some of the things which these animals have to carry on their backs, for the packages are of all sizes and shapes from a Collard and Collard piano to a case of wine. The consequence of this state of affairs is, that from his first journey until his last, the poor mule has always a raw and bleeding back. No wonder that the track across this desert might generally be found by the skeletons of these poor animals.

I have often thought that if there is any truth in the theory of the transmigration of souls, great must that sinner be who has to expiate his crimes in the body of an Arica mule.

Our party started about eight in the morning, in high glee, and as the sun in the course of the day became nearly vertical, the only shadow each of us had was that of his sombrero; but to prevent our faces from being blistered and losing all our good looks, we took the precaution to cover them with silk handkerchiefs.

About noon we halted among some rocks that made their appearance above the sand at a distance of fifteen miles from Arica; and here we had recourse to the last of our moistening store that we had provided for the journey. Thus freshened up, we again started, but our party had lost their fun and frolic, too much had been taken out

of us already. And, alas, so it was with our animals as well as ourselves; for, sad to relate, about four in the afternoon my mule showed symptoms of breaking down; and I persuaded the party not to think of me, but to go on ahead, and should they reach the place of destination to send back help.

Accordingly I was left, and the party out of sight, I endeavoured to urge my poor brute forward with all the power I had; but in vain: not even the muleteer's words,—“Caramba! cara carajo, maldita!” had any effect: he drooped his head as a signal for me to dismount. This done, I began to speculate on our condition as to which was the greater ass, the mule or I. But as I could not afford to pay for mule and saddle, I managed to urge the poor animal before me, so that at least when he dropped I should only have to saddle myself. Matters now were becoming serious. It was evident that I was in a scrape. A loose burning sand around us, my temples throbbing from heat and exhaustion and intense thirst, and having to drive a poor sinking mule before me,—and yet not a hundred yards from me I thought that I could see a beautiful lake, and even the banks on the opposite side; nay, I could even see the ripple on the water. Alas, what delusion!—this was only the effect of mirage, and I knew that instead of water I should find nothing but burning sand. In fact, if I had not kept myself up by remembering that my messmates would surely send help, I certainly should have sat down on the next skeleton of a mule among the many that mark the road, and added to its bones those of two other asses! A multitude of such thoughts crowded on my mind even including this termination of the journey, when happily my reveries were broken by the sound of bells; and on looking up I beheld a man on a mule coming on at a brisk trot, leading a horse. What relief this was I need not say. Often had I exclaimed in despair of ever seeing it,—“Oh, give me but my Arab steed!” but here was a steed as good for me as any Arabian. Soon, indeed, I was on his back, and with a good ambling speed in a short time he bore me in safety to the hospitable door of the English consulate.

A warm bath, a slight stimulant, and I was ready for dinner at eight. The consul was as considerate as kind, he had invited all the beauty, and some of the principal merchants of the place to meet us. What a change had a few hours made in my condition. Here I was enjoying the cool breeze as it was rustling amongst the leaves of adjacent trees, delicious claret, the most luscious fruit, and the sweet voices of charming ladies. No wonder that sailors are always in love. But time as usual always flying faster the happier we are, stole away a delightful evening sooner than he should have done, and those who could not be accommodated at the consulate were billeted off with the different merchants. It fell to the lot of a young German to receive me, and I was most fortunate in having a companion, who had the musical talent of his country, with all the information of an European traveller.

On the following morning, having found my way to the consulate, while waiting for some of my companions, a handsome young man en-

tered my room, and it soon appeared in our conversation that his visit was to take his farewell of the consul, being about to cross the Andes. "Cross the Andes," I exclaimed; "how much I should like to accompany you." "I really wish you would," he replied; "for a companion on such an occasion is truly most desirable." At this moment the consul joined us, and hearing our conversation, remarked,—Why don't you go with Mr. Fernandez? He is going to Puno, situated on Lake Titicaca, where the first Inca, Manca Capac, made his appearance. How could I resist, although there were certainly difficulties to overcome. In the first place, my leave of absence was but for a week, and I could not possibly return under a fortnight: in the next, I was totally unprepared for such a journey; and then, too, my friend started in two hours.

Well, it is often truly said, where there's a will there's a way, and so it was on this occasion. The first difficulty was got over by a line to the senior lieutenant, informing him that as time did not admit of an answer it was useless to apply to the captain of the ship for leave, but that I should take the responsibility upon myself, as I was sure that he would only be too glad that one of his officers should take advantage of so rare an opportunity of seeing the country.

This being concluded, I rejoined my German friend, and quickly informed him of my new determination. At which he observed,—You sailors are odd fish; but I can assist you, as I am about to purchase a very fine mule for the use of the house, and I beg you will take it for your journey, adding, you have no time to lose, so come along with me and I'll get you a fit out. Nothing was to be bought ready made here, so he soon introduced me to a friend, and it was agreed beforehand that I was to ask him to lend me his "breeches." I am not a very bashful man, but the very idea of asking a person that one has never seen before for his "breeches," in order that one might live in them for the next fortnight, required more assurance than I could muster. But my good friend, the German, came to the rescue, and as nothing but leather could stand all the work I should have to go through, in an unguarded moment I popped the question; the friend in need (I forget his name) relieved me at once; he rather liked the idea, and brought them forth immediately, saying, that I should find them *very comfortable*; on which I took them under my arm, and beat a retreat, giving him no time to finish his apologies about a button that was off.

After this feat, the remainder of my outfit necessary for the cruize, was borrowed without a moment's hesitation by merely asking, so easy is it to get on after a beginning is once made,—indeed, as Fernandez and I, loaded with botas, spurs, bridles, alpacas, ponchos, and breeches, returned to my quarters, I almost considered them my own property. However, we found lunch ready, and having accomplished his object, he left me with the promise that he would call for me in an hour. Of course I made a dinner of my lunch, and then retired to dress for the occasion. I found the continuations most comfortable; and when I made my appearance before my worthy host, the consul, armed cap-à-

pie for the journey, I really believe that I was equipped as if I were going on the stage to act the part of a brigand.

However, everything was ready, and at two p.m. on February 16th, 1845, our party started; consisting of a muleteer in charge, Fernandez and myself, with a baggage mule, and a horse that was going to be sold.

We had a most interesting journey before us. There was something exhilarating in the unexpected manner in which I had undertaken it; young as I was in the morning of life to start thus on an expedition where no danger or difficulty beset the way, nothing to check the ardour it inspired was delicious. I was ready for any difficulty, to do any thing; but, alas, how different is the case when the shadows of life lengthen! when you know that your brave, gallant messmates have dropped one by one from your side, and there is not a part of the globe in which you have not left some companion of your youth, in a lonely grave, far away from family ties! you look back on those days, and memory lingers over the picture, loth to leave it until some unlooked for incident sweeps all away.

On glancing at my pencil notes whilst on the back of a mule, I have recovered scenes and faces that were fast slipping away from my memory. It is like cleaning up an old oil painting, defaced by time, when the softest lights of the landscape are again brought forth.

The Andes, on the Pacific side, rise abruptly from the sea coast, whilst they slope on the Atlantic gradually down to the pampas, broken by plateaux. Immediately on leaving Jacna we commenced the ascent, gradually at first, until we reached a small village,—the name of which is as unimportant as itself,—about twenty miles distant. Here we stopped for the night, in a cottage next to the church, and the Padre soon joined our company. But supper over, Fernandez prepared his bed, which he brought with him in a waterproof case, kindly offering me half of it. Our muleteer coiled himself away in a corner, amidst bridles and saddles, and covered himself up with his poncho, and we were all of us soon sound asleep, notwithstanding that some dogs were howling in a more melancholy tone than is usual with such brutes in moonlight.

Long before it was daylight, the jingling of bells, and the noise of feeding the mules, told me it was time to get up; and after a rapid breakfast, our party was en route at half past five a.m. We now were fairly at the foot of the Andes; our road—if it must be called a road—was simply a dry water course, up which the mules scrambled, and then along the sides of small hills that formed spurs to the great Cordillera, until another dry water course was gained; and in this manner did we toil until half past ten a.m., when we reached Palca, an Indian village, situated in a ravine, about twenty-four miles from where we had slept.

Here is a church built by the Jesuits, but not in use now, and surrounded by a few huts. As all the mules to and from the interior pass here, the Indians make a livelihood by selling alfafa, (a kind of clover,) that grows in this valley, which is watered by a rivulet.

During our morning's ride we saw but little vegetation, and that only where some mountain rill moistened the surface, everywhere else the ground was dry and barren, and covered with stones. Thermometer ranged during the day from 64° to 60°; and at Palca water boils at 183° Far., giving a height of 10,515 feet. (See process at the end of article.)

Arrived here, both man and beast were tired, and we enjoyed ourselves in this agreeable temperature exposed to the sun. Of course I availed myself of the opportunity to visit some of those towers seated on the summits of the principal hills that command a view of the setting sun. They are about eight feet square, and twenty in height, composed of dry clay bricks mixed with straw; they had been previously opened for the purpose of obtaining the gold ornaments generally found upon the corpse of the chief, buried in them, placed in a sitting position, facing the setting sun.

Our muleteer, who served also in the office of cook, prepared our meals; which generally consisted of an *olla podrida*, formed of onions, potatoes, mutton, and beans; but at this height he could not get the water hot enough to break the potatoes or boil the meat, and as none of us thought of fastening the lid on the saucepan, and thus getting high pressure steam, we had to eat raw potatoes and parboiled meat.

As our next day's journey was considered the most severe, we very early retired to rest. Shortly after five on the following morning our party was up and moving. I had concluded that after scrambling up water courses and passing along the brinks of precipices on the previous day, we had surmounted most of the difficulties we had to encounter. But I soon found out that we had not yet commenced them; and certainly what we went through on this day confirmed the stories of them. Again we had to climb the sides of water courses, and on reaching the tops of those mountains that appeared so lofty from below, we saw others that reared their heads still higher, and when the summits of these was reached, still there were mountains heaped upon mountains beyond. Frequently our track lay on the edge of a precipice where one false step of the mule would have lost both the animal and his rider, mangled and lacerated by the projecting rocks, as they would fall to a depth that the eye could not fathom. It was sublime to look down from our dizzy height and follow the condor soaring mid heaven far beneath us, a mist resting upon the tops of the mountains that were passed on the previous day. But the eye soon got familiar to these lofty heights, and that nervousness that must be felt by all who are placed in such a position for the first time, soon wears off.

The cactus and a rush, with two or three kinds of mosses, compose the scanty vegetation. We passed two or three droves of llamas, about fifty animals in each drove, laden with cases; they have no harness on, and the boxes are secured to their backs by a rope that passes round the body: they carry about 130lb. The Indian who drives them has a sling, and these nimble animals instead of keeping together are scattered on either side amongst the rocks, like goats, feeding on what they can pick up on their way. When any one lags behind or



gets too far from the others, the Indian slings a stone at him, taking care not to hit him, as he would probably break his slender legs; but the stone drops just behind or between his legs, and the animal comes scampering down to the rest; and in this manner, by sling and stone, does he keep subordination in the flock. When he wants to unload for the night, he gets them together by calling, and then passes a string round all their legs and ties them in a bundle, where they remain until they are unloaded. They are then set loose to get their supper where best they can; in the morning they are called, tied, and then loaded.

At noon of the third day we were about the highest part of the pass, and at the perpetual snow line. The sun was at its meridian height and nearly vertical. Numerous streams were running from the sides of the snowy peaks that were on either side. And as we looked eastward what a scene of desolation met the eye; instead of the frightful precipices of the Pacific side, there were planes covered with loose stones, all of which had been thrown from volcanoes, and varied in size from large masses of many tons weight to small fragments. The ground was completely covered, and the road had been formed by filling up and levelling, by placing the smaller stones between the larger, and after all that trouble it is but a very rugged one. As far as the eye could reach were snow-capped mountains, most of them volcanoes, amongst which were most conspicuous the Illemani and Sorata, that rise from the centre of a plain, and reach a height of 25,000 feet. Some of the volcanoes are active, and others have slept for ages.

We halted for a short time, but the cold was intense, and we had to wrap ourselves in our ponchos, and cover our feet with the wool of the alpaca that we found in a hut at a place called Jarcora, a few miles to the eastward of the pass. Here there were two or three Indian huts, built of loose stones. Not a single person was to be seen. It is principally used as a halting place, and by those Indians who hunt the vacuña. They have a very primitive way of shutting up their houses, by building up the door way with stones. Our muleteer made an entrance into one, where we sheltered ourselves from a heavy hailstorm.

I was now beginning to suffer from the *siroche*; my head aching, pain in the temples, and great sickness of stomach, far worse than sea sickness. I am not prepared to say what is the cause of this malady, or why ascending to a great height should produce it. Mules not unfrequently drop down dead, and sometimes man. A few months after my visit, a young Englishman was lost from this cause when on his road to Lapaz. Although I had heard of the *siroche*, and was speaking about it the day before, it never occurred to me that I was then suffering from it; no, I thought positively that I was dying. We again mounted our mules, and I was determined not to impede the party, but to ride on until I dropped from the saddle. Our road lay on the side of a mountain, slightly descending, and covered with those loose stones. For twenty miles further did I sit in the saddle, thinking that each hour would be my last. Our mules were tired, the ice

forming under our feet; there was but one more hour of daylight for us, so our muleteer was now anxiously looking out for a halting place. Shortly we came to a place where there were three huts, built of loose stones, about six feet high, the roof covered with rushes. It was a very primitive affair. It could only afford one room, with a raised bank of earth at one end for a sitting or sleeping place. We found it unoccupied, with the door built up; so we let ourselves in and brought in our traps, and then turned our luckless mules adrift for the night, to sup as well as they could on a few rushes and a little moss.

Fernandez spread his bed on the raised seat, and the moment my spurs were off I was on my back, whilst my companions were making a fire with some rushes and the droppings of the llama that are always found in great abundance at these halting-places. I did not join the festive board, but after supper Fernandez administered a little warm brandy and water. The water boiled at  $164^{\circ}$ , giving a height of 20,466 feet. Thermometer at noon,  $52^{\circ}$ ; 2h. p.m.,  $58^{\circ}$ ; and at 7h. p.m.,  $28^{\circ}$ .

I was alive in the morning, which was more than I had expected, but could not saddle my mule, and had to be lifted on to it. I wanted to be left behind to die, but this they would not hear of. Well, as they could bury me anywhere on the road under a heap of stones, I started. We were now about to descend upon one of those large plains that form a series of steppes until they reach the pampas; they are surrounded by the tops of mountains that look like hills from the plains. It is evident by the marks of water that they have all been lakes, until the water has found its way out by wearing a channel for itself through the rocks on the lowest side. Through the middle of each there runs a stream, that sometimes deserves the name of a river, and by the side of this stream the traveller passes through a mountain gorge from one plain to another. These gorges, or passes, are sometimes seven miles long, and the path through them is most difficult and dangerous. The mules have occasionally to be unloaded, as there is not room in some places for them to pass with anything that protrudes from their sides. The sagacity shown by these animals in stopping on coming to a doubtful place is very remarkable. It frequently happens, nevertheless, that they are thrown down from great heights into the river by their loads striking against a projecting rock. On descending to the first plain I was immediately relieved from my sickness, and then it only occurred to me that I had been suffering from the sirocco, which greatly relieved my mind, as I thought that I was seized with some malignant disease.

It has always been to me a more nervous work to go down a steep hill on the back of a mule than to ascend one, as in the latter case you do not see your danger, whilst in the former you have it always full before your face. In going up, one can most affectionately hug the mule round the neck; whilst in descending one is afraid even to take hold of its tail for fear it should kick, which would certainly be its last kick. Sometimes these animals will place their fore feet together and sit down on their haunches, and then quietly slide down.

On these occasions you do not attempt to interfere, but quietly sit still and trust to the good sense of your mule, which is not so great an ass after all.

These higher plains have a wild grandeur about them, and for rock scenery cannot be surpassed. We toiled across these rugged basins, our mules carefully picking their steps, until midday, when we dismounted to enjoy a slice of sausage and a biscuit, as well as to rest ourselves by lying at full length on the ground, a great relief after being many hours on the back of a mule.

A little before sunset we observed a solitary hut before us, and finding nobody at home and the door built up as usual, we quickly made an entrance, brought in our saddles, &c., made up our beds, turned our mules adrift to get their supper—which they had a better chance of doing than on the previous night, then lighted a fire and commenced preparing our evening meal. I do not smoke, but certainly I must confess that when the Ariero and Fernandez got their steam up a pipe appeared to be an invaluable thing; it did me good to look at them.

After supper I took a short walk and found a few inclosures for alpacas and some scanty grazing in the neighbourhood, but very little soil fit for cultivation. The thermometer when we left, at 5h. a.m., was 32°; at noon, 67°; and at 5h. p.m., 44°. Water boiled at 179°, giving a height of 13,400 feet. After our hard day's ride we took to our rest directly after supper, and found that thirteen hours in the saddle was quite sufficient to make us sleep soundly.

We started again a little after 5h. a.m., and as we descended each plain became more fertile, and soon we arrived at Alezion, where grass was permitted to grow, and then we met our old companions the buttercup and daisy. How gladly did I pick them; nothing reminds an Englishman of home and childhood more forcibly than do these simple flowers. From the winding course of some of these streams, that are now as large as a small river, we had to cross and recross several times. Every one knows the old saying, "As stubborn as a mule." Unfortunately, on this day we had many proofs of its correctness. If the mule could not see the bottom of the stream that it had to pass, or had reason to think that it might be too soft for its weight, a scene was sure to take place. Mine was a good mule,—a very good mule, but on this one particular point it was perhaps a little too obstinate even for a mule. On arriving at a part of the river that was to be crossed the two other mules and the horse generally went over without much difficulty, but my "ferry-boat" would put his nose close to the water and smell it; then, with his long ears stuck forward, he would try to see the bottom through the muddy water. After giving him sufficient time to make up his mind, I used to try and persuade him with my spurs and a good stout cudgel, but they never had any effect on the brute. Poor Fernandez and the Ariero would have to come back and place themselves one on either side, and then, inch by inch, force him over.

But, notwithstanding these drawbacks, as the day was fine and the temperature most agreeable, we rather enjoyed travelling. A little before sunset we discovered a hut prettily situated near a rivulet at the entrance of a valley, and as there were llamas and alpacas grazing around it, we concluded that it was inhabited, so we dismounted and followed our Ariero, who, without the ceremony of knocking, opened the door. On entering we found a young Indian and his bride, who, it appeared, he had just brought home. The muleteer could speak a little of their language, and at once told them to "Clear out." I am sorry that I do not recollect the Peruvian for this expression. However, these children of the sun quietly took the hint and gave up possession; on which we immediately took off our accoutrements, and made up three comfortable beds by spreading the wool of the alpaca and *vecuña*, which we found in great abundance in the hut. There was good pasturage for our mules, and for ourselves we found a fore-quarter of llama banging up, which was instantly taken down and consigned to the pot for a jolly supper. Water boiled at 180°, giving a height of 12,960 feet. Thermometer at 5h. a.m., 40°; noon, 64°; 5h. p.m., 52°.

Whilst the evening meal was preparing Fernandez and the muleteer enjoyed their pipe and I took a stroll. The scenery was very pretty: an undulating country, a great deal of cultivated land, wheat and other European grains, potatoes, and some other roots, but no timber, only a few small bushes.

In the course of our ride we saw a great quantity of quail and some wild turkies, also an animal, in size and colour like a tabby cat, which they call a *biscatio*; but the game most prized and really valuable is the *vecuña*, the hair of which is so fine and soft that it is sold by the ounce: a great many were seen in the morning. The Indians catch them by placing a quantity of sticks at some yards distance apart, supporting a line with pieces of black cloth attached to it. The *vecuña* are then driven into the inclosure, and are afraid to jump over or pass under the string with these pieces of black cloth shaking in the wind, and are thus easily taken. Shortly after our supper off the shoulder of llama (which the least said about the better) we retired to our beds: the beautiful soft material that they were composed of made our sleep doubly refreshing.

Next morning we started a little later than usual,—I suppose we were unwilling to leave those comfortable beds. On going outside the hut, at a little distance I observed the owners of our mansion. They had been sleeping under a wall in the inclosure for the alpaca. Notwithstanding the lady was then making her toilet, my appearance did not in the slightest way incommode her. Her husband—the lord of the creation—was stretching himself and enjoying a good scratch.

We had to pass through a most remarkable break in the mountain, through which the river ran, called "La Estrecha de Angostura." It is about seven miles long, and the water has cut the rocks into the most fantastic shapes imaginable. At this time of the year the morn-

ings are clear and cloudless until about 2h. p.m. The sky then becomes covered with thick clouds, and for about an hour the most tremendous thunderstorm rages. The lightning is terrific, and great loss of life occasionally occurs; but to encounter a thunderstorm in this narrow pass generally proves fatal to some of the party.

The path follows the turns of rivers, sometimes on the top of cliffs and at others close to the water's edge. The heavy rains frequently displace large rocks, which fall down and block up the path completely, when the beasts have to be unloaded and the packages carried by hand, the mules being led until the difficulties are surmounted. On these lower plains there is good pasturage, and large herds of cattle are seen here feeding. They of course belong to the Spaniards, and the Indians only have the care of them. It is about this altitude that the tree is found that produces the Peruvian bark. We met some small birds, one black and yellow, and also the cardinal. Thermometer at noon, 64°.

About 4h. p.m. we arrived at a village surrounded by hills that were cultivated. The plain was covered with flocks. In the evening the llama and alpaca come home, and are enclosed in pens for the night. I have been in Italy, but I never witnessed so lovely a night as this. The moon was at her full, and as she rose from behind a snow-clad mountain and threw her silver light over the scene, the high peaks, or rather truncated cones, of the volcanoes of Illimani and Sorata appeared close to us, although they were upwards of a hundred miles off. What a place for an observatory! A few degrees further to the North and from this height both poles could be seen, and consequently every star in the heavens could be observed from one place. No other part of the world could offer such a site for the astronomer.

In the course of my observations I remarked that the locks on some of the doors here were exactly similar to those I had seen in Egypt. Instead of our latch-key there was a flat piece of wood with round pegs in it of different lengths, stuck up. The wards were holes placed at irregular intervals, and before the latch or bolt could be raised there must be an agreement of the pegs and holes. Then, again, as there was only a small hole for the key to enter, it is just as difficult to pick as our locks.

The Indians vary in height from four to five feet, long black coarse hair, no beard, olive complexion, long eye of the Mongolian, and good teeth. The men are always chewing the leaves of a plant called coco, which enables them to go through great fatigue and to do without food for a long time.

In the morning we started in good spirits, as we were to arrive at our journey's end in the afternoon. Our animals, considering what they had gone through, did not appear to have suffered much,—certainly no horse could have stood the fatigue so well. The horse that accompanied us had nothing to carry and only had to keep up with the mules; still it was completely knocked up, so much so that the speculation of bringing the animal proved a complete failure.

It was now the season in which bulls are in the most savage condition, and as I passed across some of those plains that were covered with cattle it was not very soothing to my feelings to see one of these gentlemen with short horns pawing the ground and tossing the earth into the air. So, as I wore a red poncho and my mule could hardly get out of a trot, any one who has seen a bull-fight and knows how these animals object to that colour, can easily imagine how I enjoyed my ride.

We were now in a beautiful fertile plain, surrounded by undulating hills, all cultivated. The Indians were now met in great numbers. About noon we got sight of the lake of Titicaca; and shortly afterwards we saw the town of Puno, beautifully situated on its margin.

The town of Puno contains about 9,000 inhabitants, not all pure Indians, but a mixed race, with many South Americans. They have a fine cathedral, market-house, and Governor's residence. Some of the merchants' houses are well built, and the streets are paved with curb stones.

The valley in which Puno stands is called the valley of Desaguadero, and extends some 600 miles. It contains several towns, and if the country were not in a continual state of revolution, would no doubt be thickly populated and well cultivated. But very little is really known about this part of Peru. Pentland visited it in 1836, and he gives the height of this town 12,000 feet, and it is on his authority that we have the height of the Sorata.

At a little after 4h. p.m. we entered the town, and drove to a posada, where, after seeing that our mules were well provided for, we enjoyed a good dinner.

The next day I called on the Governor-General Flores. Visited the market and saw some very fine-looking country girls selling fruit. They were dressed something like the Swiss,—short petticoat, with a headdress similar to those worn by the peasants of that country. The town is about half a mile from the lake of Titicaca, which is the largest on the South American continent, and in many parts no bottom has been found. Two rivers run into it, and I believe a small one out of it; however, there is no well authenticated account of this part of the world. There is a silver mine close to the lake, that was shown to the Spaniards on their first coming to the country. The visitor enters it in a boat through a canal; there are several locks, and in this manner he is taken into the mountain about half a mile, when he gets on a railroad. It is owned by some Englishmen, and is tolerably remunerative.

The boats that are on the lake are made by lashing a quantity of reeds together in the shape of a hammock, and two of these hammocks form a boat; of course the passenger has to sit on them: they carry a sail made of matting. There are a great quantity of water-fowl, and the scarlet ibis and also the otter are seen in great numbers on the shore. I had a day's shooting on the lake, and, although I did not do much execution, my companions made a good bag. I found that I

was not the only sailor so far inland, for I saw my old friend the seagull doing remarkably well amongst ducks, teal, and widgeon. Those sailors make themselves at home everywhere. I think that I may say that, although I was not an admiral, yet certainly I was the highest naval officer *afloat*. Fancy being on a lake as high in the air as Mount Vesuvius placed on the top of Mount Etna.

In some very pretty rides that I had it was most distressing to put my horse to a gallop; and I found also that when I accelerated my own steps to a run I soon lost my breath, and that it took a long time to regain it, during which time I was left gasping very much like a fish out of water.

It is said that one of the Incas, when he found so much trouble brought upon his people by the Spaniards love of gold, threw a long and massive gold chain into the lake. I must confess that more than once I have looked at the bottom in the hope of seeing something glittering.

The older inhabitants state that the Indians know of many mines that were worked in the days of the Incas, but will not point them out for fear of being made to work them by their present masters.

The object of Fernandez's trip was to purchase gold dust from the natives; who, when they hear that a merchant has arrived to buy gold, come from the country to dispose of it. I was present at one sale. The Indian goes into the merchant's office, and after he has taken from his belt the precious ore, the merchant runs a magnet through it and clears it from any spurious metal; he then weighs it, when he knows exactly what he can afford to give for it, and as the payment is made in goods, the merchant, I should say, has the best of the bargain.

About three centuries before the arrival of the Spaniards Manco Capae and Mama Ocolto appeared on the banks of Lake Titicaca. These two personages, male and female, of gigantic stature and well clothed, declared that they were the children of the sun and sent to reclaim the human race from its misery, introduced a new language, and taught them to cultivate the soil. Who these two people were or where they came from is rather a difficult question to answer.

After staying three or four days at Puno Fernandez told me that he could not go back as soon as he had intended, for he was obliged to go as far as Casco. I was very sorry to hear this, as it would oblige me to return by myself, fearing that the formidable R. would be placed against my name on the ship's books if I staid any longer. But I found that two sick muleteers were about to start for the coast, so I joined their party, bought a small copper kettle and a Bologna sausage for my own use, and we laid in half a sheep, with some potatoes, for the party.

The next day at noon our new party started, and having travelled eight leagues stopped at an Indian hut for the night, sharing it with some old women, who crouched into a corner, leaving us the raised part for our beds. After supper I boiled water, and when I took my

thermometer out to get the temperature, the old women, who had been anxiously watching me, darted out of the small door when they saw me put the thermometer into the water, uttering a scream which betrayed their intense fright.

We started next morning at 8h. a.m., returning by the route that I had come and resting each night at the most convenient place. On one occasion we were overtaken, when amidst the highest peaks and crags of the Andes, by a thunder-storm, and had to make for a hut that was seen in the distance. The crash of the thunder was tremendous, each rock sending back the echo. The whole sky was covered by a dense thick cloud, the lightning was blinding, and the hailstones were of a size too dangerous to be welcome. Never did I behold so grand a sight,—never did I feel so much impressed with the power of Almighty God,—and never did I feel more intensely than I did on that memorable occasion the utter insignificance of mortal man!

My friends, the sick muleteers, joined a party that was coming from La Paz, so I came down the Andes by myself in two days from the Pass. I saw a large rock that had hieroglyphics on it; from whence the ocean could first be seen.

When I arrived at Jacna I returned the *breeches* with grateful thanks for the service they had rendered; and when I got on board, the captain was very glad to see me, and still more so that I had had an opportunity of seeing a part of the world that so few Europeans have seen.

### *Thermometer Height.*

My thermometer was one of those common ones mounted in tin. I took great care in getting the temperature of the boiling water, and carried on my observations until I arrived at the valley of the Desaguadero, whose height above the sea was determined by Pentland barometrically. I then found that my heights were 6,000 feet too high, and corrected them accordingly.

### *Example.*

Upper station.	Lower station.
Thermometer in open air = $t'$ . . . . .	$t$ and $T'$ . . . . . $T$ temp. of mercury.
Height of barometer corresponding to boiling water . . $B'$ . . . . .	$B$

Palca, water boiled  $183^\circ = B' = 16.312$ ;  $B = 29.921$ ;  $t' = 60$ ;  $t = 80$ .

$B = 0.000870$	Log. D 9.419294	$(t' \pm t) =$
Log. $B' = 1.212507$	C 0.000990	
	A 4.797680	
1.213377		
Log. B 1.475976	4.217874 = 16,515 feet	
	-----	-6,000 corr.
D 0.282599		-----
		10,515 feet.
		-----



Pass of Jarcora, water boiled  $164^{\circ}$ ;  $T' = 28$ ;  $B' = 11.892$ ;  $T = 80$ ;  $B = 29.921$ .

B	0.002660	Log. D	9.620251	
Log. B'	1.056600	C	0.000900	
	<u>1.058860</u>	A	4.801870	
Log. B	1.475976		4.422521 = 26,456 feet	
			<u>—6,000 corr.</u>	
D	<u>0.417116</u>		<u>20,456 feet.</u>	

First hut, water boiled  $179^{\circ}$ ;  $T' = 44^{\circ}$ ;  $B' = 14.913$ ;  $T = 80$ ;  $B = 29.921$ .

B	0.001560	Log. D	9.478303	
Log. B'	1.173536	C	0.000900	
	<u>1.175096</u>	A	4.808670	
Log. B	1.475976		4.287963 = 19,400 feet	
			<u>—6,000 corr.</u>	
D	<u>0.300880</u>		<u>13,400 feet.</u>	

Indian hut, water boiled  $180^{\circ}$ ;  $T' = 52^{\circ}$ ;  $B' = 15.254$ ;  $T = 80$ ;  $B = 29.921$ .

B	0.001220	Log. D	9.464445	
Log. B'	1.183384	C	0.000900	
	<u>1.184604</u>	A	4.812270	
Log. B	1.475976		4.277615 = 18,960 feet	
			<u>—6,000 corr.</u>	
D	<u>0.201372</u>		<u>12,960 feet.</u>	

N.B.—As I started with only having two hours' notice, I was only able to get a thermometer before leaving, and therefore I could not get any of these heights in any other way.

E. D. ASHE.

#### THE CHANNEL ISLANDS AND THEIR DEFENCES.

In the following letter on the Harbour of Alderney, Captain Sheringham alludes with good reason to the great importance of completing those works, which have occasionally been the subject of unfavourable remarks in our House of Commons when the vote for them has come forward. The objections to that vote have arisen more than anything else from a want of consideration of the whole subject of the Channel Islands and their importance to England as a naval station. Alderney and its works form but a portion of the plan of defences which it is necessary should be made to preserve them as

British territory, for it should never be forgotten that they must be so if we intend to preserve our command of the Channel. Allowing, for the sake of argument, that these islands have been wrested from us and occupied by France: not only would Brest and Cherbourg be thus connected, but the islands would be the rendezvous of a squadron, which, with the aid of steam, would command the entrance of the Channel. Not a vessel could pass East or West of the Channel Islands without being intercepted.

We need not refer to the opinions of the Duke of Wellington or Sir John Burgoyne on this momentous subject. Any one can see, if he will but open his eyes, that the power which holds the Channel Islands holds also the key of the western entrance of the English Channel,—commands, in fact, all ingress and egress therefrom in that direction. Therefore, if we are to keep the Channel Islands,—if we are to keep the command of the Channel, and, consequently, the approach to our own shores, we must complete the works at Alderney, for those works, in these altered times, are essential to this object. To deprecate those works is, in fact, taking the part of our neighbours; who, while *they* can remark on them as being “peculiarly offensive” to France, seem to have no compunction in constructing such works on Chaussey, or in projecting a new steam arsenal at Lezardrieux, not very far from them, as appears in our June number. After all, we are but strengthening our weak points,—those vulnerable places which have become so as the common result of the altered state of things produced by more formidable ships and their heavier guns, compared with those of former days.

Much misconception seems also to have arisen on the too common application of the term “refuge harbour;” refuge from the storm, and refuge from the enemy being two very different things. Although Alderney, with its works completed, might supply both, it was never intended for the former; and should be rather classed as one of necessity than by any other name, for the reasons above given. Alderney, in fact, is an important outwork of the Channel Islands, and unless we intend to give them all away our hold of it must be stronger than it has been. Alderney, with the rest of the islands, must be either French or English. Should it ever belong to the former, the power of England must be then on the wane, and her maritime supremacy fading away,—a condition which our ancestors would never allow, and which must not be permitted either by ourselves or by our descendants.

The works on Chaussey are very well known to be going forward, and are alluded to thus in the *Army and Navy Gazette*, while the allusion to our own have been noticed at p. 286, and those of Lezardrieux at p. 308, of our June number.

“It is rumoured that in addition to the fortifications projected by the French on the Chaussey Islands, on the coast between Jersey and France, the Emperor has made provision for forming in their immediate neighbourhood a camp of 40,000 men. We shall probably hear more of the matter before long; but, in the meantime, the value of

Alderney will not by this information be a whit lessened in the estimation of all thinking men."

*London, July 6th, 1861.*

Sir,—Having accompanied Mr. Walker, as Admiralty Surveyor, on his visit to the Channel Islands, in the year 1844, for the purpose of selecting suitable sites for the construction of such harbours as it might be considered expedient to form in that important position for great national purposes, I feel in some measure called on to refute, so far as my opinion and testimony may be of value, the mistaken idea which in some influential quarters has arisen both as to the object the government of the day had in view in their construction, and as to the value of the work now in progress at the Island of Alderney.

I venture to submit that there is no warranty for the hasty conclusions and wild declamations which we so frequently hear poured forth on this momentous question, and that if a little more study had been given to the subject—and a little more knowledge obtained on the points at issue—much of this indignation at the reckless profligacy of succeeding governments might have been saved, and the public mind spared from that highly perturbed state which has been the result.

Without stopping to inquire whether Alderney is or is not a convenient port of refuge from the storm, or suitable for the accommodation of ships of the line or gigantic *Warriors*,—as far as my knowledge extends it was never expected or intended to be so.

The Harbour of Alderney was intended as a defence for the Channel Islands and as a port of observation on the most important naval station in France. It was designed as an auxiliary and an outlying naval and military post to the great work which was about to be commenced at Portland, and with which it was proposed to be brought into instantaneous communication by means of the submarine telegraph. It was designed to hold a certain number of war steamers (not ships of the line, as has been erroneously stated), available on an emergency for checking any hostile attempt on the part of an enemy until a more important force could be collected, either from Portland or elsewhere.

It was designed under a conviction that it was an eligible position for aggressive operations, and as a *port d'appui*, from whence a small squadron could harass an enemy's trade.

It was designed as an asylum for our own passing trade in the event of surprise by an enemy's cruisers, when it might be impossible for our ships to gain their own shores, although quite possible to escape and find refuge under the guns of this strong fortress.

I am not even disposed to yield the point that refuge in bad weather may not be found in the Harbour of Alderney when finished, as it is exposed only to the comparatively harmless winds in the Channel from the N.E. I maintain, moreover, that it is a place of the utmost importance, if only for the security it will afford to our disabled ships, as well as to those that might be closely pursued by a superior force;

and the masters and owners of our merchant ships may yet have to be thankful that fortified Alderney and its harbour, however imperfect it may be considered (an opinion in which I cannot join), was under their lee in the hour of need.

That Alderney is not calculated to hold many of the immense ships of the present day no one denies; but it must and ought in simple honesty to be borne in mind that when the construction of the harbour was first determined on, the largest war steamer England possessed—and, indeed, for four years afterwards—was the *Terrible*. But, after all, what is the argument worth? Merely, that it will not answer all the purposes that could be desired; while, on the other hand, it is undeniable, as proved on the competent authority of a vast majority of professional opinions, that even admitting that it is not all that could be wished, as a military post it will be of immense importance in the event of a war.

I would therefore, in conclusion, state, with all deference, that in my opinion the Prime Minister and Sir James Graham deserve the highest praise, for having by their powerful aid induced the House of Commons to grant the necessary supplies for completing the harbour and fortifications of Alderney.

From the opinions contained in my letter to the Hydrographer on this subject in 1844, when I made the survey of the harbours in question, I have no desire or reason at this distance of time, either as a naval officer or a nautical surveyor, to shrink,—although, perhaps, they might in some degree be modified from the many subsequent and important changes which have since taken place.

I am, &c.,

W. L. SHERINGHAM, *Captain, R.N.*

*To the Editor of the Nautical Magazine.*

#### OUR COAST-LINE AND ITS CHANGES,—By *S. M. Saxby, Esq., R.N.*

The crowding of the English to the sea-side for recreation in the summer months is a reasonable characteristic of a maritime people; but it would repay our curiosity if we ask,—In what consists their main source of enjoyment while there? It cannot be the bathing alone which attracts them, for a very large number do not bathe at all, and, indeed, in some places natural disabilities discourage it. Is the salubrity of the air so peculiarly limited to the precise coast-line as to be available there only? However ridiculous the remark may at first appear, there is perhaps *some* enticement in the very seaweed; for with many its presence, as detected in the sea breeze, is considered essential to that “purity” which the invalid has been accustomed to attribute to air thus “flavoured.” Many watering places possess little of the romantic in scenery to amuse us; in others a positive flatness and sterility comport with evidences of ruin in all that is

strewn around, whether it be the fisherman's hut, or his lobster pots,—his boat, nets, spars, sails, &c.,—or even the venerable owner himself,—all seem aged, worn, and wasting.

It cannot be that the wide expanse of ocean specially suggests or matures ideas of freedom and repose, for if so the multitude would rather rush to the hill side or the mountain top for the enjoyment of still more distant prospects. No, there must be, to say the least of it, a *charm* in the sea coast which attaches to that only. In the marine herbage,—in the living and grotesquely moving tenantry of the waterworn rocks,—in the ever varying playfulness or in the angry lashings of the surf,—there is an interest to which few are insensible. But, apart from these, may not the charm exist chiefly in the sea-side ramble? in which, usually, all considerations of animal or vegetable life, &c., seem to be absorbed into one involuntary feeling of serious thoughtfulness, suggested, possibly, even on the most pretending coasts, by continual evidences of the power of an unceasing agency, which, even in the rounded fragments of shingle, every footstep reveals;—just as the ticking of a clock suggests to the solitary the completeness of his solitude, and in like manner attests the unceasing operations of *time*, the insatiable *edax rerum*.

It has oftentimes occurred to me that the involuntary feeling referred to (and which assails us more usually at the sea-side than elsewhere) admits of profitable encouragement. Such rambles are generally indulged in when the cares of business or professional anxieties are purposely *tabooed* for the time. At those seasons the mind yearns for novelty, and the greater the contrast such novelty affords to the daily home occupation of the Rambler, the greater enjoyment in most cases results. Do not many of us remember sundry accidental—perhaps, at the time, *serious*—inconveniences and mishaps occurring at the sea-side, the recollection of which we strangely cherish in the store-house of the mind, and, under the name of “adventures,” delight in recalling as incidents pleasant to refer to?

It is scarcely a question whether this unbidden thoughtfulness to which we have alluded be not capable of some definition or elucidation: to trace it to a source is our present object. Let us take an instance. We are walking by the shore, gazing vacantly at the shingle, or shells, or sand in our path, without an object or purpose, without (if it be possible) a known care,—when, momentarily and mechanically averting our eyes, a tiny ripple of the calm sea near us is seen to drive or gently move a few inches landward a belt of foam or froth, or the small floating fragments to be found usually at the water's edge.

The mind's eye, rather than the mind itself, witnesses other and like commonplace incidents, until the flowing of the silent wave reaches the cliff foot itself, then and there to resume its unmistakable, often inappreciable, but certain work of destruction. All persons would not be impressed alike by these trifles. What care the many for the crumbling of a cliff or the destruction of the shore? Let, however, the involuntary sigh which the very dreariness of such

scenes will sometimes exact, turn the current of our thoughts towards that inevitable period when we too must yield to the destroyer; and the most simple incident is at once hurriedly pressed into confederacy against such unbidden depressions, and we immediately seek the materials with which to found a new train of more pleasurable ideas. Let, for instance, a single speck of sail appear on the distant horizon, and the indispensable telescope abets our purpose and restores us to—to what?—to a wilful state of mental inanition.

But such is really an unprofitable rejection of a rich offer. The tiny wave and the froth and the cliff foot, if fairly noticed, might have led the rambler to mighty and highly interesting investigations; for, as a small key may unlock a large cabinet, so can these trifles direct us to many a secret and instructive paragraph in the great book of nature. Let us consider in what manner. At such times, where are we? Standing upon a shore which forms a sea boundary,—upon a *varying* coast-line. We ask,—Has this altered from what it was years, centuries, ages since?

To follow up this question is the special object before us, and no extraordinary proficiency in science is called for in order to arrive at successful conclusions. It is just one of those questions which are adapted to the general intelligence of the moderately educated. A fair notion of the neighbouring coast, a very little acquaintance with superficial geology, and an observant eye, with an average share of common sense and some judgment, will often enable us at such times without presumption to solve one of the most interesting questions which can present itself at our leisure moments.

But, in order to lead our readers along with us, we will suppose ourselves about to start on a visit to the coast, with our chart or map spread before us for a little previous acquaintance. Few parts of the shore of our island would disappoint us; but let us for precision take for example the coast of Kent. We purpose visiting, say, Dover or Walmer, Deal, Ramsgate, Broadstairs, Margate, or Herne Bay, &c. The following would most probably be the course of reasoning we should find convenient, and the method would apply to any other coast-line, such as that of Cheshire, or Hampshire, Dorset, Lancashire, &c., as well as to the Straits of Dover and the estuary of the Thames. It is seldom difficult to discover some clue to the nature of the change which has taken place. The "oldest inhabitant" is proverbially sapient and loquacious, but his legends become so tinged from local prejudices that they are too frequently amusing rather than instructive; truth, however, is generally an ingredient in these traditionary relations, and it is for us to extract it as best we can.

In the district we have chosen for consideration, viz., the coast of Kent, our venerable friend would soon acquaint us with the antiquity of Richborough Castle; and the slightest further inquiry would inform us that it once stood on the sea shore, though now it is far distant. And, again, we should hear of the Goodwin Sands having been formerly dry land, which the sea overwhelmed. Also, that Dover Castle was built before the Christian era;—that Thanet was

once really an island, surrounded by a partly navigable arm of the sea;—that Reculver once stood a very long way inland, &c.

We have here a string of *traditions* suitable to our purpose. We turn from them to history itself: from which we extend our resources by learning that Richborough was built by the Romans as a sea-side fortress, as was also Dover Castle; which latter remains so still, while Richborough is very far from the sea-side. Sandown Castle, near Deal, was built by Henry VIII. The arm of the sea insulating Thanet was called the Wantsum, and was at a very early period some three or four miles across, while in the time of the Venerable Bede it had diminished in width to about three furlongs. The estates of Earl Goodwin were overwhelmed by a sudden irruption of the sea. We have here a string of *historical facts* on which also to exercise our judgment in connection with such conclusions as a few rambles along the coast will certainly suggest.

In our walks we shall find that the chalk cliffs at Dover must have long presented a mighty barrier to the advance of the sea, while the strata from Walmer Castle to Pegwell Bay are soft and yielding. Chalk cliffs also are the present sea boundary of the Isle of Thanet, until at Birchington, beyond Margate, the soil is again of a marly plastic nature; and this continues along the still crumbling shore of Sheppy to its N.W. point at Sheerness.

Having collected these general observations, we should naturally be desirous of knowing something of the depth of the sea in the neighbourhood, and should turn to our chart for the soundings. The striking circumstance of the deep channel of the Strait of Dover being *eastward* of the chalky shoals lying now midchannel, and known as the Varne and Ridge, and which is also eastward of the Goodwin, &c., at once suggests that an enormous inroad of the sea may possibly have contributed to the form of our present coast-line of Kent; and we turn eagerly to review our *traditions, historical facts*, and ideas formed from *personal observation*, in order that our several links of evidence may form a chain connecting the former state of things with the present.

We may now also without presumption think of indulging in an hypothesis; and, with a convenient coast chart before us, could scarcely fail to arrive at the following singular and highly interesting conclusions, which are probably near the truth,—and we will even gratify our vanity by throwing our pleasant speculations into the form of narrative.

At the far distant period when great convulsions of nature gave a general form to the European continent, the Atlantic gained access to the German Ocean by what has been long called the Strait of Dover; and this strait was bounded as at present by the sea shore about Cape Grisnez, on the French coast, and Dover cliffs, on the English;—neither of these shores having since (probably) suffered much change at the points named.

The south-eastern promontory of Kent was then far more extensive than it is at present, and its ancient outline may be thus described.

From Beachy Head the line of coast continued eastward with an easy sweep, trending northerly, till it passed along the East side of the dangerous shoal, now in mid-channel, called the Ridge; it then passed the Varne, another shoal (both of chalk rock), and joined the present coast-line between Dover and the South Foreland (which appears to have undergone very little alteration); thence continuing with a very slight flexure until it passed near the South Sand Head of the present Goodwin; from that leading again northward along the East side of the Goodwin, with more or less curve, until it reached the extreme N.E. promontory of Kent, *the present Long Sand Head, which then must have formed the southern entrance point of the ancient Thames*,—the northern having been evidently in the line of the Gunfleet and the Shipwash. There is evidence for supposing the Thames to have had, at the period referred to, at least two entrances, viz., the present Black Deep, on the South, entering by the Long Sand Head, and the Swin, entering on the North. The intermediate delta, through which now run the Barrow Deeps, &c., being then probably dry land. The two streams of Thames flood would in such case have met somewhere between the present Nore Light and the western end of the Oaze Sand, and near this the Thames must have received its principal tributary, the Medway.

Strange and fanciful as some might at first consider these assertions, strong evidences exist in their vindication. We shall explain them.

The strength of the flood tides at the "springs" in the English Channel, especially when aided by the S.W. winds, so prevalent at this part of the globe, would, in their almost direct infringement on the soft marly strata of the French coast southward of Cape Grisnez, have gradually scooped out the land, as appears to have been the case. This would have given a *new direction* to the stream of flood in the Strait of Dover; and before the excavation to its present extent had been completed, the tide would have been thrown with such force upon the part of the land about the Ridge and Varne, as to break through that insufficient barrier of chalk, marl, &c.; and this once accomplished, the wearing away of the contiguous Kent and Sussex basin, or upheaval of Weald clay and Hastings sand, would have easily occurred. Such boring operations would, however, have received a check at the solid chalk cliffs at Dover, which most likely suffered very little in consequence; but as these chalk strata dip under the marl just beyond the South Foreland, at Kingsdown, all beyond Kingsdown for some miles would have presented very feeble resistance to the inroads of the tide,—so that the flood striking precisely upon this soft shore, as it must have done, would in time have scooped out a lagoon or gulf of about ten or twelve miles long by five or six wide. The Goodwin, being of chalky strata and harder, would resist longer, so that the eastern entrance of this lagoon would have been the South Sand Head, or thereabouts. The northern extremity of the Goodwin then joined the mainland of Kent.

*Now this state of things existed at the Roman period.* We assert



this on these grounds, viz.:—The mouth of the lagoon referred to was open to the daily action of the Channel floods, and the pressure of the tide at the entrance upon the thus pent-in water raised its previous high-water level, so that the sea overflowed the land and formed what was called the Wantsum, which occupied a space between the higher parts of Thanet and the hilly slopes commencing near Walmer and running to the north-westward. The entrance of this inlet would therefore have extended from near Walmer, on the South of it, to near Ramsgate, on the North, a distance of about nine miles across,—the inlet rapidly narrowing till it attained, at a part between Minster and Guston, a breadth of about two miles and a half. Off a promontory at which the South bank of this inlet suddenly turned to the westward stood a small island, at a distance of about a furlong from the shore. From its commanding situation, and its being near the very centre of the mouth of this inlet, the Romans built on it their stronghold—their *ritvpx*, the ruins of which we know as Richborough Castle, already referred to. That this, which is now a mile and a half from the sea shore, was actually once a water side fortress is attested by the discovery of the ancient sea beach along its foot, which is now a part of the South Eastern Railway.

Perhaps few districts have been so difficult to read as East Kent, from the circumstance of the sea having receded so much at several parts, while it is actually advancing at others.

It is probable that several centuries passed until the breadth of the inlet (called the Wantsum) decreased to any great amount. The excavation of the lagoon referred to was rapidly proceeding, and as more area was scooped out by the waters, the less would be the rise of the high water as compared with that eastward of the Goodwin; but whether the tide had succeeded in forcing a small passage through Kent north of the Goodwin, so as to liberate a portion of the water of the lagoon towards the north, or whether the advance of the waters in that direction had of itself tended towards the draining of the Wantsum, certain it is that in the time of the Venerable Bede (say in A.D. 700) the Wantsum was only about three furlongs wide, and this may have further diminished till nearly A.D. 1095, at which time, as history informs us, a terrible irruption of the sea overwhelmed the lands of Earl Goodwin, leaving them what we now see, a dangerous extent of sand banks, called the Goodwin Sands, partly dry at low water,—but having a chalk and chalk and marl under stratum, while the Wantsum became as it now is a mere ditch. The difficulty with antiquarians has been to reconcile an "*irruption of the sea at the Goodwin with a simultaneous drainage of the land at Richborough*." But it is highly probable that this irruption occurred, as it is said to have done, during some violent tempest or hurricane, and that the sea suddenly denuded the softer strata which lay eastward of the chalky cliffs of Thanet, and thus gave free passage to the flood tide inside the submerged Goodwin, through the present roadstead called the Downs, the clayey nature of the bottom of which renders it so good an anchorage for shipping. While all the shoals northward

of it, such as the Brake, and the various "knolls" and "knocks," as they are called, have chalky bottoms, the strata having been stripped at the time of the last grand inroad of the sea in A.D. 1095.

A word, however, before closing this. The shores of the Wantsum can even to this day be easily traced in their ancient limits; and an agreeable ramble inland from Deal, Sandwich, &c., would furnish ample proofs thereof. It is probable that the present Deal was not that at which Cæsar landed when he invaded Britain. The town of Deal stands upon the great level over which it is most likely the Wantsum flowed; but as the hills commence just southward of it, and pass along in a direct line from Walmer Castle past the ancient village of Upper Deal, (a mile and a half inland,) which actually stands on the ancient sea line, and which sea line extended to Sholden, Cottington, Sandwich, Richborough, &c.,—it is more likely that the Romans landed at *Upper Deal*, and not, as generally believed, at or near to the present Deal Beach.

Our hypothesis may yet need further support; for instance, the geology of the localities has been but vaguely touched upon. Nor will we in the present article consider it, because we intend to return to the subject, and from an extension of our rambles shall have opportunity in a more convenient stage of our speculations to adduce additional facts from it, in justification of further statements, which really increase in interest and importance.

---

#### FANNING ISLAND.—*An Incident.*

In the midst of the Pacific, not far from the equator, in lat.  $3^{\circ} 49'$  N., and long.  $159^{\circ} 20'$  W., stands one prominent among the many delightful little isles that stud this ocean, beautiful not only in its capacity to feast the eye of all who are interested in and admirers of the picturesque, but also in the nature of its soil, which so liberally gives birth to and nourishes the tall cocoanut and other trees nearly as useful and worthy of admiration. Almost alone in its solitary beauty—in itself a field of private enterprise—it enjoys an uninterrupted state of tranquil repose, broken only by occasional visits of whalers, clipper ships, and other vessels bound southward, which, after a day or two's stay, proceed on their route well pleased and agreeably surprised with a novelty which has seldom offered such a welcome recess from the monotony of an ocean voyage.

Fanning Island, the one alluded to, is in shape oblong, extending in a S.W. and N.E. direction; its extreme length about ten miles, and its extreme breadth about six miles. It is skirted, like most other islands of the Pacific, by a small reef extending all round the island, but only about half a cable's length from the beach, against which the ocean swell breaks, but seldom with very great violence. Outside of this

reef there is no danger of any kind. The belt of land which forms the island is about a mile average width, and densely covered with cocoanut trees, which produce fruit of the very finest description. The regularity of this palmetto forest is occasionally broken by conspicuous gaps, leaving thick clusters of trees standing apart with a low coral space between.

One of the principal features which gives value to the island, is the possession of a spacious lagoon, the entrance to which is on the S.W. side. The width of the channel available for vessels is about 100 fathoms. The bottom of the channel as also that of the lagoon is of coral, variegated in colour and quality. There is excellent anchorage for ships, both at the entrance and on the West side of the island, at a place termed Whalemens Bay. At the latter place, the depth of water ranges from 8 fathoms to about 15, half a mile from the beach and upwards. Here ships of the largest class have at times anchored to procure a supply of fresh water, which is abundant adjacent to the anchorage. In the harbour, within the lagoon, the holding ground for ships at anchor is good, and there is sufficient room for several vessels when properly moored, to lie in perfect safety for any length of time.

Through the kindness of the proprietors, every facility is offered for procuring firewood and water of fair quality. The lagoon abounds with fish of the very best description, and there has never yet been an instance of poisoning from eating them. The entrance varies in depth from 4 to 6 fathoms; inside the lagoon the range is from 4 to 9 and upwards. The Trade winds blow steadily from the eastward almost all the year round, and the island is seldom or never the scene of any very boisterous weather. The months of March and April are generally the worst throughout the year. With regard to its soil, it is in some places sandy, in others it is of dark earthy mould intermixed with great patches of phosphatic guano of a fine quality. It produces bananas, pumpkins, radishes, taro, figs, cabbages, tomatoes, melons, and numerous other garden vegetables, but lately introduced, and now for the first time springing up. From the numerous cocoanut trees there is a large quantity of cocoanut oil annually manufactured, which commands a ready market in any part of the world, its purity rendering it inferior to none for burning or in the manufacture of toilet articles, for which it is extensively used in Europe and America.

Having thus far, by way of introduction, given a brief sketch of the island, we will now describe an incident which recently occurred on it, and which will form an era in its history. On Monday the 4th of February the natives and foreign *employées* of the island were startled from their work by the loud report of a gun, and on looking in the direction of the sound, saw H.B.M. steam sloop *Alert*, which had for some time been expected. Captain English, one of the proprietors of the island, immediately went off to her accompanied by a pilot, and after the entrance had been sounded and declared safe by her officers, the beautiful ship steamed safely and majestically into the lagoon against a strong ebb tide, and came to anchor in 6 fathoms of water.

The Trade wind blew very strong from the eastward for two days, with frequent squalls, but everything having been made snug, no accident occurred. Subsequently, the weather became very fine, and her commander and officers took every advantage of it in making a close inspection of the island, collecting various conchological specimens. They were highly gratified at the entertainment shown to them, and with the various amusements offered for their acceptance. Riding, shooting, shelling, fishing, stuffing birds, &c., were the order of the day, into all which, on account of the novelty, the officers entered with great zest and pleasure. But for the following Friday was reserved the performance of the special duty, which was the object of the visit of the ship to Fanning Island,—the grand finale to the programme of bustle and excitement attending the visit.

On that day, about one o'clock p.m., the entire ship's company, consisting of the commander, officers, and crew, landed from the steamer, the crew and marines fully armed, accompanied by a twelve pound field howitzer. They were drawn up in line, the marines and battery being on the extreme right. The commander then declared to the proprietors of the island that he was about to perform the object of his visit,—to take formal possession of the island in the name of Queen Victoria, and to extend to it the benefits of British protection. A salute in honour of her Majesty was first fired from the howitzer and small arms, when Captain Pearse addressed the head of the firm as follows:—"Captain English and all present, take notice, I salute the British flag (pointing to it then flying from the flagstaff) and declare this island, in the name of the Queen, to be, now and in future, under British protection." Another volley was then fired along the line.

The harbour was named "English Harbour," and the point on which is the settlement, "English Point." A young cocoanut tree was planted on the spot by Captain Pearse, in commemoration of the event. The ship's company were then exercised by four hours' drill, after which they went on board, and the ceremonies of the day terminated.

On the following day a neat railing was erected round the tree by command of Captain Pearse, and on it the following inscription:—

ENGLISH POINT TREE,

ENGLISH HARBOUR, FANNING ISLAND,

*Was planted on the 8th of February, 1861, to commemorate the Visit of  
H.B.M.S. "Alert."*

The last day of the week ended with mutual visiting, Captain Pearse permitting the natives to go on board. Ship and shore vied with each other in liberal hospitality, and on Sunday a sumptuous dinner was given by the proprietors of the island to their guests, the whole passing off with great eclat.

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XXI.—  
*The Commercial Treaty with France as dealt with at the Man-  
sion House—The Loss of the “Canadian.” Ice in Belle Isle  
Strait—Thompson’s Boat-Building—Captain Sand’s Sail-  
Making—Reduction of Light Dues—Mercantile Officers of  
Reserve—French Conscripts—Report of the Royal Life-Boat  
Institution—The “Great Eastern” to Quebec—A Missouri  
Representative’s Eloquence.*

Of the world’s doings, since our last meeting, said the Chairman on taking his seat, one of the most important, it appears to me, is that of the conclusion of the new commercial treaty between France and this country. This has been celebrated, as it should be, in the capital of this land by a banquet in honour of those gentlemen who have carried it through all its phases in spite of every difficulty. The Lord Mayor of London, with the good taste which might be expected from the chief magistrate of one of the first emporia of trade in the world, has entertained Messrs. Cobden and Bright, with many of our English nobility, at a banquet, when sentiments were expressed which do honour to those who spoke them as Christian citizens. And while long discussions on the means and implements of warfare are so frequently before us at every turn, let us see what these sentiments are, for this is the object with which I have alluded to this demonstration.

We will give Mr. Cobden full credit for all his illustrative allusions as to the ignorance of each other that prevails between the two races, their habits, propensities, good and bad qualities, and what is to be gained by each from the new commercial treaty, and we will take the words of M. Michael Chevalier as the specimen of the feelings of his countrymen towards us, and which, as we have said, do honour to his head and his heart. M. Chevalier said,—

We are met to celebrate a victory. But what a victory! No human blood has been shed, no empire has been overthrown or shaken, excepting that of prejudice and routine. No city has been taken by assault, excepting the citadel of prohibition, the ruin of which is complete, without entailing agony on any human being. The victory which we are met to celebrate is the final triumph of free trade, which must contribute so largely to the public benefit. But we are not here merely to do homage to an abstract principle. We are happy to unite in doing honour to one who, among so many distinguished champions of the good cause in which the fate of the mass of mankind is involved, has in spite of every obstacle achieved the triumph of free trade. We are here to acknowledge and to proclaim the title which Richard Cobden has acquired to the gratitude of Europe and of the whole civilized world.

There is a personage, a crowned head, to which the mind naturally recurs when speaking of the treaty of commerce between France and

England. The deep conviction and the firm will of the Emperor determined the conclusion of the treaty; and history will only be doing justice in proclaiming that the treaty of commerce, so far as France is concerned, was the spontaneous and personal act of the Emperor.

The City of London, in whose halls we are met to receive from its chief magistrate the hospitality for which it is so renowned, can claim an honourable part in the triumphs of free trade. As early as the year 1820, the principal merchants of this city presented to parliament a petition, since become celebrated, in which for the first time freedom of commerce was boldly advocated by practical men. That petition is a monument of logic and common sense. It contained the substance of those arguments which a quarter of a century later overthrew and destroyed in Great Britain the protectionist system. It is a commonplace to say that free trade promotes the well-being of mankind in all countries, that it substitutes ease and abundance for poverty and misery. But it will produce other consequences far happier in the eyes of religious men and of philosophers and statesmen. The miseries of life are not all physical. There are ills which gold cannot cure, and they are not the least afflicting. I speak of moral evils,—of those divisions and jealousies, and hatreds—which overshadow our existence here below, and which convert this fair earth, to use an inspired expression, into a vale of tears. Among these moral evils I should especially stigmatise national hatreds, which are the deep seated causes of the most hideous and cruel miseries, for they engender war itself, which is the most terrible scourge that can be let loose on the earth.

Now, free trade tends to uproot those national hatreds, and all the evils which follow in their train: and it is for this reason, beyond all others, that it should be hailed as a blessing to the human race. So long as the nations adhere to the doctrines of protection, it furnishes them with motives for mutual distrust, and condemns them to a state of suspicion and jealous isolation, which is the ready preparative for war. For, according to the protectionist faith, a nation which buys the products, natural or manufactured, of another people, becomes their tributary, and accepts in relation to such a people a humiliating and ruinous position. From the moment that we are converted to the principles of free trade, the aspect and character of matters are completely changed. The people who unite themselves to another nation by the bonds of free commerce, instead of making themselves a tributary to that nation, obtain by its co-operation the means of augmenting their own well-being and prosperity; the narrow and paltry feeling which led nations to isolate themselves disappears, and gives place to a belief in the community of interest. With faith in free trade people will cease to regard the prosperity of their neighbours as an evil to themselves. Instead of repeating the dogma of Montaigne that "the gain of one is the loss of the other," they will say, with the Emperor Napoleon III. in the opening speech of the legislative session of 1860, "that the more prosperous and rich a nation becomes, the more it contributes to the prosperity and riches of others."

Thus in our own day, the principle of free trade presents itself to the eyes of men in the character of a pacificator, and from the very fact that it favours peace, it is favourable to every kind of progress, whether political or social. And here let me express from the bottom of my heart the confident hope that the principle of free trade will fulfil its mission of peace and harmony, especially between these great nations on the two sides of the Channel. Indeed, what motives can the Englishman or the Frenchman have for hating each other? They worship the same God; they profess sincerely the Christian maxim, so simple and so elevated, which suits the intelligence of the infant as it leaves the cradle, and on which the greatest genius may ponder with satisfaction, "Do unto others as thou wouldst have others do unto thee." Is it the clamour of other countries that provokes these two nations to regard each other with a restless and suspicious jealousy? By no means, from every side the nations declare to them, "your good understanding is the surest guarantee for the political and social progress of the whole world, and your hostility, from the moment that it breaks out, will retard the prosperity of the entire human race." Is it the special interest of their separate influence? No: for when divided they paralyse each other. Or must they hate one another because the armaments of one necessarily give umbrage to the other? By no means; for the composition of their armaments is different. Both possess an army and a navy; but the amounts of their forces, instead of corresponding, are in an inverse ratio to each other. In England the chief element is the navy; for France, it is the army. I do not mean that England has not a brave and reliable army, or that France does not possess a considerable navy. But England ought not to, cannot, and will not, have an army equal to that of France; and France ought not to, cannot, and will not, have a navy equal to that of England.

Financial necessities, as well as the dictates of common sense, require that the two countries should preserve this inverse proportion in their respective military and naval armaments. And yet these two nations are easily excited against each other. It is an animosity which generally lies dormant, but is not difficult to inflame. Now what can be its origin? If you question the Frenchman or Englishman of our day, when irritated with each other, what is the cause of the irritation, it will be very soon discovered that it arises from the wrongs and injuries inflicted on each other during the long war of the Republic and the First Empire. If you had asked them when that war commenced, the cause of their mutual enmity, it would have been found to have originated in the wars that occurred during the reign of Louis XVI. and George III., or in the time of Louis XIV. and William III. But if at that time the cause of the war had been sought it would have been traceable in a great degree to the previous wars during the reigns of Francis I. and Henry VIII., or of Charles VI. and Henry V. And thus, in going back, it will always be found that the principal cause why people fought was that they had fought before, so that

it was the first war which was the chief cause of all the wars which followed.

Now, the first war arose from a coarse jest uttered by the French king, Philippe I., upon the protuberant figure of William the Conqueror, from which we inherited eight centuries of hostilities. A royal jest in very bad taste, such is the cause for which the two nations have for 800 years been destroying each other. I can assure you that in France every reflecting man thinks that the manes of Philippe I. ought to be satisfied, and that it is more than time to repudiate this quarrel of the dark ages; and we hope that the modern generation of Englishmen will not be much more inclined to sacrifice themselves on the field of battle to prove their love for the memory of William the Conqueror. The time is come for consummating a great change in the relations of the two leading nations of Western Europe. In order that they should become friends, it is only necessary that they should be acquainted with each other. Place the French and English together—I do not say under circumstances so seductive as those in which we now find ourselves, whilst partaking the splendid and cordial hospitality of the Lord Mayor, and in the presence of the ladies, who are everywhere the angels of peace—but simply in the ordinary circumstances of life, on the field of commercial operations, they will very soon arrive at a reciprocal appreciation of each other personally, and acknowledge and esteem their respective intelligence and probity. It is thus that the treaty of commerce will exert its legitimate influence in favour of international concord. Events have prepared this happy issue. Here are nearly fifty years that England and France have remained at peace. It is the first time for a very long while that they have offered the spectacle of such a long truce.

But more, it is not many years since we saw the two united flags seeking laurels on the same battle-field. The Crimean campaign, undertaken in common, with a good faith which has never for a moment been disturbed, is a happy augury of the future. If they could thus unite for a warlike object, why should their union be more difficult for purposes of peace? If we consult the signs of the times, we shall easily discover grounds of hope. We all live in an age which is great, and which derives its character of greatness from the happy and mighty changes which it is incessantly accomplishing. A long continuance of amicable relations between France and England will be a novelty. But if we look around us how many more surprising and unexpected novelties we shall see! Political liberty is establishing itself in the greater number of states; nationalities which seemed annihilated for ages, and of which great statesmen said that they were nothing but geographical expressions, are resuscitated and flourishing. Progress is everywhere the order of the day. In the interior of every state an assimilation proceeds between the different classes of society, whilst the fusion of provinces is being simultaneously organized. Between the different nations interests are mixing and confounding; products and ideas are rapidly exchanged; inventions, which border



on the miraculous, since they realise what would have been thought impossible a century since, facilitate and increase this admirable movement of amelioration.

Free trade, another novelty, is one of the natural fruits of this productive age. It could not have ripened in the sun of earlier ages. It comes now as the completion of several other improvements, and it will impart a greater consistency to them all. To suppose that France and England, in the arrangement of their mutual relations, will resist the influence of these moral and material improvements—to believe that they will not draw closer together when the tendency to fusion is so strong and general, and that they will not be animated by the spirit of peace at the moment when peace is universally admitted as the first necessity of Europe—to pretend that they will not respond to this unanimous appeal of mankind, would be to offer an unlimited insult to those great and generous nations. To them belongs the initiative in the greater portion of the political and social progress which has been effected, or is in the course of accomplishment in the civilised world; and they will cherish the opportunity of taking another step in the path of progress by the final repudiation of their antiquated and disastrous jealousies. We may therefore look with confidence to the future. The friends of civilisation will soon find a new occasion for exultation in the improved attitude which the two great western nations will have assumed towards each other.

Now, these sentiments of a Frenchman, delivered in French, were worthy of all honour, and all worthy men would desire that they should be perpetuated. Mr. Bright was no less happy in his allusions—although of a reference to our own statesmen,—and concluded his observations thus:—

We instructed the nation. We converted Sir Robert Peel—no man will deny that—and if we could not convert Lord Derby, at least we succeeded in defeating him. And, my lord, as M. Chevalier has said, there was a great battle, and a great warfare, and although there were no regions ravaged and no towns sacked, and no widows and orphans made—and though there was no blood upon our weapons or upon our armour—still it was a great fight, and the result was a great conquest. And of all the conquests that men struggling for victory have ever made it had this great and blessed peculiarity, that when the conquest was achieved the spoils and the gains were equally divided between the victors and the vanquished.

Having, then, in these few sentences, described this one revolution, what I want to ask, gentlemen, is this,—Don't you think it would be wise to get up another? I think I see one dawning already. If England were asked, "Who is thy neighbour?" England would answer of course geographically, "France is my neighbour!" But if she were asked, "Have England and France lived on neighbourly terms?" England would be obliged to answer, "No," for in the 125

years which elapsed between the year 1690 and the year 1815, England and France spent not fewer than sixty-five years, or more than half that whole period in tearing each other to pieces.

Now, I will not go into the causes of those disasters. We will let bygones be bygones, if you like, except for the payment of the bill, which, I suppose, we cannot escape. But this will be admitted, that no pen of Englishman or of Frenchman has ever yet attempted to describe, or been able to describe, a millionth part of the disasters to the human race that have arisen from these contentions. It may be that the recording angel hovering over the scenes of human action—and, if I may quote a metaphor from the great Italian poet,

“Winnowing the air with those eternal glooms,”

may have recorded every single fact of that tremendous and pitiful story of human suffering and human wrong.

Now let us—if that book has been closed for nearly fifty years—let us, if it be possible, do something to prevent it being ever again opened. There are men whose folly—there are circumstances whose effect, may possibly precipitate these two countries again into disorder, hate, and war; but there is throughout England at this time a moral sense and a Christian feeling which, if they were once bent fairly upon the practices of this country, I believe would make it impossible for any cause not absolutely uncontrollable to involve these two countries again in war.

Now observe, my honourable friend Mr. Cobden has in my opinion been able—and I know not that a man could have lived for a more blessed work—to take the first great step in the changed policy which I hope the future will offer between England and France. We are now pulling down, or about to pull down, our old Foreign Office. We won't dispute here whether that shall be built up again in the Gothic or the Italian style of architecture. I am in favour—though my opinion on such a subject I offer as of no value—of the Italian style. (A voice—“Garibaldi.”) But over and above all question of style is this—I hope that when pickaxes and crowbars are employed to pull down the old Foreign Office, there will be somebody to bury many of its old traditions in its ruins. I am sure, if there be any moral government in the world, and if we are rational and Christian men, there must be some means of making the future of these countries better than the past. We may give confidence where suspicion has existed. We may, I believe, plant affection where hate has been known almost for ages to continue.

There is one thing which we may all do—we may endeavour to do the best of our power, in our families and amongst our friends, to spread the knowledge of the French language. I believe the Minister of Public Instruction in France is very anxious to spread throughout France the knowledge of the English language. Why should we not here in all our schools have at least some portion of the scholars well grounded in the French language? The more we can come together—

whether by trade, by travelling, by literature, by social intercourse—the more we know of each other, the more, I believe, we shall condemn the past and be anxious to make amends for the future.

Now, I thank the Lord Mayor from my heart that he has done this honour to my honourable friend Mr. Cobden; that he has invited these distinguished Frenchmen; that here in this hall, consecrated to liberty—in a hall where so many great men have spoken, and so many great causes have found advocates—he has permitted us to-night to say that we are willing that there should be another revolution begun—not a revolution of violence, nor a revolution of hate, but a change that shall bind two great nations in one common interest and one common peace, and shall give to the future a brightness that shall be tenfold better for posterity to regard than that gloom of the past which we must all of us so much deplore.

Nothing, observed the Chairman, could enhance the value of these sentiments more than their realization hereafter, which he hoped he and his generations after him would live to see.

These sentiments were cordially responded to by the Club, as the Chairman concluded with a desire for the business of their meeting to be brought forward.

On which, Albert said he would take the opportunity of observing that he had preserved the report made on the loss of the *Canadian*. This report, which he would read, ran thus:—

The *Canadian* was an iron screw steamer, 1,926 tons. She was built at Greenock in 1860, in conformity with the requirements of the Merchant Shipping Act, and was owned by the Montreal Ocean Steamship Company. She was under contract to carry the mails between British North America and this country, and was commanded by Captain John Graham, who held a certificate of competency as Master, dated in 1851. This document and the certificates of the other officers, together with all the ship's papers, were lost in the vessel.

The *Canadian* sailed from Quebec, in all respects efficiently equipped, on the 1st of June, bound to Liverpool. She appears to have had on board, as nearly as could be estimated by the captain in the absence of an authentic list, 112 passengers, of whom 51 were cabin passengers and 61 steerage passengers. Mr. Panton, the mail master, was also on board. Her crew numbered 96, all told. Her cargo was principally wheat and flour, and she does not appear to have been overladen. After leaving the St. Lawrence her course was shaped for the straits of Belle Isle. At 9h. p.m. of the 3rd of June, being dark and much ice in the vicinity, the ship's head was put to the westward, and kept within sight of the light on Point Amour throughout the night. At daylight on the 4th she proceeded through the straits, meeting and avoiding large masses of ice in the passage. At 8.30 a.m., the ship was abreast of Belle Isle, by which time the wind had increased to a gale from the southward. At 9.30 am., at some dis-

tance outside the straits, they came upon heavy field ice, closely packed.

Up to this time the engines had been for the most part at half speed; but the captain finding her course at this point impeded, her head was turned to the westward, and she steamed slowly back towards the straits, to wait for fairer weather and clearer water. After pursuing this return course till about 11.30 a.m., the captain found that he had to pass through a narrow passage, with heavy ice on the starboard hand, and an apparently small patch of field ice, just a-wash on the port hand. The ship was going at the time from four to five knots an hour. In passing the floe struck her on the port side, under water, a little before the fore-rigging, and scraped along for the distance of about sixty feet. The concussion was very slight, and there was no apprehension of damage. At this time the captain was on the bridge, and had been there from eight on the previous evening, to pilot the vessel through the ice. Shortly afterwards it was reported to him that water was coming into the fore steerage, and he immediately went down and found the water rushing up the hatchway into the steerage. Concluding from this circumstance that some very serious accident had happened to the ship, the captain returned on deck, and gave orders for the boats to be got ready immediately. This was at once done with great coolness and promptitude.

Up to this time the water had not reached the engine-room, and directions were given to proceed to the nearest land, which was Cape Bauld, then in sight. In the course of ten minutes the ship settling by the head, the water found its way into the engine room through the stoke hole door, although precautions had been taken to secure it by stanchions, when it became evident that the water was coming in. By this time the ship had taken a list to starboard, and had settled so much that the water was coming in forward over the bulwarks. Seeing now that the loss of the ship was inevitable, the engines were stopped and the boats lowered into the water, with the passengers and crew distributed among them.

Seven of the boats reached the water in safety. As No. 6 boat dropped astern she passed under boat No. 8 then full of people in the act of being lowered. The boatswain in charge of No. 6 sung out to the men who were lowering No. 8 to hold on until they were from under. Just as No. 6 got clear, a sea swept her across the ship's stern. A cry arose that the ship was going down. The oarsman in No. 6 backed water to escape the vortex, and on looking round No. 8 boat was seen hanging by the foremast tackle, and the only persons visible were one man clinging to the after tackle, and another upon the fan of the ship. In two minutes the ship went down. She appears to have foundered about five miles N.E. of Cape Bauld, in 45 fathoms water.

According to the captain's statement, 181 persons were saved in the seven boats, and were picked up by some vessels, which appeared to be French fishing vessels, which had been previously seen under the land, and to whom signals of distress had been made. This would

leave 29 persons unaccounted for, if the numbers of the passengers and crew above given be correct.

Such is a brief narrative of the circumstances attending the loss of the *Canadian*. There can be no doubt that the ship was lost by coming into contact with the ice, but how the bottom was so immediately and seriously affected by the concussion, there could be no evidence to show. In the absence of such evidence, which could only have been procured had there been time to examine the nature and extent of the injury which the vessel received, the manner in which the ice acted upon the iron material of the vessel, must remain a conjecture. My nautical colleague informs me that very recently an iron whaler was lost by a somewhat similar accident in the North Seas.

Setting aside the question of the propriety of taking the passage through the straits of Belle Isle at this period of the year, I have no fault to find with the captain of the *Canadian*, his officers, or the crew. All appear to have ably discharged their several duties, and, when the emergency arose, to have acted in a manner worthy of British seamen. With regard to what I consider to be really the main question in this inquiry,—viz., the expediency of taking the passage by the Straits so early in the year,—it would appear by the printed regulations of the company to which the *Canadian* belonged, that it is left to the discretion of the captain to take that passage or not, as he thinks best, after the 20th of May in each year. From the statement of the captain, which I am bound to say was made in the most candid manner, he appears to have consulted his owners in Canada before sailing, and to have arrived at the conclusion that he was justified in proceeding by that route, although no certain information had reached Quebec before the *Canadian* sailed, to prove that the Straits were open, or that the ice had dispersed at the eastern entrance.

It would certainly seem that during previous years other vessels of the same company had safely traversed the Straits at even an earlier period; but as seasons differ materially, it may be worthy of consideration how far it is desirable for vessels freighted with so many lives, to take that route till certain information has reached Quebec that the Straits are sufficiently free from ice to make that passage expedient. Without such information, it appears to me that masters of vessels can have no data on which to found any sound conclusion, and must, therefore necessarily incur considerable risk.

I would, therefore, venture respectfully to suggest that your lordships should recommend such an alteration in the printed rules of this company as would take away all discretion from the commanders of these vessels in regard to taking the Belle Isle Passage at so early a period of the year. Probably by fixing the 20th of June instead of the 20th of May as the earliest date at which such discretion could be safely given, the probability of future casualties would be greatly decreased, and I have reason to believe that such an intimation from your lordships would not be unacceptable to the company.

I think it right to mention that four of the ship's boats were fitted

up with Clifford's lowering apparatus, but in consequence of their crowded state they could not be used. No. 8 boat, which was lost, was not one of the boats so fitted.

I have, &c.,

T. S. RAFFLES, *Stipendiary Magistrate.*

*Liverpool, July 5th, 1861.*

I concur in the above report.

HY. HARRIS, *Nautical Assessor.*

This was no doubt a step in the right direction, and would tend to reduce the chances of wreck by placing it out of the power of a commander, not over burthened with discretion, to take that route for the sake of his own opinion against all other. But with reference to the navigation of the Strait at all, as seasons are uncertain in their nature both as to winds and weather, each exercising a certain influence in reference to ice, the whole month of June is insufficient to clear it away, or July along with it. He need not look further back than to the January number of their *Nautical*, in which Lieutenant Ashe, of the Observatory at Quebec, on his way to the northward with the American astronomers in the *Bibb*, says, on the 7th of August "passed Belle Isle and kept close to the Labrador shore; patches of snow on the land, and several curiously shaped icebergs in sight. They are of all sizes and forms, and vary in colour according to the light they are seen in." He need not read further, although Mr. Ashe speaks of a vessel running into the middle of one of these dangers and finding smooth water, and speaks of a schooner which in attempting to run "between two icebergs struck against a projecting piece of ice beneath the water, and went down immediately;" a case something similar and certainly in effect the same as has happened with the *Canadian*. Now if ice is to be found so close to Belle Isle as this was, it may be justly concluded that it could be found in the strait of Belle Isle, and hence that neither in July nor August can those straits or the neighbourhood of Belle Isle be considered safe to navigate. And the saving of a day in the passage should not justify the risk which the captain might choose to run. This is the fourth vessel lost by the company to which the *Canadian* belonged, and he would conclude his observations with the following extracts from a letter written by one of the passengers on board this ill-fated vessel to his father, who resides in Glasgow; a repetition of which may be expected by those who persevere in using the straits of Belle Isle.

About three minutes after she struck, word was brought to the captain that she was rapidly filling. He went down to see what was wrong, and in a few minutes more the steerage passengers came running up on deck, as the water was already two feet in the steerage; and so rapidly did the water rise that some passengers were drowned before they could get up on deck. For some time after she struck, I had hopes that, being built in compartments, she would float for some

time, so with Mary Anne in one hand and little Katie in the other, I remained quietly on the deck. By this time all the life-preservers had been secured by the passengers; but, being too clumsy to take into the lifeboats, they were nearly all afterwards dispensed with. One gentleman had an airtight preserver wrapped round his chest, which saved his life, as he was some time in the water. Immediately on seeing the extent of the damage, the captain had given orders to have the eight boats ready, and, as it turned out, there was not a minute to spare, as had there been the least delay in launching them the loss of life would have been much greater.

When the boats were pretty well filled with passengers I stepped up to the captain on the bridge, and asked him if I should get into a boat, when he said, "Hold on a little." Mary Anne and I were about the last to get into the captain's boat. After I had put them in they refused to admit me, as she was full, but I said I must follow my wife and child. I can assure you, in moments like these, every one looks to himself. The captain and two or three more got in after me, and being quite full, orders were given to shove off. They took some few minutes to get rid of the tackling, as the sea was running pretty high.

The steamer was now going down fast, and the anxiety became very great to get clear of the ship, as had we remained by her two or three minutes more, we should all have been lost. She immediately went down, head foremost, with a great plunge, and when she struck the bottom, the stern, which all this time had been out of water, sunk in a moment. Then followed a loud explosion, leaving the sea foaming and gurgling, and all you could see of the wrecked steamer was a few spars and a few bodies floating about, and one boat turned upside down, with a man sitting astride on the keel.

But our danger was not yet over. In fact, the impression was that we should be swamped in the whirlpool; but, by pulling desperately at the oars, we got clear of this other danger. We were now adrift on the Atlantic. The land was only about five miles off, but the north of Newfoundland is inhabited only by a few fishermen, so that we were in danger of starvation from hunger and cold, and this might have been our fate had we not been picked up by four vessels, which very remarkably hove in sight just as we were wrecked.

Rodmond asked for information on a subject which was important to shipping, and which had been noticed in the public prints. He alluded to Mr Thompson's method of boat building by machinery. He believed Mr. Thomson was a very ingenious American, and we all knew their ingenuity.

Albert replied, it was very true. Mr. Thompson's process was established at Old Ford, near Bow, and had surprised all who had witnessed it. He seemed to have overcome all difficulty, and had invented thirteen machines, by which he produced all the variety of shapes in wood from the keel to the gunwale that were required for the construction of a boat. It was, in fact, a happy application of the division of labour, so that each machine, capable of producing one

specimen of its own in a very short interval of time, could do the same continually, and as these several parts had then only to be united, as many boats as desired could be formed at one time by a certain few hands working on each according to the numbers, in the space of ten or twelve hours, the time required to make one. Thus the saving of time and labour was evident. He believed it amounted to about 75 per cent. Mr. Thompson, he understood, was forming a company, and he wished him success.

Speaking of nautical improvements, observed Arion, have you heard of Captain Sands' improvement in sails, another American invention. It consists in the method of sewing canvas together for the sails of ships. Instead of the double flat seam now in common use, Captain Sands unites the edges of the canvas by sewing them upon a small rope. Each seam is therefore covered and strengthened by a rope, and the hood lap of canvas is no longer necessary. The sails of a 1,300 ton ship commonly require 5,300 yards of canvas. By Captain Sands' improvement a saving of 1,000 yards is effected, only 4,300 yards being necessary. An economy of nearly 300 dollars is thus effected in material, while the *weight* of the suit is reduced nearly 5,000lbs. The ropes are said to render the sail more durable, as they prevent chafing. The sails are also said to be stronger at the seams than the canvas is in its body. This has been exemplified in sails that were split by the wind in a tornado, the body of the canvas being rent, while the seams remained entire.

Both of these inventions were applauded by the Club.

It was then stated by Albert that a reduction of twenty-five per cent. had been announced by the President of the Board of Trade in the light dues,—this being made up from a fund in the hands of that board produced by fees on examining masters and mates of merchant shipping, surveys of ships, &c. The reduction on coasting voyages would be fifteen per cent., and ten per cent. on over-sea voyages. It has been ascertained that the light dues press most heavily on our coasting trade; but this measure would not only relieve these small craft of fifteen per cent., but the additional ten per cent., making twenty-five per cent. on vessels which, in continuation of their coasting, make over-sea voyages. Mr. Gibson illustrated the measure thus:—"The shipowner who in 1854 paid £100 on a single ship, and who now pays for an over-sea vessel £50, and for a coasting vessel £65, will in future pay £40." The measure is very properly looked on as a step in the right direction, as it seems to be understood that the whole tax of light dues will hereafter be swept away; but it will be satisfactory to our shipowners to find themselves, at the end of the year, relieved of some £100,000 from the partial abolition of tolls and light dues.

Another subject, continued Albert, of a different but very important nature, was well worthy of their attention,—he meant the Naval Reserve. A reserve of officers and seamen in case of war with this country was at all times important, and with reference to men had for some time been forming. But while men were enrolling why should



not their officers of the mercantile marine be enrolled also. The officers, in fact, were so willing that they had volunteered their services, but required to know their positions in reference to the naval officer. Nothing could be more reasonable. How could gentlemen of the merchant service, who had retired from many years command of large ships and were first-rate seamen, be subject to the command of a naval officer who, after six or seven years of the quarter-deck, had just become a lieutenant? The mercantile officers justly stipulate that in entering the reserve they shall be placed on a footing of equality with officers of corresponding rank in the navy, and that they should not be subject to the command of an officer inferior in rank to that of commander.

It is to be hoped that this little difficulty will be overcome and all matters so clearly arranged as to prevent the possibility of any question occurring about rank. The importance of the object to be attained is so great that every exertion should be made to secure the services of those excellent officers in the common cause. It would establish a desirable connection between officers of the mercantile marine and the royal navy, and we should gradually obtain a force, composed of nautical experience and military skill, on the shores of this country that, while her ships of war might be detached in different parts of the world, would, with the assistance of gunboats and other means, protect them from aggression.

It appears, observed Rodmond, that our neighbours, with their conscription, still want seamen. M. de la Tour has shown in the *June Nautical* that servitude at sea in a man-of-war is not very palatable to the French fishermen. A decree has appeared in the *Moniteur* ordering a *levée* of men for the navy as follows:—1st. From among those sailors who have not yet served the state; and also, 2nd., In case of an insufficiency, from among the class who have served the shortest time of their period of service. Another decree establishes bounties for those sailors who re-enter the navy after their period of service has expired.

It is curious, continued Rodmond, that our neighbours take up the bounty system just as we have dropped it, although under another condition entirely.

Yes, observed Albert, and recommended to be abolished long ago in the *Nautical*. You will find that in one of the volumes, in a paper by Captain Sheringham. I hear that the Cowes Yacht Club have doubled their annual subscription to the Royal National Lifeboat Institution, from which I have just received this report, which we shall preserve, as usual, in our minutes; and, with the view of seconding the efforts of the institution, I would propose that its "whereabouts" be added at the end, in order that every one who peruses them may know how to communicate with its secretary.

The Secretary reported that the National Lifeboat Institution continued to reward brave exertions to save life from wrecks on our coasts, whether in its lifeboats or by shore boats. At its last monthly

meeting he found that the silver medal of the institution was voted to Lieutenant Dyer, R.N., and Mr. George Farrin, gunner of H.M.S. *Ajax*, in testimony of their intrepid services, in conjunction with many others who had been previously rewarded, in attempting to save life from the brig *Neptune*, of Whitehaven, wrecked off Kingston on the 9th of February last. Lieutenant Dyer had been twice swept away by the surf, but was providentially saved; and Mr. Farrin received, on that disastrous occasion, a serious wound on the head, from which it was said he still suffered.

The silver medal of the institution was likewise presented to Mr. John Large, master-gunner in the Royal Artillery, in acknowledgment of his brave exertions in wading into the surf, at the peril of his life, and aiding to rescue three out of seven of the crew of the schooner *Harmony*, of Waterford, which, during a heavy gale of wind, was wrecked in Freshwater West Bay, near Milford.

The silver medal of the institution was also voted to Henry Puxley, Esq., of Dunboy Castle, for swimming off and afterwards saving, at considerable risk of life, by means of a small boat, four persons who had been capsized from their boat during blowing weather off Berehaven, on the coast of Cork, on the 7th June. Had it not been for the prompt and daring exertions of Mr. Puxley on the occasion, the officer of coast-guard stated that he believed the poor men must have perished.

A reward of £2 was granted to Charles Gilbert, fisherman, of Sutton Bridge, on the Lincolnshire coast, for his prompt and very laudable services in rescuing, at considerable risk of life, four men, whose boat, during squally weather, had sunk, placing her crew in a most dangerous position.

A reward of £13 was also voted to the crew of the Arklow lifeboat, belonging to the institution, for pulling off, in reply to signals of distress from two vessels, which had, however, afterwards got out of danger. It often happens that a vessel has a signal of distress flying, and that there is every reason to suppose her in extreme danger; on which the lifeboat's crew are quickly at their posts. But they go off only to find on arrival at the vessel that, by a change of wind or other unforeseen cause, she has escaped the danger, and that the services of the lifeboat are not required; yet the crew of the latter may have to incur as much risk in going out and returning to the shore through a heavy surf as if they had returned freighted with a shipwrecked crew. Such services are, indeed, sometimes of the most trying description that the lifeboatman is called on to encounter, as all the dangers and exposure which he may have undergone have been to no purpose. Yet in such cases it will not do to hang back until it is certain that the shipwrecked crew are in the last extremity, for it would then too often happen that the far greater disappointment and grief would be experienced of seeing the vessel and her crew engulfed, when the means of safety were already on their way, but too late to be of any avail.

A reward of £12 was likewise granted to a number of poor fisher-

men of Blasket Island, on the coast of Kerry, for their very laudable and humane exertions in rescuing fifteen persons from a boat belonging to the ill-fated ship *Middlesex*, of New York, which, during a fearful gale of wind, had been abandoned in a sinking state, with fifty-three persons on board, in the Atlantic, in March last.

It was reported at the meeting that the institution had during the past month sent a new lifeboat and transporting carriage to Campbeltown, on the west coast of Scotland, and that Lady Murray, widow of the late Lord Chief Justice Murray, had defrayed the whole cost of the establishment, nearly £450, in memory of his lordship. The institution had also lifeboats and transporting carriages nearly ready to be sent to St. Ives, Cornwall, Aberystwith and Llanddwyn, in Wales, Scarborough, and Tynemouth. A new lifeboat was ordered to be built for Kirkcudbright, the expense of which, together with a transporting-carriage, had been presented by a benevolent gentleman resident in Manchester.

The institution also decided on receiving the Guernsey Lifeboat Station into connection with it, and on completely renovating the establishment. A new lifeboat and transporting-carriage were also ordered to be built for Jersey, the expense of which would be defrayed by the states of that island.

It was reported that the Spanish government had recently ordered Messrs. Forrest, of Limehouse, to build six powerful lifeboats on the plan of the institution, to be stationed on dangerous points of the Spanish coast. For the sake of the cause of humanity it is sincerely to be hoped that all maritime countries will follow this laudable example of Spain.

It was stated that some friends of the institution at Ipswich were making arrangements with the ministers of all denominations in that town to preach sermons in their several places of worship on a given Sunday, in aid of the important and national objects of the Lifeboat Institution. It was also reported that the late T. F. Hemington, Esq., of Uplyme, Devon, had left a legacy of £100, free of duty, to the Lyme Regis branch of the institution.

A report was read from the inspector of lifeboats of his recent visit to the lifeboat stations of the institution on the Sussex and Kent coast, all of which he found in good order.

Payments, amounting to £1,050, were made on various lifeboat establishments.

The committee earnestly appealed to the public for assistance, to enable them to meet the continued heavy demands on their many lifeboats, now numbering 112. The Royal National Lifeboat Institution, founded 1824, and supported by voluntary contributions, consisted of:—Patron—Her Most Gracious Majesty the Queen; President—Vice-Admiral his Grace the Duke of Northumberland, K.G.; Chairman—Thomas Baring, Esq., M.P., V.P.; Deputy-Chairman—Thomas Chapman, Esq., V.P., F.R.S.; Secretary—Richard Lewis, 14, John Street, Adelphi,—where and to whom all communications should be addressed.

The visit of our *Great Eastern* seems to have been anticipated at Quebec, observed Albert. It is stated that the Board of Trade is seeking the co-operation of the Trinity House and the City Council in devising means for giving a fitting reception to her in the St. Lawrence. It is intended to send a fleet of river steamers down to the Traverse to meet her. No doubt that, properly arranged and advertised, such a plan would not only be pleasing but would pay its own expenses. It would be advisable, perhaps, that the officers of the steamship and those of the regiment she brings, should be entertained at a public dinner, not on personal so much as on public grounds. For if the States are meditating a brush with England it is just as well that the American people should understand in advance how sincerely we Canadians love the mother country, and how determined we are to stand or fall with the rest of the Empire.

This from the *Quebec Chronicle*, continued Albert, is not bad. A specimen first of how stories of war gain by telling, but, best of all, that the Canadians are loyal to the back bone. The *Great Eastern's* passage has occupied, I see, nine days: she sailed on 27th June and arrived on 6th July.

No fear of a Canadian or American war, added Albert. Mr. Lincoln has enough on his hands without a war with England;—besides, what for?

The war of slavery which was now going on in the United States, (for, civil war as it might be designated, it was neither more nor less than a war of the slaveholders of the South against the antislavery states of the North.) was not without its effect on British commerce; but it appears that at Savannah, in one of the Confederate States, an outrage had been committed on one of our merchant captains that was ill calculated to secure our respect. Inquiries, it seems, were going forward, the result of which he should look for with interest. He had heard of a British mercantile commander having been threatened with being tarred and feathered if he appeared again at New Orleans. Was this the same person? Time no doubt would show. However, leaving the Mississippi for the Ganges, he was glad to find that by way of seconding the great work of irrigation that was meditated in India, a company was getting up at Calcutta with a capital of £200,000, for the purpose of erecting floating piers on the banks of the Ganges. The want of docks, piers, or other appliances for facilitating the shipment or discharge of cargoes at Calcutta, has hitherto been found a very serious drawback. Floating piers recommend themselves by the facility with which they are established, and also by their adapting themselves to the rise and fall of the tide, so as to present an unvarying altitude relatively with a vessel alongside. The example of the landing stages at Liverpool shows how efficient for all the purposes of commerce floating piers may be rendered.

The conversation continued, varied by the opinions of the different speakers, when the Secretary joined with an amusing picture of the oratorical powers of a Southern representative (no less than those of a general) that was recorded on the subject of secession in the house of

representatives of Missouri, on the 8th of February last. As a specimen the extract might be worth preserving.

After a long and heated discussion on the reference of a bill, Mr. Riley obtained the floor, and addressed the House:—

Mr. Speaker,—Everybody is a pitching into this matter like toad frogs into a willow swamp, on a lovely evening in the balmy month of June, when the mellow light of the full moon fills with a delicious flood the thin ethereal atmospheric air. Sir, I want to put in a word, or perhaps a word and a half.

There seems to be a disposition to fight. I say, if there is any fighting to be done, come on with your corn-cobs and lightning-bugs! In the language of the ancient Roman,—

“Come one, come all, this rock shall fly  
From this firm base, in a pig’s eye.”

Now, there has been a great deal of bombast here to-day. I call it bombast from alpha to omega,—I don’t understand the meaning of the words though. Sir, the question to refer, is a great and magnificent question. It is the all-absorbing question,—like a sponge, sir, a large unreasonable sponge, of globe shape, in a small tumbler of water—it sucks up everything. Sir, I stand here with the weapons I have designated, to defend the rights of St. Louis county; the rights of any other county,—even the county of *Cedar* itself. Sir, the debate has assumed a latitudinosity. We have had a little b’ack-jack buncombe, a little two-bit buncombe, bombast buncombe, bung-hole buncombe, and the devil and his grandmother knows what other kind of buncombe.

Why, sir, just give some of ’em a little Southern soap and a little Northern water, and quicker than a hound pup can lick a skillet they will make enough buncombe-lather to wash the golden flock that roams abroad the azure meads of Heaven. (Cheers and laughter.) I allude to the starry firmament.

The Speaker,—The gentleman is out of order, he must confine himself to the question.

Mr. Riley.—Just retain your linen, if you please. I’ll stick to the text as close as a pitch plaster to a pine plank, or a lean pig to a hot jam rock. (Cries of “Go on, you’ll do.”)

I want to say to these carboniferous gentlemen, these igneous individuals, these detonating demonstrators, these peregrinus volcanoes, come on with your combustibles. If I don’t—well. I’ll suck the gulf of Mexico through a goose-quill. (Laughter and applause.) Perhaps you think I am diminutive tubers and sparse in the mundane elevation. You may discover, gentlemen, you are labouring under as great a misapprehension as though you had incinerated your inner vestment. In the language of the noble bard,—

“I was not born in a thicket  
To be scared by a cricket.”

Sir, we have lost our proper position. Our proper position is to

the zenith and nadir—our heads to the one, our heels to the other, at right angles with the horizon, spanned by that azure arc of the lustrous firmament, bright with the corruscations of innumerable constellations, and proud as a speckled stud horse on county court day.

“But how have the mighty fallen!” in the language of the poet Silversmith. We have lost our proper position. We have assumed a sloshindicular or a diagonological position. And what is the cause? Echo answers,—“Buncombe,” sir, “Buncombe.” The people have been fed on buncombe, while a lot of spavined, ringboned, hamstrung, wind-galled, swyneyed, splithoofed, distempered, pollevelled, pot-bellied politicians have had their noses in the public crib until there ain’t fodder enough left to make a gruel for a sick grasshopper. (Laughter.)

Sir, these hungry brats keep tugging at the public pap. They say, “Let down your milk, Sukey, or you’ll have a split bag.” Do they think they can stuff such buncombe down our craw? No, sir; you might as well try to stuff butter in a wild cat with a hot awl. The thing can’t be did.

The public grindstone is a great institution, sir! yes, sir, a great institution. One of the greatest, perhaps, that ever rose, reigned, or fell. But, sir, there is too much private cutlery ground. The thing won’t pay. Occasionally a big axe is brought in to be fixed up, ostensibly for the purpose of hewing down the gnarled trunks of error and clearing out the brushwood of ignorance and folly that obstruct the public highway of progress. The machine whirls; the axe is applied. The lookers-on are enchanted with the brilliant sparks elicited. The tool is polished; keenly edged; and, while the public stare in gaping expectancy of seeing the road cleared, the implement is slyly taken off to improve the private acres of some “faithful friend of the people.” What is the result? The obstructions remain unmoved. The people curse because the car lags; or, if it does move, ’tis at the expense of a broken wheel and a jaded and sore-backed team. I tell you, the thing won’t pay. The time will come when the nasal promontories of these disinterested grinders will be put to the stone, instead of their hardware. I am mighty afraid the machine is a going to stop. The grease is giving out thundering fast. It is beginning to creak on its axis. Gentlemen, it is my private opinion, confidentially expressed, that all the grit is pretty near worn off.

Mr. Speaker, you must excuse me for my latitudinosity and circumlocutoriness. My old blunderbuss scatters amazingly; but if anybody gets peppered, it ain’t my fault if they are in the way.

Sir, these dandadical, supersquirtical, mahogany-faced gentry, what do they know about the blessings of freedom? About as much, sir, as a toad-frog does of high glory. Do they think they can escape me? I’ll follow them through pandemonium and high water!

These are the ones that have got our liberty pole off its perpendicularity. ’Tis they who would rend the stars and stripes,—that noble flag the blood of our revolutionary fathers embalmed in its red. The purity of the cause for which they died—denoted by the white; the blue—the freedom they attained, like the azure air that wraps their

native hills and lingers on their lovely plains. The high bird of liberty sits perched on the topmost branch; but there is secession salt on his glorious tail. I fear he will no more spread his noble pinions to soar beyond the azure regions of the boreal pole. But let not Missouri pull the last feather from his sheltering wing to plume a shaft to pierce his noble breast; or, what is the same, make a pen to sign a secession ordinance. Alas, poor bird, if they drive you from the branches of the hemlock of the North, and the palmetto of the South, come ever to the gum tree of the West, and we will protect your noble birdship, while water grows and grass runs. Mr. Speaker, I subside for the present.

---

### Nautical Notices.

#### ADRIATIC,—*Gobbo Shoal off Salvore.*

We have received the following account of a recently discovered shoal near Salvore, which the writer considers will interest our readers as regards the improvement of charts generally.

Near Salvore, in the Adriatic, (coast of Austria, province of Istria,) at a distance of 6·7 cables from the lighthouse, and of 5·6 cables from the nearest point of the coast, there is a shoal, of which single rocks are only 23 Vienna feet below water; (1 Vienna foot = 1·037 English foot;) the shallowest part is nearly circular and 36 fathoms in diameter.

The following are true bearings from the shoalest part.

Lighthouse on Point Bassania, S. 16° E.; Steeple of Pirano, N. 64° E.; Steeple of Buje, (inland,) S. 54° E.; Extreme of Point of Salvore, N. 75° E.

1861, variation 13½° W. There are some more shoals with 30 to 32 Vienna feet N.N.W. from the lighthouse, and at a distance of 11 to 12 cables. Soundings from Point Bassanio northward are 14 to 17 Vienna feet until two cables off, then soundings increase rapidly to 120 Vienna feet till you reach the shoals, where soundings suddenly decrease. The shoal indicated is called by fishermen and pilots the *Secco del Gobbo*.

---

#### SUBMARINE VOLCANIC ACTION IN THE ATLANTIC OCEAN, *near the Equator.*

That oft reported volcanic action which has been for some years going forward in the Atlantic in the neighbourhood of the equator has been again at work, and we have now two accounts of the same, observed by two ships but a few miles apart from each other. In our

last year's volume (page 345) the observations on board the *Florence Nightingale* appear to be the nearest to these;—the first of which we have received from Admiral FitzRoy, forwarded to him by Messrs. Pilkington, the London agents of the Russian ship. That of the *Melbourne*, which follows it, we find in the *Shipping and Mercantile Gazette*, of the 12th of June.

.. 1861, 20th March, at 7h. p.m., in lat.  $0^{\circ} 27' N.$ , and long.  $20^{\circ} 30' W.$ , it must certainly have been ground. The ship went over it with ease, but every one on board felt it. The ship's masts and yards were shaken. There was very little swell when the ship passed over it, and the weather fair, moonlight, and very light wind. Ship made about two miles and a half in an hour. After having been in a dry dock found the ship's false keel gone, and consequently, by all appearances must have struck on a rock.

WM. WIKANDER, *Master of the*  
*Russian ship Dallas, from Maulmain to London.*

*London, May 30th.*

Sir,—I beg to quote the following entry from my log-book of the barque *Melbourne*, of Dundee, on a voyage from Port Adelaide towards London, in lat.  $0^{\circ} 20' N.$ , long.  $20^{\circ} 35' W.$  March 20th, 1861, at 7h. 15m. p.m., was startled by hearing a loud rumbling noise, and at the same time felt the ship tremble from stem to stern, which lasted four or five minutes.

Knowing we were in the region of volcanic phenomena, I conclude this must have been the shock of an earthquake, as, although the noise and tremour of the ship slightly resembled the grinding of a ship over hard ground or a coral reef, still there was sufficient swell on to cause a heavy break in the sea had we been passing over shallow water. The noise more resembled the low grumble of distant thunder than the harsh grating noise produced by a ship taking the ground. I did not sound, as before a lead and line could be got ready the noise and vibration had passed away. The above was witnessed by the whole crew and by

Yours, &c.,

C. COWIE, *Master.*

*To the Editor of the Shipping Gazette.*

#### CHARTS AND COAST VIEWS.

*Blumenthal, Weser, Hanover, July 12th, 1861.*

The undersigned takes the liberty to address a few lines to the Editor of the *Nautical Magazine*.

As a reader of your Journal, which is so highly important to the interests of navigation, I have already pretty frequently had occasion to impart to my pupils sundry matters of information derived therefrom. What appeared to me of special importance to navigation was



the fact recently observed that during the period of the Lunar Equinoctial storms are of usual occurrence.

Where in England a service is to be rendered to navigation by any discoveries, improvements, or corrections, both the government and private individuals show themselves equally emulous to do so. It is for this reason that I have felt more surprise how it could possibly happen that in the "Chart of the North Sea, comprising all the *Modern* Surveys, drawn by J. S. Hobs, F.R.G.S., Hydrographer, published by Charles Wilson, late J. W. Norie and Wilson, 1860," the variations which were considered correct about thirty years ago are still retained; although, as early as the issue of your Magazine in 1857-8, attention was called to the incorrectness of such data. It is self-evident what serious mishaps might arise from such unreliable statements, and it would therefore appear advisable to call anew both the attention of hydrographers and mariners to the fact.

It must surely be known to every nautical man how extremely important the *knowledge of the coast* must be to the mariner. The acquisition, however, of this knowledge presupposes an experience extending over many years.

It may therefore be asked whether it would not be possible to place at the disposal of the mariner some means to enable him to acquire such knowledge even without that long experience.

The delineations, however, of isolated parts of the coast given for this purpose in the charts are so few and generally so incorrect that they can hardly be expected to aid the mariner very greatly in arriving at a correct notion thereof.

If such drawings are really to serve as a means to help the mariner to a correct idea of the coast, it appears to me indispensable in the first place that they should be made with greater accuracy than has hitherto been the case; and secondly, that they ought not to be confined to isolated parts, and should embrace, as much as possible, all accessible points, and be taken from several bearings; and finally, they ought to be drawn on separate sheets, instead of being traced on the chart itself; and in order to afford an accurate and faithful representation, which after all is the great point, they should appear to the eye as presented in a panorama.

Drawings so made and arranged would assuredly aid most essentially to the acquiring a correct notion of the coast, and would therefore be of the greatest use to navigation.

There could hardly be found in any other department of art, so rich and remunerative a field for combining the *utile* with the *dulce*; and drawings of the kind referred to would undoubtedly, from their very novelty, be sought after quite as much by landmen as mariners.

Should you, esteemed sir, be equally convinced with me of the importance of this subject, I should be very pleased if you would call the attention of the public thereto in a number of your Journal.

I am, &c.,

W. DÖRING, *Teacher of Navigation.*

*To the Editor of the Nautical Magazine.*

We much regret that any publication of one of our principal and oldest established chart dealers should lay him open to the observation in the foregoing, especially now the important information alluded to is constantly available from the Admiralty charts, as well as the notices of lights so frequently publishing from the Hydrographic Office: we conclude, however, that this has been entirely accidental.

In reference to the knowledge of the coast alluded to by Mr. Döring, it has always been admitted that faithful representations of the appearance of headlands, and portions of the shore, including views of sea marks, and especially those as they appear when and where they are to be used as leading marks, either for avoiding dangers or for keeping a channel, are valuable, and indeed of essential service to navigation. Without doubt fidelity of representation has often been lost sight of, features have been unworthily magnified and portions distorted by *artists*, until the views have become next to useless. The method of drawing by scale and angles, as done by the late late Hydrographer, Sir F. Beaufort, is, we fear, little practised beyond the range of the Admiralty surveys. But even this, now that the powers of photography are established, may be superseded by this very valuable art. We have little doubt that a publication of photographic views (taken in a favourable calm) of coast scenery, combining the seaman's wants with the landsman's requirements, would be a successful work if cheaply carried out, and would well repay a discreet and enterprising publisher. There is a large field in this branch of the arts for rendering essential service.—ED.

---

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of July, 1861, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

Scotland, West coast, Arasaig Harbour, Commander J. Wood, R.N., (1s. 6d.)

Mediterranean, South coast of France, Ciotat and St. Nazaire Bays, Pilote Francaise, (1s. 6d.)

Mediterranean, Archipelago, Scarpanto and Casso Islands, Captains Graves and Spratt, R.N., (3s.)

Mediterranean, Archipelago, Euripo Town and Strait, Commander Mansell, R.N., (1s. 6d.)

United States of America, Savannah River, Coast Survey, (2s. 6d.)

Red Sea, Ushruffi Islands and Reefs, Commander Mansell, R.N., (1s. 6d.)

East Indies, Banka and Gaspar Straits, corrected by Wm. Stanton, Esq., R.N., 1861, (3s. 6d.)

East Indies, Banka Strait, South Entrance, Wm. Stanton, Esq., R.N., 1860, (2s. 6d.)

*Hydrographic Office, 20th July, 1861.*

---

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle.

---

SEPTEMBER, 1861.

---

THE MERCHANT SERVICE AFLOAT,\*—*Lloyd's and Underwriters,—  
Owners and Captains,—Insufficiency of the Merchant Shipping  
Act to check Insubordination,—Morality.*

As a constant reader of the *Nautical Magazine*, I have perused with diligent attention the various papers that have from time to time appeared in its pages on the condition of the mercantile marine, with suggestions for its improvement. This subject has long engrossed a considerable share of my thoughts, and everything I meet with either in print or in private intercourse with professional friends, has had a place in my "note book," and shared more or less my attention and consideration. Indeed, so early as the year 1845, I published a small pamphlet, dedicated to the Shipowners' Society of London, entitled, *Practical Hints for Improving the Mercantile Marine*, wherein was set forth the fearfully depraved moral condition into which our seamen were sinking, their consequent deterioration as a body in efficiency: that among the causes of this degeneracy was the migratory character of their employers,—by which certificates of character and competency could not be verified, forgeries being every day had recourse to by the more worthless and vicious offscourings of our large sea port towns: nay, even thieves, to evade justice, passing themselves off on the shipmaster with these false certificates as seamen;—a crew formed of these materials, being one of the worst description, insubordination being mostly certain to arise on the voyage with such men.

\* See former remarks on this subject in May number, p. 225.

This has been too often looked over and forgotten at the end of it, and thus the offenders have escaped with impunity to resume their imposition and vicious practices in another. My suggestions to meet this evil have now been partly remedied by the establishment of marine courts abroad and shipping offices at home. I also advocated the extension of the apprentice system, unhappily now abolished.

It is well known that in pointing out abuses and daring to speak truthfully of them, one often finds himself treading on dangerous ground. As, in the political world, place is power, so in the trading or mercantile world, money is power. When the subject in question is one where the truth is likely to give offence to one of those powers, that quiet submission to tyranny and oppression that is inseparable from the feeling that one's bread is at stake, supervenes, subverts and suppresses truth, and renders the intelligent man a slave to the purse-proud, narrow minded, but cunning knave, whose end and aim is to enrich himself at any price. The tendency to this course, it is deeply to be regretted, many engaged in commercial pursuits of the present day are evidently not over scrupulous in following.

Much has been said and written against the masters, officers and seamen of the merchant service. At one time, indeed, it seemed to be the fashion to hold up British masters and officers of the mercantile marine in some of the public prints of this country as the least trustworthy and the most worthless of their class on the face of the earth. Whether this was a political move on the board to pioneer and smooth the way for the repeal of the navigation laws by the advocates of that measure, I know not. But this I do know, that same measure was mosts uicidal and un-English. It had a tendency to disgust the best informed, the most skilful, and reflecting of our shipmasters and officers against their profession, leaving them with no hope for redress from the disgrace arising from a false defamation of character. I know many of our officers who preferred entering the American service in a subordinate position to remaining in the degraded one of a British shipmaster, on whom the lash of ignorant and ill advised legislation was beginning to fall with increasing severity.

In proof of this being the fact, I shall quote a paragraph from the *Nautical Magazine*, vol. xxiv. for 1855, in a communication from your able correspondent and excellent old sailor, Captain K. B. Martin. He says, "An intelligent American commander remarked to me the other day, all the recent alterations in your maritime affairs are to the benefit of the seaman, while the position of your officers are gradually becoming worse. I am an Anglo-American, and if I had remained in the service of the old country, I should never have been worth a pice."

The low standard of masters has been often and severely commented on in the pages of the *Nautical Magazine*, and in vol. xxiv. for 1855, we have the picture drawn by a correspondent (who calls himself "North") of the majority of shipmasters, that I must confess was somewhat startling to me, did it not bear on its face the stamp of the source from whence it came. The captain, he says, "knowing him-

self to be the confidential servant of the owner, draws money on the strength of this confidence and spends it as he likes;" and he then illustrates the manner in which he robs him by "two-pence worth of greens for six-pence," which he adds, is "an old saying, and has lost nothing of its truth." I shall only put down that it is at least quite new to me. North invokes Dickens to apply the lash as unsparingly to the shipmasters "as he has done to Squeers, and thereby to effect another great public good." If depravity exists to the extent that North asserts that it does, it is high time to apply a remedy, though not of the description indicated by North. It was with some surprise I read his paper, and it was with amazement that with such dishonest confidants I saw that shipowners could not only sail their ships at all, but get rich by doing so.

Although my intention when commencing this communication was principally to treat on the masters, officers, and seamen of the merchant service, of whom so much has been said, it will be as well to claim attention also to owners, allowing that as a body they are first entitled to consideration when alluding to the present condition of the British mercantile marine. Although I may risk offence to some of that very respectable class, whether their standard be high or low, has nothing to do with me. What concerns the mercantile marine is not the influence they exercise on their servants by their example, but their treatment of the men who command their ships, and who peril their lives for a pitiful remuneration to make money for *them*, while *they* "sit at home at ease." I do consider this to come within the scope of an inquiry into the decline of the service, a decline which everybody concerned in the honour and welfare of his country much deploras.

To probe the matter thoroughly and the more effectually to reveal the "secrets of our prison-house," and our "tale to unfold," we must go back and take a retrospective glance at the mercantile service in days of yore; and in order that I may speak with authority, I will confine my observations to the last thirty-five years, during which I have belonged to it. Now, it will be worth while, in order to obtain some additional light on the subject, to look into the character of the owners and masters at our starting point, thirty-five years ago, as compared with those men who now supply their places. This I maintain is essential to the subject before us, when we are inquiring into cause and effect. If a corrupt government corrupts a nation, so it is through all the minor relations of life; and depend upon it that in reviewing the character and condition of the service we are treating of, the old adage equally applies to this as to all others, "like master like man." What would a venerable and honourable English gentleman, now no more, have said; he who long presided at the head of a highly respectable firm as merchants and shipowners in Lawrence Pountney Lane, with whom I had the honour for many years to transact business in my younger days; aye, and one, too, who will yet be remembered by many of the best and most upright of the city men for his high sense of honour, integrity, and truth in all his deal-

ings, (for it is by such men that the pursuits of commerce, low in itself, are raised to dignity and respect,) what would he have said were he to have heard and seen, as I have done, the words and deeds of very questionable integrity that are now passed over in shipowners and merchants' counting-houses without comment or with approval? But they are such as I would not for any consideration have advanced, to be certain of meeting the terrible torrent of his virtuous indignation.

When our British merchant ships were principally owned by merchants and gentlemen of this description, that depravity in our commanders, too bad for me to transcribe, and represented by your correspondent North, was never heard of. Shipowners, who are gentlemen, select respectable and gentlemanly men to command their ships. At least this is a very fair inference, and they give them a respectable remuneration for their services. Such a connection has the natural tendency of elevating the character of the shipmasters as much as a contrary one has that of lowering and depressing it.

By that lax morality in the pursuit of riches through the channels of commerce to which I have adverted, and which distinguishes the dealings of the present day, it would be downright hypocrisy were I to say that I consider the shipowner is exempt. He, like others around him, endeavours to make money, "honestly if he can." But, alas, as it is said of the Scotch matron, who advised her son on going abroad, at any rate to make money, so on the broad principle of doing so, he sends a ship to sea *half rotten, badly manned, badly fitted, and worse found*. Insured as a matter of course she is to her full value, and perhaps well over it. Such a ship in all probability before completing her voyage gets into difficulty; the master has the defects repaired at the expense of the underwriter, although they did not arise from the perils insured against. Thus, by a system of fraud and false representations such a man, like the unjust steward, will be commended for his cleverness; in all probability he will be rewarded with a better command next voyage. And thus the owner gets his "six-penny worth of greens for two-pence," and he both commends and rewards the man who was the principal agent in plundering a stranger, of whom he rarely knows anything. Thus rendering the act still more disgraceful.

But now for the honest servant: the master who, from a conscientious sense of right and *amour propre*, would never lend himself to such fraudulent practices, in nine cases out of ten would be pronounced a simpleton or a dolt; his dismissal would soon follow, he would be got rid of the first opportunity for a cleverer fellow, *i.e.*, a less scrupulous one.

And now let us see what are the effects of such transactions in a moral point of view, and what are the tendencies to which they lead. It must occur to an owner that by lending himself to, or even silently looking over a fraudulent transaction in his servants, although he derives the immediate benefit of it, he is setting a bad example, and encouraging a principle which at any time may be turned against himself. He may depend on this, that the man who, for the benefit

of his owner, has no scruple in plundering others by fraud and falsehood, when the opportunity offers will have as little in plundering his owner himself.

No doubt the system of insurance is in itself most useful for the security and extension of commerce. But its abuse has nevertheless been attended by and is every day producing disastrous consequences. Thousands of valuable lives have perished in the depth of the ocean, sacrificed to the protection which it affords to greedy, unfeeling, and unprincipled owners. Many hundreds of young masters have been corrupted from the same contaminating source.

Among the fraudulent practices on underwriters that pass unquestioned and are looked upon as venial offences among the money getting maxims of the day, but which exercise a baneful and corrupting influence, is one that is very well known. This both at home and abroad takes hold of a weak or ill trained mind, and seldom fails both in defrauding the underwriter and, what is worse, of laying the foundation of a future career of dishonesty and falsehood. But what has the owner to do with this? It is the practice of holding out bribes to the shipmaster to falsify statements and pass fraudulent accounts to augment the claims of the insured. Some time ago a most glaring instance of this kind of imposition was clearly established, and with no mistake, for it happened with myself, on the occasion I am about to relate.

Coming home from abroad, the pilot brought the ship I then commanded to an anchor off and near the Tongue Sand. It was blowing at the time of our bringing up a heavy gale from the S.W. The gale increased, and during a heavy squall the ship dragged towards the sand, and the pilot and myself deemed it expedient to slip and make sail. The topsails were set close reefed, the ship's head being brought to the wind, we stood off clear of the sand. I then made a signal for a Deal or Ramsgate hobbler, then in sight, who being on the look-out was soon alongside. The wind by this time had partially lulled, after the heavy squall just mentioned, and I concluded a bargain with the boatmen to take me to Ramsgate, where I would obtain another anchor, bring it off, and put it on board for £60. Leaving the ship under sail in charge of the pilot to dodge off the Foreland until my return, in preference to bringing up, I proceeded in the boat to Ramsgate. After landing, and while engaged selecting my anchor and chain, the weather began to wear a still more threatening appearance, and my boatmen very soon let me know that on account of the appearance of the weather they would not risk going off again to the ship without a larger remuneration, and deliberately proposed that if I would, without any opposition, make it £120 (just double what was agreed) and they would there and then give me £25 out of the spoil. Being somewhat taken aback at this outrageous proposition, I very foolishly gave vent to my indignation in no very measured terms. The result of which was that had it not been for the interference of an excellent and well known gentleman,

Mr. Darby, of Deal, I should not only have failed in getting my anchor and chain shipped, but in getting off to the ship myself.

The settlement after all had to be left to arbitration, and the award for the service, if I recollect right, was £80. I drew up a statement of these facts at the time, and handed it over for the information of those whom it most concerned, the members of Lloyd's, and if my memory now serves me rightly, the answer I received from the then secretary was,—“That they had long been aware of such impositions at the Cinque Ports, but had to look over them as a necessary evil, this class of men being of great value in cases of emergency, and during tempestuous weather, for saving lives and property.” Such, then, is actually the case, that a system of corruption has to be overlooked and borne with as a necessary evil. But why not apply the “pick-axe and shovel to the root of it,” and dig the long projected ship-canal from Portsmouth to London, or some other Channel port to London, for it is a scandal to us that so much life and property should be annually sacrificed for any vested rights or imaginary safety which the country derives from the Cinque Ports, with such corrupt practices.

I have no particular predilection for underwriters. Their business at best is but a species of gambling. But as it is useful and now firmly established, and could not be dispensed with, we need say nothing about abolishing it, for, like all human institutions, the cancer of abuse must attend it. The fault really lies not with the thing itself, but in the field it opens to unprincipled persons. Underwriters themselves, as a body, and particularly those known as members of Lloyd's, are, I believe, among the most honourable men the city of London contains. At any rate they are entitled to fair play, and their comparatively unprotected position makes any advantage or fraud wilfully practised towards them proportionately greater.

In the course of the twenty-five years that I have had command of a ship I have been placed, as might well be supposed, in difficulties; in which I have ever had to combat with the men who style themselves “Lloyd's Agents,” to prevent them from running me into ruinous expenses, which it did not require much penetration to see that they had invariably, directly or indirectly, more or less interest for promoting. In dealing with such matters, however, I have always considered that there was but one interest confided to my care, and whether it was that of my owner or his underwriter, so far as my duty was concerned they could not be separated. In either case their interest was intrusted to my care, for it depended more or less on my judgment, honour, and integrity for protection. This position, I think, must be obvious to every unbiassed and right thinking mind.

The treatment of the shipmaster by the owner becomes the next subject for our consideration, and we shall see that it is not such as is at all likely to elevate him, or to raise him in his own esteem or that of his captain. I believe that he is too often in the habit of looking upon him more as a piece of his property than as a rational, intelli-



gent, and independent being, in every way his equal. Nay, he may be his superior in everything but the weight of his purse! It is a very high-sounding phrase on 'Change for an owner to speak of *my* captains in conjunction with *my* ships, and, as I have said, both are considered his property, with this difference, that the latter holds the nearest place in his affections.

Your correspondent "North," in his paper on the "Mate and his Rights"—which is highly to be commended, only shadows forth in the captain's treatment of his mate what the captain himself meets from his owner. Is the captain ever seen a welcome and "honoured" guest at his owner's table, as in former days? or is he received at all on those terms of familiarity, friendship, and respect to which the confidence necessarily reposed in him and the onerous duties he has to perform in his owner's service would seem at least to entitle him? My knowledge, if not my experience points to the reverse. Why is this the case—that the captain should hold no higher place in the owner's estimation than his cook or footman, if he should happen to have those appendages to his establishment? It is because he can get both at his own price, and as such he values them! If the captain happens to make a successful voyage and puts two or three thousand pounds into his owner's pocket, as a matter of course he is received in the "sanctum sanctorum" with a gracious and condescending smile, and a certain description of welcome that it would be difficult for me to define,—a sort of patronising welcome, and means—"See what you get for being a good boy, and see how kind I am to you when you make money;" and in the fullness of his heart he orders Mr. So-and-so to give Captain —— a check for £50,—nay, perhaps £100! In this case he gets the money, but should the order be to credit Captain —— with the latter amount it is a very questionable affair, for if anything happens to the captain, by some process in bookkeeping known only in the owner's counting-house the entry, like the mysterious writing on the wall, having served its purpose, disappears, and like the "baseless fabric of a vision," leaves not a trace behind in the way of £ s. d.

But let this pass, and let us come to the reception met with at the termination of a less successful voyage. This is a terrible encounter for the poor terror-stricken slave. He has a vision in his mind of the hungry shadow of a wolf howling at his door ready to devour his wife and little ones, when the expected and awful mandate of the petty despot shall go forth,—“Captain ——, I shall not require your services any longer!” In the latter case, the disappointed owner, no matter how unavoidable the cause of the miscarriage, cannot and cares not to divest himself of prejudice to the unfortunate captain. He barely receives him with civility, for this description of owner does not possess that *suaviter in modo* that characterises a gentleman, and that makes his rebuke both respected and remembered; but with that overbearing insolence that tends but to rouse the worst passions and characterises the man of low origin or ill-re-

gulated mind, often with a cowardice known only to such minds, he adds insult to rebuke when he knows that it cannot be resented.

The writer in the *Times* who calls himself a "Shipowner" says the remuneration given to the commander of a merchant ship is equal to that of a lieutenant in the navy. That admitted, what fearful odds in their prospects and position still remain. The lieutenant in the navy, besides numerous other advantages, is not subjected to the capricious tyranny of a splenetic employer without redress. Nor can he be dismissed from his employment without a fair and honourable hearing of his case and the sentence of a court-martial. This fact alone is worth all that the best paid shipmaster gets from his owner, by adding as much to the dignity and self-respect of the lieutenant as the masters and officers of the merchant service are debased by their dependance upon the will and caprice of the owner.

If, therefore, the respectability and efficiency of the officers of the merchant service is of any importance to the public of this great maritime country, and surely it must be that they, with their wives and families, must be confided to their care to cross thousands of miles over a treacherous ocean, let them devise some means of emancipating them from this tyranny, and I do not fear for the rest. I (who perhaps have as little to complain of in my position as a shipmaster, both as respects emolument and treatment, as the majority of commanders of merchant ships) can assure them that, constituted as the merchant service is at present, I feel it to be a soul-degrading service,—one in which no respectable parent who knew anything of it would wish to place a son on whom he had bestowed a good education. I am well satisfied that this is the opinion and feeling of all the most thinking and best informed shipmasters.

Besides the lowness of the scale of remuneration, the precarious tenure by which they hold employment, and their treatment by the employer, other and equally potent agencies have been at work to degrade their position.

It must be obvious that to calumniate and vilify a class of men is not the way either to elevate their character or raise their condition. The most ancient and revered institution if thus assailed would soon totter to its base. It will be remembered by all who took any interest in or notice of the subject that the British consuls abroad took up the cue, or rather were instructed to do so, and pushed the ball in what seemed to be, at the time, the required direction, until such a mountain of abuse had been heaped on the masters and officers of the British merchant service as seemed at last to satisfy the requirements of their enemies; and then followed the Act of Parliament to confirm and complete their disgrace, by increasing their responsibility and at the same time letting loose the combined vice and malice of a disorderly and vicious crew to frustrate their efforts.

Before, however, proceeding to comment on the Act entitled "The Merchant Shipping Act," it will be worth while to ask what are the duties and responsibilities attached to the master and officers of a

merchant ship. Your correspondent "North," in the paper to which I have alluded, says—"There is nothing in seamanship calling for a high standard of ability. A cabman driving through the streets of London requires as much or more skill and nerve than a shipmaster." Now, as "North" tells us he has been a shipmaster himself, this sounds very like a joke, and we may help it out by adding that a cabman is just as like a king, "because his nose is above his chin!" But if he is serious, all I can say is that never was a greater outrage perpetrated on common sense, to correct such grievous ignorance of the duties and responsibilities that attach to the commander of a merchant ship, and the skill and judgment required of him. I cannot do better than quote the introduction to this subject from that most useful and excellent work, the *Hand-Book of Average*.\*

In the first paragraph on the shipmaster's duties and position, the author says,—“Indeed, I do not know a member of society from whom more is expected and demanded than from the shipmaster,” and he might have added—more poorly rewarded for the dangers he encounters and for his many anxious days and sleepless nights. “I do not,” continues Mr. Hopkins, “remember any class connected with commerce that is trusted so largely and so entirely as the masters of merchant vessels are. I do not think any person is more liable to be placed in situations of difficulty and of danger, situations requiring caution, self-dependance, and integrity, than the captain of a trading ship. Not only is the whole property of the vessel, her cargo, and her earnings within his power, and its safety dependant upon his honesty, his prudence, and energy, but the very lives of the crew and the passengers hang, as it were, on the master's experience, watchfulness, and sagacity. So great a responsibility and so implicit a confidence [he ought to have said *should*] impart to the shipmaster a certain dignity which always attaches to the person who leads his fellow men, and on whose conduct the safety and fortunes of others depend.”

If "North" had been a shipmaster, as he says, and was serious in his remarks on the duties and position of the master of a merchant ship, I would advise him to peruse further than I have transcribed from Mr. Hopkins' book. And as it is evident, by his own showing, that he was neither aware of his duties nor had any sense of the responsibility of his position or the charge entrusted to him when master, all I can say is that both lives and property have gained additional security by his retirement, and the service is well rid of all who feel and think like him.

If such, then, are the duties and responsibilities of the officers of the merchant service, there is no class of men and no position in life in which they could be placed around whom the law should throw closer its protection. Left alone to his own resources, apart from all aid and intervention of the civil power in his behalf, there should be something stronger than the instinct of self-preservation on the minds of those who are called upon to obey his commands.

\* *The Hand-Book of Average*, by Manly Hopkins, Esq.

Nothing apart from what I have already adduced has tended more to degrade the officers and disorganize the merchant service than the code of regulations issued for its government. Had a body of professional men who had long studied the subject and given it their serious thought been consulted, there is reason to believe we should at least have got a code of regulations founded upon practical knowledge. But, though England is a great maritime nation, these laws, of the most vital national importance, are left to the manufacture of men who have never seen the sea, except, perhaps, from Brighton or Hastings piers,—men clever and clear-sighted enough at their own particular business and in their own particular sphere. But almost every article of the Merchant Shipping Act proclaims their ignorance of the subject by its framers. Its mischievous tendency and utter worthlessness for the purpose for which it is intended cannot be better illustrated than in this. If an enemy wished to disorganize and ruin the royal navy of Great Britain, and had the power of doing so, he would only have to abolish the Articles of War and adopt in their place the Merchant Shipping Act, and in less time than the Merchant Shipping Act has now been in force its ruin would be completed.

Where would officers and gentlemen be found to take the responsibility and care of lives when a combination to disobey his orders met him at every step. Such is neither more nor less than open mutiny. He may be knocked down on his quarter-deck, maimed, or disabled, and the offender's punishment for this and other dangerous offences, such as wilfully damaging the ship and impeding the navigation thereof, is no more than a prospective one of twelve weeks' imprisonment, with or without hard labour,—a far less punishment to a sailor than that of being cooped up on board ship for the same length of time on a voyage to India would be to a landsman. The duties of a seaman at all times require prompt obedience to orders, and are also at all times of a more or less perilous and often harassing nature, and, being such, demand and require stringent rules for enforcing obedience. I am quite certain that a great amount of damage and even destruction to both lives and property, are of every day occurrence, arising from timid masters and officers having less fear of losing the sails and spars and endangering the ship, than that of rousing the angry and grumbling feelings of the crew by getting them promptly to their duty.

The fact of the matter is this, that under the Merchant Shipping Act officers become the slaves of the crew; and, as a matter of course under such a state of things, the business too often ends in the destruction of both. From the want of a proper code of discipline to regulate the conduct and duties of both officers and men, as I have said, the service is completely disorganized. A sort of antagonism prevails between the officers on the one hand to get the duty performed, and the seamen on the other to evade it as much as possible, thus producing nothing but anarchy and confusion, with imminent danger both to lives and property.

What else, I should like to know, could be expected where such a

state of disobedience and defiance of authority exists as what I am about to relate, my informant being a highly respectable and intelligent pilot,—moreover, it is a thing of common occurrence. A ship sailed from Gravesend for the Downs in January last, in charge of the aforesaid pilot, and in the evening, when becoming dark, anchored in the Princes Channel to await daylight and the tide to work through, the wind being to the E.N.E. In order to save a portion of the favourable daylight tide, and to give time to heave short and set sail, the hands were called out an hour before daylight, or about six o'clock. Half an hour passed and no appearance of any one being inclined to come on deck, another call was made to man the windlass. Another quarter of an hour elapsed and no signs of a move: the easterly wind was freshening all the time, and both master and pilot were anxious to get the ship through the channel and round the east buoy, when she would have a fair wind,—but not so thought the majority on board, this majority being the crew. Another fifteen minutes and yet no signs of a stir, when the pilot himself went forward to beg of them to turn to. On going into the fore-castle he found them sitting on their chests, debating whether they should turn to before daylight or not, and if so, why, on such a cold morning, they should not first have a glass of grog. The result of this was that by the time the ship was got underway the tide was so far gone and the wind had so much increased that she could not get round the east buoy of Margate Sand, and had to bear up from whence she came. Then, again, before night it was blowing a perfect gale from E.N.E., and a second anchor had to be let go to save the ship from driving on shore. Well, there she lay for three days in this easterly gale; with which, had the men done their duty and turned out when desired, they would have run out of the channel and into the open ocean. Instead of this the wind changed to the westward, and blew just as hard from West as it had done from East, and this ship was for three weeks after beating about in the Downs and in the Channel. Professional men will see the mischief of all this if the framers of the Mercantile Marine Act cannot do so. Besides the serious loss to the owners, which it is hardly possible to estimate, these men punished themselves by not promptly obeying orders, for how many harassing winter nights, in rain and snow, would have been spared them. And how many have miserably perished, and never lived to tell their tale from the same cause?

It will be readily admitted that a combination of the cook, house-maid, butler, and groom of a well appointed establishment at the West End to disobey the lawful commands and even to assault the master, though a very unpleasant affair, at the worst would only involve the loss of a dinner, which could easily be remedied by sending to the nearest *restaurant*, and the offenders could be expelled the house forthwith or handed over to the custody of the first policeman to be had, and their places immediately supplied by a more orderly crew. Twelve weeks' imprisonment, with or without hard labour, would be ample punishment and, I think, meet the ends.

of justice in this case on shore; but did the framers of the law ever contemplate the consequences that might arise from such a combination far away from any succour? I think not. Nor do I think the same gentlemen, did they happen to be embarked as passengers on board a ship where such disobedience and disorder arose in the middle of the ocean and in the face of a threatening and tempestuous night, would go to bed and sleep soundly, with the consolation that the offenders would eventually—if ever the ship arrived at her destination—be punished as provided by the act.

Were any portion of an army to combine and refuse to march at the command of the general, or were they to march and halt as they pleased, the result of the campaign under such a state of things would be easily foreseen. Such an army would soon be annihilated by a better disciplined and more determined enemy. The prosecution of a voyage is one continual combat with the elements, full often combined like treacherous and relentless foes, and in this combat the disorganized armies of British seamen are daily falling the victims. Let this, then, be remedied, and a code of regulations to meet the requirements of the service be drawn up by practical and professional men, who thoroughly understand the nature of the service for which they are intended.

A fixed system of lawful command and reasonable discipline should be established, one that would protect the seaman from being harassed by harsh and unfeeling masters, and, as far as the nature of the duties would admit, assimilate the two services—the royal and merchant navies. This, indeed, would have good effects; it would be beneficial to both services, and the seaman of the merchant service would have less reluctance to enter the navy from knowing that the regulations and discipline of both were pretty nearly alike.

A great deal of inconvenience, loss of time, and detention of ships would be avoided. These are of every day occurrence, from sailors, after signing articles and getting an advance, not joining. The ship has in consequence to be stopped at Gravesend, and if substitutes are not to be found there they have to be sent down from London. Now, though the Merchant Shipping Act provides a heavy punishment for this breach of agreement, it is almost a dead letter, for the offenders are rarely proceeded against, and thus at the very outset of the voyage the law itself, as it now stands, is disregarded. To prevent this there might be attached to the shipping-offices a staff of marine police, specially to look after seamen who had engaged, and see that they were at their posts. These men would make themselves acquainted with all the seamen's haunts in the port, and with ordinary attention to this duty very few could escape their vigilance.

The punishment of twelve weeks' imprisonment provided by the Act for deserting after signing articles or refusing to proceed in the ship, would, if carried out, be fraught with mischief, owing to the corrupting influence of a public gaol, where the sailor meets and mixes with thieves and vagabonds of the lowest and worst description. With such associates he can scarcely fail to get more or less

contaminated. Might not the government take into consideration whether it would not be better to have a ship or two stationed at the most convenient and eligible places in our harbours for receiving offenders of this class? and while under restraint in such quarters they could be drilled and exercised in their proper duties, and also trained in the use of great guns and small arms. Might not a few of our old and useless ships of war be spared for this purpose, and thus out of evil ways would come some good.

When a code of regulations to meet the requirements of the merchant service shall be drawn up by competent persons (and I am confident much mischief and loss, both of life and property, would be thereby prevented) and the shipowner is left to more sober reflection, I would then direct attention to the moral condition of our merchant seaman. This, I regret to say, presents a dark and terrible picture. A sad and mournful amount of depravity has here taken up its abode, such as is only to be found in the vilest of haunts in sea-port towns. From these it is imported into the fore-castle, where the obscene jest and blasphemous oath becomes the common medium of conversation. To such a degree is this carried on now that the mind shrinks with horror at the thought of any youth with a virtuous and moral training breathing an atmosphere so thoroughly saturated with vice and immorality as that to be found among our merchant shipping.

I may reasonably be asked whence arises this state of moral depravity in the seaman's character? and as I have taken some pains to consider and seek out this, I can with some degree of confidence and certainty attribute it to the operation of two causes. *First*.—That the abolition of the apprenticeship system has introduced and from necessity admitted into our service a large sprinkling of the lowest and worst characters of seaport towns. London and Liverpool have contributed largely to the stock of ruffianism, which is every day showing itself in plunder of cargo and insubordination on board merchant ships. This depravity, hunted from the land, has taken refuge in the sea service and spread its contaminating poison over the ocean; while the immunity from punishment adequate to the offences committed, as set forth in the Merchant Shipping Act, has accelerated the flow of this polluted stream. I lament to say, and I say it in sober, sad reality, that from my own experience of the sailor (with some honourable exceptions) I would put no more reliance on his oath than I would on that of a Kaffir! Could any one who hears a human being calling on his Maker to "blast his soul," "strike him dead," &c., &c., almost every day of his life,—could any one, I say, believe that such a man could entertain any idea of the moral obligation or solemnity of an oath? Dreadful scenes of robbery and murder—the latter by false swearing—are now plotted in the fore-castle, and the unhappy officers are falling the victims. These things, however, will in time right themselves,—when the light of truth shall awaken the public, at present in ignorance of them; though the disgraced widow and the orphan children are left to mourn; nor shall we be able to

wipe away the shame or atone for the agony and grief of their sorrowing hearts.

The *second* demoralizing effect on the sailor's character is the company he keeps when on shore; where we must follow him, to see for ourselves what sort of society he mixes with, and what moral influence it is likely to have on his future character and conduct when he shall, perhaps, fall into our own hands. We see him the moment he enters port pounced upon by a horde of sharpers, who, by ministering to his indulgences in vice and immorality, induce him to believe they are his best friends; and in the society of such characters he passes his days on shore in drunkenness and debauchery, until his *interested* friends have fleeced him of his hard earnings, and the Sirens by whom they lured him to their haunts turn their backs upon him, after assisting in the plunder. From them he comes, in poverty and disgust, and in no enviable mood (if he is possessed of reflection) with himself or the world, to the shipping office, again to resume his occupation. Here he agrees with the first or any shipmaster that will ship him until the end of the next voyage, when he will again renounce manhood and virtue and sink himself below the brute. This is no overdrawn picture, it is no other than stern reality,—it is what is done every day by hundreds of our seamen. Here is a field for the labours of the philanthropist! But let him spare his indignation, and let the sharks live, for if he can point to the land where the crafty do not lay snares for the simple, and where the strong do not impose upon the weak, let him but breathe its name, and there let us go and be at peace.

SOUTH.

---

#### A CRUISE IN THE PACIFIC.—*The Tokolau Group.*

Three hundred miles S.E. from Gardner, is a group of three islands—the Union or Tokolau Group. They are within the parallels of  $8^{\circ} 36'$  and  $9^{\circ} 24'$  S. latitude, and  $171^{\circ} 21'$  to  $172^{\circ} 39'$  W. longitude. The north-westernmost is called the Duke of York, or Oatafu, in the native language; next, and S.E., comes the Duke of Clarence, Nukunono; and in a line still further to the southward, is Bowditch, Fakaafu, the principal of the group. They are all of coral formation, with large lagoons; and being covered with cocoa-nut trees, they are populated to their full capacity. The total population of the group may be five hundred, of which Bowditch contains fully one-half.

It was on our fifth day from Gardner that we came up to the Duke of York. The dawn of daylight revealed the land fringed closely with the graceful cocoa-nut tree, the very form of which is ever associated with tropical life. As we drew in shore a couple of canoes were made out approaching. Curiosity was on tip-toe. We were to



make our introduction to people celebrated in history and song; to people who have been charged with a weakness for missionary steaks and baby pot-pie. We were entering the seas that once floated the "South Sea Bubble." Somewhere in these regions is the isle of the Lilliputians, if the veritable Gulliver was not mightily out in his reckoning—and might we not be the favoured ones to re-open it to the commerce of the world.

The first interview dissipated Lilliputian ideas, but kindled our curiosity. The canoes—made of pieces of wood joined with wonderful skill, long, narrow, and with outriggers—came shooting through the water, each propelled by two men, who could handle paddles to good advantage, untrammelled as they were with clothing. They were lighter coloured than our Hawaiians, tall, muscular, and good-natured in appearance, and their actions were all friendly. As soon as within ear-shot, they commenced shouting *talofa, miti*—expressions of friendship—and stretched out their hands to shake ours on coming alongside, all the while pouring forth a stream of jargon utterly unintelligible, but expressive of happy feelings, to judge from the way their eyes glistened, and the laughs that showed matchless teeth. They endeavoured to prevail on us to go closer in, but failing in that, started for shore after awhile, promising by signs to return soon. And they did, and with a fleet of canoes, all loaded down with naked men—a force of twenty-five or thirty. We aboard were only fourteen—a decided minority; but as we had a number of revolvers, together with plenty of sharp knives, and as our visitors looked wonderfully good-natured, and showed no offensive weapons, we allowed them to come alongside and swarm over on our deck.

The Ariki chief was pointed out to us the first thing as the one to be honoured before all others. He was an old man, with rather an intelligent countenance, and wore a *maro* of superior size and workmanship to those worn by his subjects. Otherwise there was no hedge about his royalty: he handled a paddle with the commonest, and was as eager at a trade. They brought shells (but few pearl shells), cocoa-nut oil in small quantities, fish-hooks—which their manufacture out of shell and wood, uncouth things that seem useless for any practical purpose, and fish-lines—made out of the fibre of the cocoa-nut leaf, I believe; and in exchange were anxious to obtain cloth, Yankee fish-hooks, tobacco, and carpentering tools. Tools they desired very much for boat-building, as all work at wood was slow and toilsome with their rude implements of stone and shark's teeth, but, unfortunately, we had none to spare.

With the other articles, however, we were supplied, and a brisk trade was kept up for an hour or two. The poor wretches had nothing of any value to dispose of. The shells were far inferior to those obtained in the East Indies and Mediterranean, and their fish-hooks and lines of course were worthless, but as curiosities; still, we continued to barter away our valuables out of pity, and very proud and happy and rich felt he who could get a fathom of bright-coloured calico to present to his dusky mate ashore, a few of the fish-hooks so

slight, sharp, and strong, and a little tobacco, with a pipe to smoke it in. They were eager to shake us by the hand, to press us to their oil-smeared, naked breasts, and even to express the warmth of their feelings by rubbing noses: and all the time they jabbered and laughed and rushed around to examine the vessel in every part, and peered down the companion-way into the cabin, whence issued forth such rich stores of goods.

So friendly and harmless did they appear, we concluded a visit on shore would be safe. We were curious to see the female portion of the population, their dresses and their style of living. So, with arms in a useable condition, and a few presents as a propitiatory offering, we started in our boat, taking the Ariki with us. Some of the canoes left as we did, but shot rapidly ahead, and our landing was all prepared for. It was at an outlet of the lagoon, a channel through the reef affording a passage for the boat to a beach of sand. A few hundred feet across the beach a stately grove of palm trees arose, under the clear shapely arches of which clustered forty or fifty huts. These were of the simplest construction, being merely steep thatched roofs, supported on four posts, and descending to within two or three feet of the ground, placing one under the necessity of bowing humbly on entering. Over the hard earth were spread mats, serving for carpeting, bedding, and furniture of every kind, unless wooden calabashes might come under the latter head. Then, overhead, suspended from the roof, were stored the family possessions,—fishing-nets, paddles, miniature canoes, and valuables obtained from passing whalers.

The value of a homestead and its contents would not pay a sheriff's attachment-fees. Ignorant people! They know nothing of sheriffs, or bankrupt laws, or police-courts.

The residence of the Ariki, whither we were first taken, seemed nowise superior to those surrounding. Republican simplicity prevailed; indeed, the mere title seemed to embrace all the prerogatives of the office.

Our first glimpse at a female was through a leafy covert—a shy one at a shy one,—for we were cautious not to offend in the slightest the people at whose mercy we now were, and whose feelings of jealousy might be easily aroused. But, after resting a little in a hut, and sipping leisurely the cool, soft, sweet, indescribably luscious milk of the young cocoanut, we ventured out, accompanied by an ample number of guides, to see the town.

Oh! that first, full, fair view of a female Oatafuian! a South Sea Island princess! Isn't it in *Omee* that Melville spins such a charming yarn of one? Form as graceful as a vision of—no, not light, but twilight—deep liquid eyes, looking love, etc.,—flowing masses of hair; black as night, and all that. I stood ready to fall in love and desert the schooner—till I got the aforesaid view. Pshaw! such walking skeletons and perambulating oil casks (unhooped), old, wrinkled, ill-shapen, with nothing to soften and conceal defects but a very brief, stiff, ungraceful skirt of leaves, putting to blush the most audacious ballet-dancer. Such a coming down as was that to all romantic feel-

ing! The only redeeming features were the little children, fat, black-eyed, rogueish, and naked little things, running around in such numbers as to show that the women were better than they looked, and that the future of the country was promising.

One fact did not escape observation—the absence of “sweet sixteen and her associate,” there was no female to be seen between the ages of five and twenty! This singular gap in the progress of the human race was equally apparent in the neighbouring islands, and we speculated gravely on it, and extended our researches as far as possible for the elucidation of the mystery in vain. We went away no wiser, but afterwards we fell in with some old travellers who threw light on the subject. They said human nature, as it is generally found in whale-ships, has proved itself, in intercourse with these innocent people, to be a very carnal sort of nature, indeed; and so, made wise by experience, on the advent of strangers, temptation is prudently removed, and youth and beauty stowed away out of sight. Thus we failed in seeing the brightest side of the picture—the inner sanctum; and Melville may still be telling the truth, for all I know; and Lieutenant Maury may have found some ideal to captivate even his philosophic eye.

The two or three hours of our visit passed agreeably. The ladies would sing for us: low, monotonous songs, each verse ending in high, shrill notes and a ringing laugh, as if the sentiments expressed were very funny. The picaninnies, bashful at first, made rapid advances with the confidence of childhood, and soon became emulous of the honour of holding us by the hand. The lords of the creation, having satisfied their curiosity, sought ease in the cool of their huts; some were busy in taking off to the schooner a supply of young cocoanuts, which were paid for in tobacco. Before leaving, we joined in eating some fried fish,—fried, probably, for our especial entertainment, as the popular style is to take them raw and uncleaned.

Could we by any possibility remove from our minds the prejudices of training and association, and look at life merely as an animal existence—a succession of years of eating and drinking, sleeping and waking, as it is, indeed, to the vast majority of the human family—would these poor South Sea Islanders appear so savage after all?

In enlightened countries it is the part of most to struggle all through life, to toil early and late, to win merely a crust for the support of nature and to lie down and die when the time comes. Our friends of Tokolau are easily sheltered, and clothed without an effort. When hungry, a fish is caught, and eaten writhing in their hand. When tired, they lie down and sleep, with no factory-bell to call them at early dawn. They never go to war—or law. Childhood has no bugbear in the shape of school,—manhood no wearying business. Death comes as it does to the most of humanity, civilized or barbarian. Indeed, does it not come with less terror? “For of those to whom much is given much will be required!” So, on the whole, is not their life the most sensible?

It was on a Sunday that we made our visit to Oatafu. Tuesday  
NO. 9.—VOL. XXX. 3 P

we were at the Duke of Clarence—Nukunono. The islands are not over forty miles apart. In appearance they are alike, but Nukunono is the largest and contains a greater population. Our welcome was equally kind, and just as much trading was carried on. The chief was a splendid specimen of a man, with long black ringlets clustering around a well developed head, and a demeanour dignified as becomes the leader of people. He was made proud and happy by the present of a tall white hat from our captain. Undoubtedly it will go down to his successors as the crown imperial.

The next day we were at Bowditch, Fakaafu, thirty miles to the S.E. Here is the residence of the head chief of the group, and his superior state and authority was manifested in our reception. He did not come rushing off in a canoe to board us, but sent a deputation to escort us ashore. His Majesty was seated on a mat near the spot of our landing, surrounded by his counsellors—dignified old men. At a respectful distance the women were gathered, all showing the usual marks of age, and the background was filled up with a host of naked picaninnies.

Our intercourse was quite formal. We spread out the presents we had brought, amidst a grave silence from the men and faint but irrepressible exclamations from the females. In return, a mat was given as the most valuable thing they had to bestow. On expressing the wish, we were conducted through the village by one of the dignitaries, very likely the Prime Minister, the others the meanwhile retaining their place on shore. The town showed one novelty, marking it as the capital: there was a small square, once occupied by a temple devoted to idol-worship. A year previous to our visit the temple was destroyed by fire, and the presiding deity now stood in the open air perched on a block of wood, but so covered with votive offerings as to be quite obscured in form and feature. It is the god of the group. Annual gifts are received from the neighbouring islands and laid on its shrine. As to the forms of the worship, or the power the religion has over the minds of the people, our observations were too limited to enable us to learn.

Missionaries have endeavoured to gain a foothold here, but have been firmly repulsed, with the singular objection that the islands were over-populated, and strangers could not be allowed to crowd out natives.

Living thus secluded and in small communities, these people are mild and inoffensive. They have no rival tribes to quarrel with, and no use for weapons of war. Among themselves peace and good-will seem to prevail, so that constables and courts and calabooes are unknown. We did hear afterwards that a whaler's boat's crew had been cut off here and destroyed, but nothing of the whys or wherefores; and as the story came through a crooked channel it may have got twisted out of shape. Certain it is that the Tokolauians offer an agreeable contrast to their neighbours of the Feejees; and in many respects their lives might be profitably imitated by people who are wiser, much wiser, in their own esteem.

THE STRAIT OF BELLEISLE: *As to its eligibility for navigation on the route to and from Quebec.*

Some remarks that have been made at our "Club," on the occasion of the wreck of the *Canadian*, have produced the following paper on the eligibility of that navigation in preference to the route South of Newfoundland. We lose no time in giving them a welcome place in these pages, as our only object can be to arrive at the truth on so important a subject. We are always glad to avail ourselves of the little collections of information and opinions held by our friends of the Club; and although they may sometimes border on extremes, they may be none the worse for that. In the present case it is clear they have been productive of good, and we hope will yet be the means of eliciting further remarks on that navigation; for, in a future number, we hope to be thus enabled to arrive at some safe conclusion on the subject for the general benefit hereafter. At the same time we may take this opportunity of adding that we are very glad to receive so important a communication from the rooms of the Mercantile Marine Association of Liverpool, where so much experience on the affairs of our journal is to be found, and that we shall always be glad to hear from the same quarter.

*Mercantile Marine Service Association, Liverpool,  
3rd August, 1861.*

Sir,—In the magazines for July and August there are some remarks about the loss of vessels this season by ice on the coasts of Newfoundland; also opinions put forth highly condemnatory of the use of the Straits of Belleisle, and advising passengers not to patronise those steamers which take that passage to or from the Gulf of St. Lawrence.

It appears to me that there is considerable misconception on this subject at present, and great experience of both routes is the only excuse I have to offer for troubling you with my opinion on their comparative disadvantages. While I admit that the Belleisle route ought to be avoided when there is a risk of *field ice* being encountered on it, I feel confident that at all other times it is by far the safer route of the two.

Dangers arising from ice, from irregular currents, and from collision with other vessels are greatly multiplied by dense fog; and in these respects the northern route has a great advantage over the southern one, for the fogs are seldom of long continuance in the north, while off Cape Race they form the general rule in the summer months.

At the lighthouse on the top of Belleisle in the six summer months of 1859 they experienced 1168 hours of fog. The average is about eight days per month. A considerable portion of those fogs would be moderate, involving little risk in navigating through them. Moreover, as the island is high, the upper part of it is frequently enveloped in fog (and of course registered), while it is clear weather near the

surface of the sea. I have frequently observed this, and Captain Vaughan's, the lighthouse-keeper, published statements are to the same effect. I have no positive data as to the proportion of fogs to clear weather on the Grand Bank and in the vicinity of Cape Race, but my impression is that fogs prevail there half of the time during the summer months. They certainly are very frequent, often of long continuance, and extending at times from eight hundred to a thousand miles with scarcely a break in them.

The steamer *Anglo Saxon*, in the early part of last month, got enveloped in fog as she left the Gulf of St. Lawrence by the south route, and from there to  $40^{\circ}$  W. had not four hours of clear weather, having passed over a space of 900 miles. Both last year and the year before, at about the same season, dense fog was experienced on board of her in passing over that track, and her experience is no exceptional case.

Now, danger from icebergs can be in a great measure avoided by going slow or stopping altogether if the fog is very dense. But in the ice track, and that of many vessels at the same time, even extreme caution does not insure safety; for by going dead slow, or stopping altogether, to avoid Scylla you may fall into Charybdis, or rather Charybdis may fall into you, in the shape of a ship running into a steamer amidships, her weakest and most dangerous part. But icebergs wont run into a steamer if a steamer does not run into them. Danger from icebergs is much less than dangers from other vessels in their vicinity.

There is, perhaps, not above a score of vessels pass to and from Europe by the Belle Isle Route in the whole season. There are no fishermen outside the straits, and few inside, in the steamer's track. But by the southern route over the Grand Bank they are very numerous, many of them of considerable size, with large crews on board for fishing purposes. Then a great proportion of the United States traffic by steamers and sailing vessels pass over that track, as well as the New Brunswick and Nova Scotia trade from Europe, and all the Gulf of St. Lawrence trade from Europe, less the few by Belle Isle.

The Quebec fleets alone average over a thousand vessels a season, and all these ships and steamers pass over this south track, which by usage is not very broad, and a portion of it is obstructed by *field ice* in the early summer, and by icebergs throughout all the summer months.

The vessels to which you refer as missing from New York to Europe, and supposed to be lost by ice, were on the south route, and we know of several others that were lost by ice this season on the same route. Last mail brought the account of one ship from Montreal that was lost through striking an iceberg on the 25th of June, in a latitude south of Cape Race; and to-day's newspaper gives the accounts of the extremely dangerous position that the ship *Plantagenet* was in for three days, through being entangled amongst *field ice* and icebergs in a dense fog, ending on the 27th of June. Her position was lat.  $47^{\circ} 15'$ , long.  $45^{\circ} 10'$ , on the regular south route for any port of North America.

These are a few known instances; but we have no account of the many narrow escapes that must have been made this season already. We may safely fancy them as rather numerous, from the number of ships that have arrived in Canada and the United States that have been damaged by ice. The loss of the mail steamer *Canadian*, is referred to, and the straits of Belle Isle blamed for it; but she was lost after passing through the straits in safety: and the same cause would have produced the same effect off Cape Race, viz., crushing her bilge in by falling heavily on heavy ice in a swell of the sea. And as I have already shown there was *field ice* abreast of Cape Race and 300 miles east of it on the 27th of June, twenty-three days after the *Canadian* was lost on the northern route.

Danger arising from irregular currents is alike common to both routes. The *North Atlantic Directory* furnishes a painful list of vessels that have been lost in the vicinity of Cape Race from that cause. Freedom from danger arising from sailing in the vicinity of land is also in favour of Belle Isle Route, for the distance by that route is 226 miles less than south by Cape Race, 125 of which is the coasting part of the passage. If some parts of the coast of Labrador are more dangerous than the south coast of Newfoundland, both are dangerous in thick weather, if too closely shaved. In clear weather there is danger in neither, and clear weather is much more prevalent on the Labrador coast than on the south coast of Newfoundland.

The strait of Belle Isle is only eighty miles long, it is some ten miles broad at its narrowest part; the passage is free from rocks except one or two close to the shore. There are soundings throughout, and in many parts of them a vessel can anchor if necessary. There are also several harbours in the straits; Forteau Bay a spacious one. There are first rate lights at each end. The Canadian government are about to erect another on Cape Whittle, the worst part of the Labrador coast. And the soundings survey is being carried out at present by Captain Orlebar, under the authority of the British government.

If the strait be attempted too early there is a risk of more *field ice* being met with outside Belle Isle on the north route than on the south one, and this is the only real advantage that the south route has over the north one, in my opinion. For although the icebergs are more numerous north than south, there is little risk incurred when a steamer can go slow in fog without any danger from other vessels. In 1857 the strait was clear of field ice on the 9th of April; in 1858, on 10th of June; in 1859, on the 12th of May: for 1860 I have no data at hand; this year it was after the 4th of June, and it was in considerable quantities 150 miles east of Belle Isle on the 5th of July; I am not aware if any has been seen since. But this is an exceptional bad year for ice both north and south, the worst since 1856.

Lieutenant Ashe seeing icebergs near Belle Isle on 7th of August, is not a sufficient reason for the passage of the straits being avoided until September, for icebergs do not block the way as field ice frequently does, and by waiting until June is over the risk of encountering field ice is very small indeed. We might as well avoid going

south of Cape Race, for there will be icebergs on that route in a season like this until the end of September. Even as a general rule icebergs are encountered on both routes throughout the summer and autumn months.

The connection with which it is remarked that the line have lost four vessels, would lead any one ignorant of the facts under the impression that they were lost on the north route, whereas the *Canadian* was the only one lost there. Passengers who are used to this route prefer it on account of its being a short oversea passage; the distance from Tory, in Ireland, to Belle Isle, being only 1,640 miles; and as the rest of the passage is generally made in smooth water, there is less suffering from sea sickness than on the longer oversea passage to America.

The Belle Isle route when free from field ice is preferred by all the commanders of the Canadian Line on account of its safety, the time saved being a secondary consideration. You refer to them as commanders not overburthened with discretion, because they hold and act on their own opinions. Why should they not? Leaving *their* responsibility out of the question, can you point out any others' upon whom they can rely as having greater practical knowledge and experience of these routes? Until you have done so the term indiscretion is not applicable to their professional character.

I am, &c.,

WILLIAM BALLANTINE, *S. S. Bohemian*.

*To the Editor of the Nautical Magazine.*

#### MORE ABOUT THE FEEJEEES.—By *B. Seeman, Ph. D.*

The Feejee Islands are likely not only from the importance of their position but also from their extent and great resources, to become more intimately known to us hereafter than they are at present. We therefore gladly seize all opportunity for preserving accounts of them for our readers. Mr. B. Seeman's narrative of an excursion to one of the mountains which they contain forms an important addition to his last, and we therefore have no hesitation in borrowing it from the *Athenæum*.

On the north-west point of the island of Kadavu, rises a mountain, nearly 4,000 feet high, which, from a certain resemblance to the hillocks on which yams are planted, is termed Buke Levu, or the Large Yam Hill. No white man had ever ascended it, and though laid down in the latest maps, its very name is not recorded. We had on two occasions made attempts to reach the summit, but were baffled by gales and rain. However, when Mr. Pritchard and I were at Bega, the fine weather induced us to steer once more for Kadavu, and, sailing



all night, daybreak disclosed the bold, dome-shaped outline of Buke Levu.

On bringing our little schooner to anchor off Talaulia, heavy showers overtook us, and we began to despair of ever attaining our object, when, about nine o'clock, it suddenly cleared up. The natives, who had watched from the beach, could not understand our hesitation in not landing at once, and in proof that they were friendly disposed, brought out their women and children, and, moreover, carried green boughs, as the troops do in Macbeth when "Birnam wood removes to Dunsinane." On learning our object in coming, fifteen men and boys cheerfully volunteered to accompany us. The ascent commenced the moment we left Talaulia, and passing over cultivated grounds where the people were busily engaged with their crops of sugar-cane, yams, taros, and plantains, we reached, in about a quarter of an hour, a village, where another party of natives joined us, and where we saw some fine plants of the different kinds of kava, for which Kadavu is renowned.

A narrow path, often winding along precipices and through rivulets, led to about 1,500 feet elevation, when it gradually faded away, and the isolated patches of cultivation noticed up to this height, as well as the wood which had re-occupied ground at one time cleared, gave place to an undisturbed virgin forest; through which we had to cut our way. We had taken the precaution of bringing a strong rope, sixty feet long, which, made fast to trees, proved extremely useful in dragging ourselves up almost perpendicular rocks, in the rainy season occupied by waterfalls, and even at this time of the year very slippery. On some of them were found a number of delicate ferns (*Hymenophyllum*), and quite a new species of landshell (*Bulimus*), fully two inches long, and of a bright salmon colour. In order to save time we had directed one of our men to push ahead and prepare a camp-kettle full of tea. When, at last, after great exertion and frequent stopping to examine objects of interest, we reached the top, he and half a dozen others were already there, but they had omitted to bring either matches, firesticks, or water, and even the cocoanuts, packed up with the rest of the day's provisions, were too old for drinking. Being exceedingly thirsty, we could not touch food, hungry though we were. The natives declared the nearest water to be more than 1,000 feet down, and as they had not the proper wood it was impossible for them to kindle fire by friction. However, a man must have read *Robinson Crusoe* to little purpose if his resources fail him in moments like these.

We were determined not to let our explorations come to a sudden stop for want of something to drink. Mr. Pritchard left me the option between procuring fire or water; to guard against lame excuses on the part of the natives, it was thought necessary that one of us should go with them in search of a spring. Knowing what a hard job it was to make a fire by rubbing, without pausing, two pieces of wood together, especially in the tropics, I declared in favour of getting the water. My companion, who did not seem to relish descending so

many feet and climbing up again, was evidently pleased with his lot. In spite of all the natives were saying about making the wood answer, he resolutely began rubbing away. Great exertions were required; hat, jacket, vest, and neck-tie discarded to give greater freedom to action. At last came the reward; the wood began to smoke, sparks appeared, went out again, re-appeared, and brought in contact with a piece of bark cloth cut off the tail of a boy's dress, soon produced a flame. All this time I had been sitting on an old stump, feigning to be quite insensible to certain hints about the desirableness of looking after the execution of my part of the contract. When the first flame had appeared I at last bestirred myself, and, to the surprise of the fire kindler, instead of going a long way for water, climbed up a neighbouring tree on which I had noticed an epiphytical plant (*Astelia*), the leaves of which acting as a kind of rain-gauge, were filled with pure water. By merely emptying these the necessary supply was obtained; ere long tea was ready, and relished all the more from recalling to mind the long established connection between cups, slips, and lips.

After all hands had partaken of the refreshment, a number of trees were felled, in order to gain, if possible, a view, the top of the mountain being densely wooded. No sooner had this been accomplished, than, to our joy, the clouds, which up to this time had been interposed between us and the region below, dispersed, disclosing a great part of Kadavu and the sea. Our little schooner was snugly lying at anchor, flying the British colours; but we listened in vain for the signal guns, which the men had been directed to fire as soon as they should perceive the smoke of our fire. We afterwards learnt that it had been found impossible to distinguish between smoke and clouds. A large native canoe, with its triangular sail, was seen approaching the shores, and the blasts of the conch-shells could be heard distinctly, though we were nearly 4,000 feet high. Otherwise there was a deep silence, only occasionally broken by the dogs which have become naturalized in these wilds, as the domestic fowls have in other parts of the group. The vegetation encountered was similar to that of Voma Peak in Viti Levu; there were the same scarlet orchids and epiphytical ferns, but also several new species of plants. The Cinnamomum, furnishing a superior Cassia bark, was here as plentiful as in Great Feejee; a kind of Gummi Gutti tree also engaged our attention. Buke Levu is evidently an extinct volcano, and the hot springs at its foot may possibly stand in some connexion with the cause of its former activity. There is a swamp at the top; but we did not discover any large crater.

Having left on one of the trees a bottle containing a record of our visit, we commenced the descent, which presented in some parts serious difficulties; but, thanks to our rope, we overcame them all, only one of the lads having a serious tumble, by which he sprained his ankle. Before we were more than half way down it was completely dark, when the natives lit bundles of reeds and the stems of an *Erigeron*, both of which made excellent torches. On arriving at the first grove of cocoanut palms, a general halt was made, and heaps of nuts were brought down from the trees and emptied of their contents with asto-

rishing rapidity. It was past nine o'clock, just twelve hours after we started, when we reached Talaulia, where the whole village was assembled at the house of the teacher, and our native companions gave a circumstantial account of our day's proceedings.

Early next morning every one who had accompanied us received a butcher's knife, which elicited much clapping of hands in proof that the gift was acceptable. Money would not have pleased half as much, as its use is not yet understood. All payments are made in kind,—a most irksome and cumbrous way, compelling you to carry a whole heap of things to defray the current expenses of a cruise. Articles regarded as small change, and making one look like a pedlar, you are supposed to have always about you. In one pocket you carry pipes and tobacco—in great demand, but held rather cheap; in another fish-hooks, jews'-harps, and beads, the spare room to be filled up with scissors and knives of various descriptions. Your gold and bank notes, represented by bales of Manchester print, especially navy blue, flannel jackets, and woollen blankets—killing the natives faster than brandy and the so called vices of civilization, and American hatchets, price five dollars a piece, are kept on board. The inconvenience and expense of paying for everything by articles of barter, is increased by some of the goods not proving acceptable in all towns, and the natives refusing certain things because they happen to differ in some unimportant trifle from those generally in use. Knives, with white handles instead of black, would be objected to, though their blades might be first rate; and I learned, to my cost, that it is absolutely useless to lay in stock at Sydney unless one obtains exact information regarding the articles in demand.

On leaving Talaulia, we steered eastwards, passing Yawe, famous for its manufacture of large earthenware pots, made without a wheel, in order to bid farewell to Mr. Royce, the principal missionary at Tavuki, under whose hospitable roof we had previously stayed. Tavuki, from being made the centre of the mission of the district, may be regarded as the capital of Kadavu and its dependencies. The island of Kadavu, of which so little is known, is hilly and highly cultivated; its population, said to number 10,000, is a mixture between the Feejees and Tonguese races, all of whom, with the exception of seven individuals, have nominally become Christians. The island is twenty-five miles long, stretching from east to west, and being contracted about the centre into the narrow isthmus of Yarabale, literally "Haul-across," from the fact of canoes and boats being dragged across it, in order to save the trouble and escape the danger of a long passage around either the east or west point. We crossed there on a previous occasion, and found the northern portion of the passage a fine avenue of cocoanut palms, the southern more or less a mangrove swamp. A similar short cut for canoes is effected in Vanua Levu.

On both sides of the isthmus of Yarabale, there is a bay; the northern, Na Malata, is shallow and open; the southern, Ga Loa, has deep water, good anchorage, and three passages through the reef outside. The different surveying expeditions having quite overlooked

this fine bay, Mr. Pritchard made a rough survey in 1858, it being not improbable that if the much discussed communication between Sydney and Western America should be established *viâ* Feejee, steamers would prefer calling at this southernmost bay, with plenty of sea-rooms outside, than run the risk of entering the labyrinth of reefs, shoals, and rocks which render the navigation of the central part of the group rather difficult. There are three islands; the largest, 200 feet high, about a mile long, and half a mile across, is termed Ga Loa, (Black Duck,) and confers its name on the bay. It is full of fruit trees, and pointed out as the spot where, only a twelvemonth ago, a man was baked and eaten. Cannibalism in Feejee will soon number amongst the things that have been. The influence of *all* the whites residing in or visiting the group is steadily directed towards its extinction; and although a missionary has asserted in print that *he had been told* some of the white residents were habitual partakers of human flesh, I think, for the honour of our race, such second-hand stories ought to be indignantly rejected. Antiquaries know that cannibalism of a certain form lingered in Europe long after the Reformation; that mummies, thought to be Egyptian, were extensively used medicinally; and that only after it was found out people had not partaken of the contemporaries of Thothmes the First or Rameses the Great, but of bitumenized portions of their own fellow countrymen, this precious medicine fell into absolute disuse. Even in our own times we may still meet in certain parts of Europe people doing what has been recorded with horror of the Feejeean—that of drinking the living blood of man; but, mark! with this essential difference, that the former do it in hopes of thereby curing fits of epilepsy, whilst the latter did it to gratify revenge and exult over fallen enemies. As for an European, even of the lowest grade, coolly sitting down to a regular cannibal feast, the idea is too preposterous to have ever been allowed to disgrace the pages of a modern publication.

Taudromu, another of the islands in Ga Loa Bay, scarcely half a mile around, now belongs to an American Indian of real flesh and blood, and in former times was inhabited by Ratu va caki, a mighty spirit, who, with his sons, all, like their father, of prepossessing appearance, and bearing poetical names, seem to have played the same part in Feejee as the Erl-King and his daughters did in Europe. Many are the stories told of their deeds and adventures. Generally they used to go out together; but if Ratu va caki was disinclined, the boys, who, young rascals! had as keen an appreciation of a pretty face and good figure as their old rake of a father, would go out by themselves, principally moving about in heavy squalls and gales—hence their invisible canoe was termed Loaloo; and if soon after stormy weather any fine young girls suddenly died, it was proverbially said that Ratu va caki and his sons had enticed them away. However, poetical justice was done at last. One day, when all were at Yanuca, near Bega, their presence, notwithstanding their having assumed human shape, was discovered by the local god, who rightly guessed their intentions. When they were performing a dance, and all the girls were admiringly

watching their movements, the local god caused his priest to prepare a certain mixture, which, on being sprinkled over the visitors, made the arms, legs, and other parts of their bodies assume such ridiculous shapes that they became the common laughing-stock of all, and could never think again of undertaking similar expeditions.

At sunset we left Tavuki, and had put to sea scarcely an hour when the weather became squally and very thick, compelling us to take in all canvas except the foresail. We should have fared ill if it had not been for the presence of the consular interpreter, Charles Wise, who combines with a perfect knowledge of the Feejeean language, customs, and manners, the advantage of being perhaps the best pilot in the group—the more appreciated amongst a maze of 230 islands, of which there exists no reliable chart. After an anxious night among reefs and shoals, we found ourselves off Rewa; and as the wind had now become a gale, the rain was coming down in torrents, and the sea was very high, we took shelter in Laucala Bay, anchoring opposite the premises of Pickering, alluded to in a previous communication. The occupier was absent, but his people made us comfortable; and in the evening a boat took us across the Rewa River to Mataisuva, where the bad weather detained us several days.

The coast about here was surveyed years ago by Belcher and Kellett, and has of late attracted some attention from a prevailing conviction that somewhere in this neighbourhood, probably in Suva Bay, will be the capital of Feejee, if the country should become a British colony, Bau, where the present king resides, being built on a mere islet, and not possessing any advantages in the eyes of foreigners. There are three places which have put in a plea for the distinction,—Levuka, Port Kinnaird, and Suva: but the arguments advanced incline in favour of Suva, situate in a fine bay, open to the prevailing winds, and on rising ground, and having an inside reef communicating with nearly the whole southern portion of Viti Levu and the Navua and Rewa rivers. Land has, in consequence, so much risen, that an acre, worth a couple of years ago only a few pence, now fetches £10 and upwards.

The mouth of the Rewa River during the rainy season is notorious for myriads of mosquitoes. On some evenings the hecatombs slain by incautious contact with the flame actually put the candles out. At the Mission Station, Mr. Moore once contrived a room on the principle of a mosquito curtain; but the contrivance was not found to answer, as few persons could be induced to purchase freedom from irritating bites by confinement for several hours of a hot night in an insufficiently ventilated kind of cage, which, from its very nature, could not be so large as to admit of much moving about or the introduction of light for reading and writing. Mosquitoes are objects to which the attention of all new comers is irresistibly directed. Those of Somosomo never favoured us with a call until after breakfast, and they obligingly withdrew about sunset, in order to let us have the evening to ourselves. In other parts of the group the evening is their very time for paying visits. The moment one of their monotonous *solos* is

heard, a *tutti* will immediately follow. The difference between the voices of the various species is almost as great as that observable in those of men, and a naturalist studying these insects thoroughly should either possess an ear musically trained or else carry a fiddle, in order to determine the exact note struck up. I am persuaded that every mosquito, from the large sluggish one of the Arctic Circle to the little swift one of the Equator, may be known as readily by its peculiar note as by any artificial diagnosis—the Sydney one pre-eminently by its very deep tone.

Sacred groves formed as prominent a part in the Paganism of the Feejeeans as they did in that of the Indo-Germanic nations, and there still exists a fine one at Na vadra tolu, about a mile from the Mission Station. Keeping along the sandy beach you observe a large Yevu-yevu tree (*Hernandia Sonora*), forming a bower which leads to a very curious group. A venerable Vutu rakaraka (*Barringtonia speciosa*), more than sixty feet high, has thrown out several strong branches, two of which form, in connexion with its stem, bold arches. Epiphytical figs, with their numerous roots, are holding the monster in close embrace. Ferns, and festoons of aroideous plants, and wax flowers, tend to increase the wildness of the fantastic scene; whilst the dense foliage of surrounding Tahitian chesnuts and Vesi trees insure a constant gloom and sombreness to the place. It was here where, in times gone by, when Rewa was a heathen district, the priests spent whole nights in consultation with the gods to decide whether peace or war was to be the watchword. If at dawn of day blood was found in the paths, more blood was to be spilt; if no such omen was observed, peace was desirable.

Several of these groves were destroyed on the introduction of Christianity; a large one near Bau was felled the day after Cakobau, the King of Feejee had embraced the new faith, the woodcutters trembling when they had to lay the axe on objects so long sacred to them by all the laws of *taboo*. Sacred stones, to which the natives pay reverence, also exist in Feejee; for instance, near Vuna and Bau, as well as in many other parts of Polynesia. Fully granting their being the supposed abode of certain gods or goddesses, as has been contended, we can only hope to arrive at their real significance by considering them in connexion with the ideas associated with, or represented by, other monoliths. I would particularly direct attention to their peculiar shape, of which some good illustrations have been published. Compared with certain remnants of Priapus worship as found in India, the Museo-Segreto at Naples, or, freed from every trace of obscenity, in the obelisks of Egypt, their nature becomes evident. More or less, these monoliths represented the generative principle or procreation; and, if the subject admitted of popular treatment, it would not be difficult to show that the Polynesian stones, their shape, the reverence paid to them, their decoration, and the results expected from their worship, are quite in accordance with a superstition of wide geographical range. Some of these South Sea stone gods were supposed to cause fecundity in pigs, rain and sunshine. A stone at Mayo was carefully

wrapped up in flannel, periodically worshipped, and supplicated to send wrecks on the coast. Two large stones lying at the bottom of a moat, are said to have given birth to Degei, the supreme god of Feejee. In all instances an addition to objects already existing was expected from these monoliths. There was a stone near Bau which, whenever a lady of rank at the Feejeean capital was confined, simultaneously gave birth to a little stone. It argues nothing that these stony offsprings were fraudulently placed there. The ideas floating in the minds of the bulk of the people absolutely tended towards the conviction that some mysterious connexion existed between the large stone and the Bauan ladies. Since the introduction of Christianity to these districts, it has been found necessary to remove the large stone, in order to check the prevailing superstition, leaving its numerous posterity bel ind to get on as best it may.

Leaving Rewa Roads on the 10th of September, we reached Port Kinnaird on the following day, where our little schooner was refitted, and we made every preparation for another, my last cruise. The natives were now beginning to discuss the possible chance of what may be called their whitebait season, the time of the year when the Balolo comes in, an annelidan, the periodical appearance of which is watched with the deepest interest and predicted with almost unerring certainty from the phases of the moon. But of the very existence of this animal naturalists knew nothing until a few years ago, Dr. Grey, of the British Museum, described it under the name of *Palolo viridis*, adopting the Samoan and Tonguese term for the genus, and Dr. Macdonald wrote on its anatomy. The first few of these wormlike creatures floating on the surface of the ocean are seen in October, hence termed Balolo lailai, a little Balolo month. Myriads appear about the middle of November, (generally attaining their climax on the 18th,) which from that fact is called Balolo levu, or great Balolo, and the natives on the coast are particularly busy in catching and forwarding this delicacy of the season to their friends at a distance, all the more appreciated as a whole year must elapse before it makes its re-appearance. From personal experience I can add nothing respecting the taste of this dainty article of food. Some of the white residents in Feejee eat it, and a strong minded English lady assured me it was quite a relish. However, everybody knows the old proverb, *De gustibus, &c.*,—and if in the Samoan, Tongan, or Feejeean group a dish of Balolo should be served up, strangers must exercise their own discretion whether these little creeping crawling things, with their cylindrical jointed body, green, with a row of black spots, are a delicacy to be recommended, or a nuisance to be avoided.

---

A Sydney paper of October last contains the following remarks on these islands.

We now imperatively require the aid and power of a systematic government. While there are only a few settlers, the consul can

manage to keep everything straight and quiet, with the influence he has over the chiefs and with the good sense of the majority of the whites. But soon there will be more than an official can look after. To carry out the experiment to obtain cotton from Feejee, we want a government, we want the British flag over us. The chiefs are daily pressing us to the delay, for already do they see the benefits that will accrue to them as well as to us. The native population is becoming more anxious to see the flag over them, and our laws accompanying it. All hitherto done has been managed wholly by moral force, for there has been no physical force to which to apply for aid.

The cultivation of cotton has been commenced with fine prospects of success. A site has been reserved for one of the cotton gins sent by the Cotton Supply Association in the middle of the town, so that any one may have access to it who has cotton to clean. I calculate that each planter will procure at least one third more cotton from an acre of land in Feejee than in America; for while in the latter country the cotton plant has to be renewed each year, which incurs additional labour and outlay as well as loss of time,) here we have our trees flourishing all the year round, besides the saving of labour and outlay and not being required to plant every year.

Our spacious and beautiful harbour, Port Kinnaird, is the admiration of every one, and the place only requires to be seen to be admired. Nothing whatever can possibly harm a vessel as she swings to her moorings, and the facilities for running out wharves are everywhere. There certainly is no harbour like it in Feejee.

We want more missionaries: without them our task is much more difficult. It is very well for those who wish only to amuse themselves with the natives, or to buy their oil or beche de mer with iron hoop and madapolams, to decry the missionary and his work. But an impartial observation tells me the missionary is absolutely necessary to teach the savage to give up his heathenism, and then the trader or the planter may supply him with cloth and get his honest labour. If the Wesleyans cannot send more men, let the Churchmen, let the Congregationalists, the Baptists, step forward to help us. There is room for all.

Another correspondent of the *Southern Cross* gives a most favourable account of the natural capabilities of the islands, and we may fairly anticipate that should they ultimately become a part of her Majesty's colonial empire, they will be found to be one of the most valuable acquisitions which have been made of late years. The Feejee Islands enjoy, though lying in the tropics, many different climates, which are favorable both to purely tropical products and to such as are generally found only to flourish in more temperate latitudes. Coffee, cotton, wine, wool, and tropical fruits of all kinds, may be looked for as the future exports of these islands. The natural growth of grass is described as most luxuriant, and of a kind similar to that of the grass in this province. A great similarity seems likewise to exist in the soils, which both here and there show unmistakable indications of a volcanic formation. The natives, who have been brought



into contact with Europeans, seem to be disposed to acquire civilized habits, and to amalgamate with Europeans, but not with Americans, to whom they appear to have an unconquerable aversion; but those living in the interior are reported to stick still to their savage and even cannibalistic customs.

---

#### CYCLONES AND SAXBY'S WEATHER SYSTEM.

Sir,—In your Magazine for July last you did me the favour of referring to me a letter dated 6th May, 1861, received from a member of the Meteorological Society of Mauritius. Much occupation prevented my replying in time for the current number.

The question asked by your correspondent is this,—“Do the same rules apply to the barometer in the southern hemisphere as in the northern in regard to lunar equinoctials?”

I can only answer generally, that my lunar theory applies to all parts of the earth's surface, but that I have yet to show the true position in which one who resides in the region of the Trades is placed as regards the barometer.

The barometer has so long been the only means by which some changes of weather have been indicated before their occurrence, that it has obtained among us an extraordinary reputation:—extraordinary, because uncertain. The Meteorological Department of the Board of Trade has published a manual of its attributes:—it tells us,

That the barometer foretells coming weather.

That it does not always foretell coming weather.

That it may be used without difficulty.

That its indications are sometimes erroneous.

That any one using it once a day, &c., may become “weather-wise.”

That its warnings do not always apply to weather in the locality of the instrument, but sometimes to neighbouring regions.

It is time we better understood what the barometer really can or really cannot do. I propose, therefore, the following in explanation. Before again entering upon untrodden ground to turn the first furrow of a virgin soil, let me remark that storms are known to frequently occur in which the barometer gives no warning whatever; and, on the contrary, great depressions in the barometer frequently happen without any apparent results as to weather. It is from these simple facts that we derive all the contradictions which writers on the barometer are so liable to assert. *Explain these and we place the barometer on a footing of usefulness it never before possessed.*

Those who have had patience to read my remarks in the *Nautical* since January, 1860, have probably noticed that I have seemed to “shy” the question of cyclones, which your Mauritius correspondent

now so opportunely raises in his letter. Whatever my opinions may have been, I have referred cyclones to causes but vaguely hinted at. I have now to explain my views more clearly with regard to both cyclones and the barometer.

It has appeared to me that we may reasonably evade the difficulties which beset the barometer from its "uncertainties," if we consider weather as proceeding from two causes, viz., *primary* and *secondary*.

The primary cause of all weather change is undoubtedly electricity; but in a limited sense, and for practical uses, I purpose in future to distinguish the *electric* or primary from what we may call the *mechanical* or secondary effects: by so doing we approach what may truly be called a weather system.

Now we are in possession of the facts of the greatest importance in our investigation, viz.,—

1st.—The heaviest hurricanes which sweep our globe *do* cause a great disturbance of the barometer.

2nd.—Exceedingly heavy gales *do* occur which scarcely disturb the barometer.

We call the first by various names, such as hurricanes, cyclones, &c., and, as I stated in the *Nautical* in 1852, they invariably originate in the region of equinoctial calms; (the cause which produces them is quite another subject;) they move along with differing velocities, and at first stride the earth on or close to a neutral magnetic line, which we call the "line of no variation:"—they gradually diverge from the neighbourhood of the equator until having reached near to the polar limit of the region of the Trades, they recurve towards the nearest pole, again drive along upon some one line of equal magnetic variation until they lose themselves in high latitudes or disperse altogether. These cyclones, having a distinctly traced whirling motion, the air surrounding them soon partakes of such gyrations; and precisely as we see in a small whirlpool, (we often see it in our teacup,) centrifugal force removes a portion of the fluid from the centre of the whirl, and in the case of the cyclone, consequently relieves the surface of the mercury, which is open to the atmosphere in the barometer, from some of its pressure; in other words, the mercury is no longer sustained so high in the vacuum end of the tube, and the barometer "falls." Now I call this species of storms *mechanical*, because the motions of the air and mercury follow, upon a very large scale, the common laws of gravity which affect all other ponderable bodies.

As regards the second class of gales which scarcely (or sometimes do not) disturb the barometer, I place them under the category of lunar equinoctials, for the following reasons. Attributing all changes of weather to electric influences, we have in the electric fluid an *imponderable* body. Its free permeation of the atmosphere does not therefore affect the density of the air except with *minor* operations, which disturb temperature, and by resulting condensations and evaporations (the means by which in this class disturbance of weather is produced) cause *displacement* of air, when such does occur, on a comparatively small scale, occasioning the depressions or risings which we

frequently but not uniformly seen in the barometer. We cannot estimate by *weight* the presence of electricity in a fluid or solid, therefore an accumulation of electricity cannot by its presence affect the *weight* of the atmosphere nor, therefore, disturb the barometer. Hence, I say, we have storms which *do* affect it, and storms which *do not* affect it. Now, without my lunar theory mankind have positively no means from which to take "warning" when storms of the latter description are to be looked for. That these are not unfrequent I at once demonstrate even from the last month (July). On the 18th, a very heavy gale from S.W., having (according to the register of the Royal Exchange anemometer) a velocity of upwards of fifty miles an hour, sprung up while the barometer was *above* Belleville's average height for the date, and the barometer had been either steady or rising for the sixty previous hours! Thus we had no warning whatever of any danger. The "heavy gale," therefore, was no cyclone, because it did not affect the barometer. What then was it? according to my arrangement, as explained above, it must have been of the primary or electric order: and if so, it could only have happened at the time of lunar equinox or stitial colure. Now, if you will refer to my prediction for this date, you will see that I did predict it, because the moon was at the stitial colure on the 18th at midnight, as I forewarned weeks beforehand (I could give other instances from the same month.) On the other hand, to show that great indications in the barometer are sometimes without any perceptible consequences, let me state that during the 1st, 2nd, 3rd, and 4th of July last, (in the same month,) there occurred a great and determined fall of the barometer, until it reached from 30.25 inches to 29.39. Admiral Fitz Roy even sent a telegraphic warning to the coast, her Majesty's ships sent down top-gallant masts and prepared for the expected storm,—*but it did not come*. We had a moderate single reefed topsail breeze at 5h. p.m., which died away towards 7h. p.m., when rain set in. The lunar colure happened on the 5th at midnight, and we had a few hurried squalls during the day, but they did not affect the barometer in the least.

Having thus incontrovertibly shown that I have solid grounds for my assumptions, or, rather, shown your readers by one example how I could prove my position, if called upon,—I will trace onward the subject of cyclones as connected with the lunar theory. I say incontrovertibly, because I rest upon easily attested facts, corroborated by extensive observations.

So entirely new a system of weather study suggests a wide field for further scrutiny. It presents all our collected registrations and records in a new focus. I confess my inability to have done more from want of access to such collections, or, indeed, to any public records. The delay, however, has had its advantages, inasmuch as my own personal watchings were made with the more care and regularity.

Your Mauritius correspondent is in a position somewhat peculiar as compared with ourselves, and without having his attention properly

drawn to one circumstance might suspect the accuracy of my second assumption (as regards some gales not disturbing the barometer), because he would naturally appeal to his registrations made at Mauritius. If, however, he read my letter in the *Nautical* for February last, he will see that the region of the Trades should be *exempt* from the general primary or electric operations of the lunar theory, inasmuch as disturbances of weather at the Mauritius at the periods of lunar equinoxes or lunar stitial colures would not occur there, from its being situated in the Trades; and therefore, being subject only to one species of disturbance,—viz., the secondary or mechanical, *which a'ways affects the barometer*,—he will not be in a position to corroborate my assertions as to disturbances of other kinds.

He has kindly furnished us with information as to past weather, on which I have the pleasure of offering a few remarks. That which I am so often obliged to speak of as “my lunar theory” relates to atmospheric disturbances, which (I am also obliged to repeat) occur at the periods of the moon’s crossing the earth’s equator, and of her being at her “stitial colure.”

Dropping for the moment the two limited and subordinate divisions of primary and secondary, which I have only adopted for illustration and distinction, I believe that the interruptions of the great electric currents of the globe thus caused by her change of position *affect both hemispheres alike*, and are the sources of all changes of weather whatsoever. I expected to find it so before my suspicions were confirmed by actual observations by one of my sons in Tasmania. Accordingly, cyclones, as well as all other disturbances upon a grand scale, would, if belonging to my system at all, *derive their origin at these periods only*. It therefore is important to examine records of cyclones, noting their localities in particular, in order to arrive at proofs of this. Their rate of travelling, too, should, when practicable, be ascertained, in order to estimate the number of days which might have passed since they were called into being, for your readers will remember my having called attention to the circumstance of our heaviest gales usually occurring two or three days after the lunar equinox or stitial colure.

Now, if my suspicions as to the origin, date, and birth-place of cyclones be accurate, those which reach us must have originated not far south-eastward of the West India Islands; and therefore must, before visiting us, have travelled along a well known curving track of some 4,500 miles. Bearing in mind that if they were formed at a lunar period referred to, this 4,500 miles could not possibly be traversed in two or three days, it is most probable that at least *one* lunar period (of about seven days) intervened; and this is likely, because if they take nine to twelve days to reach us (which this hypothesis would show), their velocity of travel would be variable from 300 to 500 miles a day,—and this is very near the general supposition, from observation.

In order that I may here, too, show that I am treading on some

solid grounds, I take the past year, 1860, and note the dates of *all* the gales which happened in that year attended with great barometric or marked depressions, such as I venture to affirm indicate a cyclone.

The gales of January 3rd, 30th, February 6th, March 3rd, May 2nd, would have happened about nine days after a lunar period.

That of January 21st nine days and a half after.

Those of March 31st, September 24th, and the *Royal Charter* gale of October, 1859, ten days after.

Those of February 19th and 27th, and May 26th, eleven days after.

Those of 2nd June and the St. Kilda gale of 3rd October, twelve days after.

We will now examine the Port Louis records, as kindly given by your Mauritius correspondent in your last July number, remembering that in this instance the nearer the time of the occurrence of cyclones approaches to the dates against which I have given warning, the nearer the cyclone itself ought to be found to the cradle of its birth, viz., the region of equatorial calm. We are told that on—

1860.—December 5th.—“There was a cyclone in 8° S. and 80° E.”

N.B.—This is within the region of equinoctial calms, and therefore *could not have been long formed*, and, according to my theory, could not have travelled far, for reference shows that the *lunar equinox was on that very day*.

January.—“Between the 11th and 19th January another cyclone passed to the N.W. of us.” N.B.—The stitial colure was on the 8th, at midnight. The cyclone was on the 11th, not far from the Mauritius, and must have therefore travelled, in three days and a half, about 2,000 miles from the place where it was formed, near the line of no variation.

February 6th.—“The barometer commenced falling on the 6th, till the 16th, when the centre passed about forty or fifty miles to the North of us, and curved between this island and Bourbon.” N.B.—The stitial colure was on the 4th, at midnight. The cyclone on the 16th must have travelled at least 2,500 miles from the place of its origin, in eleven days and a half. (It need not be supposed that a cyclone would affect the barometer until within a certain distance of it.)

26th.—“The barometer commenced falling, and continued doing so till 2nd March, when the centre of another cyclone passed to the S.E. of us.” (*Query*,—Why “another”?) N.B.—The barometer began to fall at the period of lunar equinox. The cyclone of 2nd March had travelled about 2,000 miles in four days.

March 8th to 16th.—“During 14th, 15th, and 16th, a cyclone was in 94° E.” (Unfortunately no latitude is given.) N.B.—The disturbance of the barometer on 8th, 9th, and 10th March was most probably caused by a distantly passing cyclone which had arisen on the 4th, the period of lunar stitial colure. That

of the 14th, 15th, and 16th in  $94^{\circ}$  E. may have originated at the lunar equinox of the 11th.

19th to 21st.—“On 19th, 20th, and 21st, there was another considerable fall in the barometer.” N.B.—Here the fall commenced on the day of lunar stitial colure.

April 3rd to 7th.—“A cyclone raged during this time in  $14^{\circ}$  S. and  $76^{\circ}$  E.” N.B.—This, if formed at the period of lunar stitial colure on the 31st March, would have travelled about 700 miles in three days. It was evidently travelling very slowly from its duration in the neighbourhood of  $14^{\circ}$  S.

11th to 14th.—“The barometer fell gradually, showing a disturbance in the S.E. Trades.” N.B.—Probably a passing cyclone which originated on the 7th, the day of lunar equinox.

The above may be taken rather as the manner in which I should treat observations on cyclones than as an attempt to prove anything, although it is *highly encouraging*.

Having at first said so much in partial depreciation of the barometer, I feel bound to state that since we find that the heaviest gales are those which alone can be detected in the steady fall of the mercury some time before their arrival, the warnings we occasionally receive from Admiral FitzRoy are worthy every attention along the coast, because I believe that great falls never occur from any cause but approaching cyclones; and while we laugh at the occasional fruitlessness of some warnings, and rejoice to have escaped the storm that threatened, let us be thankful for the vigilance which tried to give us the timely warning.

---

#### LUNAR EQUINOCTIALS,—or, *the Past and Future.*

I have trespassed so much on your space that I will only, as regards the *Past*, state that—

June 21st—Produced very destructive floods (in Yorkshire, &c.)

28th—Was marked by change of wind and very disturbed weather.

July 5th or 6th—Hard squalls and occasional rain.

12th.—Change of wind from S.W. to E.S.E., and much thunder and lightning.

18th or 19th.—Heavy gale S.W.

25th.—Heavy gale S.W.

August 2nd.—Heavy gale 2nd p.m. till 3rd a.m., S.W. to West.

8th or 9th.—Fresh gale W.S.W., W.N.W., and W.S.W.

15th.—Great change from pleasant summer calm of previous days to windy, gloomy W.S.W. weather.

#### *The Future.*

August 15th—22nd—29th or 30th

September 5th—11th—18th—25th or 26th

October 2nd or 3rd—8th or 9th—15th—23rd—30th

November 5th or 6th—11th—19th—26th

December 2nd—9th—16th—23rd—30th.

N.B.—September 4th to 7th, October 2nd to 5th, November 2nd to 6th, December 1st to 3rd, are likely to be periods of more than usual disturbance.

I have, &c.,

S. M. SAXBY, R.N.

*To the Editor of the Nautical Magazine.*

#### A VISIT TO THE CEDARS OF LEBANON.

*Friday, June 1st.*—This morning we bade adieu to the plain of Bukâ 'a, or Cœlo Syria, and began our ascent of Lebanon. Our guide was an old man, whose life had been saved by Mr. Graham. About two years ago, war having broken out in the mountain somewhat earlier than usual, Toanna (the guide) found himself in a hostile village, the inhabitants of which were much exasperated against his tribe. Of course the unfortunate man was seized, and would speedily have fallen a victim to the popular fury but for the resolute conduct of Mr. Graham, who, at the risk of his own life, and by payment of a considerable sum for blood money, succeeded in saving that of the poor old man. Toanna hastened last night to see his preserver, and it was touching to hear his expressions of gratitude, tears streaming down his face as he kissed our friend's hand.

Our way led through a rocky glen, the sides covered with hawthorn and dwarf prickly oak. The main ridge was not visible. After various short ascents and descents, we arrived at Ain Ata, a little village with a remarkably cold spring. From hence we descended a rocky path into the ravine separating the ridge of lower hills over which we had passed from the Lebanon itself; crossed a pretty brook, fed by the melting snow (the infant Leontes), and commenced in good earnest the ascent of the central range.

At the foot of the pass we met the only group of armed men whose appearance and behaviour caused us real uneasiness. Hitherto we had always been greeted with respect by the Maronites, and with warm—one might almost say affectionate—enthusiasm by the Druses; but the party we now met “gazed upon us with ungentle looks,” made observations in a loud voice, greeted us with shouts of laughter, and seemed to have some intention of barring our progress. Had all our party been together we should have been a match for them; but our people had loitered behind, and even Ayoub was not, as usual, striding on in front. However, the band, which consisted of some ten or twelve well armed men, seemed to think better of it. They did not

molest us, but their countenances were so little inviting that we were very glad when their picturesque figures diminished in the distance and finally disappeared, as each turn in the rapid zigzag diminished the objects in the valley below.

The ascent is steep, but by no means difficult, although the sides of the mountains are precipitous enough to turn the heads of those unaccustomed to mountain climbing. The hill sides are large, smooth, round shoulders, descending without interruption to the valley beneath, and covered with a kind of dry slippery moss. Yomas, the Nubian groom, in trying to take a short cut, displaced some stones, which rolled down and down till they came to the bottom, meeting nothing to stop their progress; and such would most likely have been the fate of any who had had the bad luck to make a false step, there being neither bush nor hollow to afford a chance of checking the descent. The zigzag was, however, very well managed, and the horses climbed like cats. In mounting, we caught occasional glimpses of the exquisite little Lake Lemone, of the most brilliant sapphire blue, embosomed in hills on a plateau near one of the lower ridges. We saw quantities of wild rhubarb and gathered some sticks; it was quite as red and as good as that grown in English gardens.

After a ride of an hour and a half from Ain Ata, we arrived at the snow. Large patches were lying in the hollows, and shortly before reaching the top of the pass we crossed a considerable field of snow and ice. Towards the West side it was still more abundant, long white lines intersecting the mountain sides.

We were now at a great elevation, between 7,000 and 8,000 feet above the sea. Jebel Mukhsnel, on our right, is the most lofty mountain of the range: its height is about the same as that of Etna,—between 10,000 and 11,000 feet. Hermon is about 9,000 feet.

The view from this point was very grand. On one side we saw the vast plain of Cœlo Syria, bounded by the Anti-Lebanon and Hermon; while on the other, the Mediterranean was so far below that it was lost in a mass of clouds and vapour. A little dark clump of fir trees, a thousand feet beneath us, was pointed out as the far famed cedars, and we could not conceal our disappointment that such a mere patch, not even a wood, should be the trees renowned for their size even in the time of David. It was curious to see the masses of clouds floating along the mountain-sides, while beneath them hill rose above hill, range above range in glorious confusion. We could just distinguish some long green valleys, softening the ruggedness of their dark brown sides, and becoming more numerous and smiling as they descended to a more genial climate.

A party of travellers, consisting of a father, mother, and daughter, natives of a village a few miles from hence, had accompanied us up the mountain; they had walked from Damascus, and, having been ten days on their journey, looked, poor creatures, tired and foot-sore. The girl was very pretty, and far more German than Syrian in her appearance; she had a round, fair, Saxon face, light curly hair, and large blue eyes, to which the circle of Kohl gave great softness and



expression. They had wisely timed their arrival at the top of the mountain, and, halting when we halted, came in for a part of our luncheon.

Although amidst fields of snow, the heat of the sun was so great that it seemed wonderful anything that could melt was able to resist its power. The descent was even more rapid than the ascent, but we had not far to go, as we meant to spend the night at the cedars. From their position, the trees are not seen again until the foot of the knoll is reached on which they stand, but it is impossible fully to appreciate their beauty until fairly beneath the shadow of their branches. The outer trees are all comparatively small, the hoary giants standing within, encircled by their smaller brethren. In order thoroughly to enjoy the repose and loveliness of the spot, the traveller should arrive, as we did, tired and fatigued by a hot sun, and feel that the day's journey is really over. It was delightful to know that we had nothing to do but to throw ourselves under one of the huge cedars, *whose* branches were creaking and sighing in the gentle wind, and enjoy the luxurious rest afforded by the warm earth, perfumed and soft with cedar-spines. The music from a thousand birds came from every part of the grove, and a glorious sunset was pouring its flood of crimson and gold upon the dark trees. As the sun slowly set, a few stars showed their silver light above the mountain tops.

Although the sea itself could not be distinguished, a band of lurid copper coloured light stretching along the horizon marked where lay the Mediterranean. It was a reflection of the ocean, and the consciousness of how hot it must be on its shore, made us enjoy still more the fresh coolness of our evening here. Long after the sun had set, the rosy glow still lingered; long after the moon had risen and the night had fully come, a pale pink vapour still floated in the sky. It was in curious contrast with the scene on the other side; there, we were hemmed in by the frowning barren mountains, and the moonlight falling on the long streaks of snow, gave them a livid unearthly pallor, that cast into still deeper gloom the dark hollows and recesses in their rugged sides. Though other parts of this glorious chain might be convulsed with the horrors of war, pillage, and massacre, so quiet and tranquil were the Cedars in the calm moonlight, that it was difficult to realize the sad fact that turmoil and death were raging near.

*Saturday, June 2nd.*—The perfect repose and quiet that may be enjoyed here add another charm to the beauty of the spot. The villages are all at a considerable distance down the mountain. Some of the villagers came up last night to help and to stare; this morning they are at work in the fields, and there is no sound to disturb the calm but the song of the birds and a peculiar sighing of the wind. One can never weary in looking at the trees, these giants of the forest. There remain only thirteen of the very largest; but notwithstanding the great age of these patriarchs, they are flourishing and healthy; one or two of the oldest are upwards of forty feet in circumference, and many of the branches would themselves be grand trees. The grove consists of about four hundred cedars. There is but one

young one, an infant of forty years old, and he is stunted and ill-grown for his age. Numbers of little cedars spring up every year from the cones, but they are always eaten by the goats. A magnificent tree, one of the largest, had fallen a victim to some winter storm; it was grievous to see it lying low, its glory levelled to the dust and its beautiful wood rotting unheeded on the ground. Some of it has been used for a small chapel, which stands in the centre of the grove; and unfortunately the people from the neighbouring villages, when they come up in the autumn for the Feast of Cedars, are in the habit of tearing down and burning the branches. My sister and I sat working under the trees, while our companions read us the account of the building of the Temple of Jerusalem. "And Solomon sent to Hiram, King of Tyre, saying, 'Now therefore command that they hew me cedar-trees out of Lebanon.' So Hiram gave Solomon cedar-trees and fir-trees according to all his desire." A verse which follows gives an idea of how extensive the Lebanon forests must have been in those days:—"And King Solomon raised a levy out of all Israel, and the levy was thirty thousand men; and he sent them to Lebanon, ten thousand a month, by courses; a month they were in Lebanon and two months at home; and Solomon had three score and ten thousand that bare burdens, and four score thousand hewers in the mountain." For twenty years these mountains resounded with the noise of the tools of the workmen preparing the cedars for the Lord's Temple and Solomon's House. All was fashioned here, "so that there was neither hammer, nor axe, nor any tool of iron heard in the house while it was building."

This spot is remarkably well suited for an encampment, and as we rode up yesterday, we were quite charmed with the picturesque beauty of the scene. Our numerous tents were scattered here and there among the trees, while in a little hollow our cook had established his fire, which sent up a thin cloud of blue smoke among the branches. The cook himself, in white cap and jacket, moved among his saucepans and kettles with an air of a *cordon blue* presiding over a grand dinner in Paris, rather than preparing a supper for hungry travellers in Syria. The tired muleteers had thrown themselves on the ground near the little fire, smoking, and drinking coffee, all fatigued with the long day's march, except the indefatigable Ayoub, on whom no amount of walking seems to produce the least effect. With a long swinging step he passes over the ground, his square but elastic figure and sturdy legs defying hill and valley, rough or smooth road. He and Hassen were telling stories for the amusement of the company in general, and had great success, to judge from the shouts of laughter which greeted them. Soon after dark the mules went down to water, as there is no spring up here, and it was pretty and pleasant to see the long dusky train winding down the hill, and to hear the tinkling of their bells. During the night all the animals were allowed to roam about except poor "Nisik," who was far too precocious to enjoy such liberty. Nisik was a fine Arab, bought by Mr. Graham during our stay at Damascus, and being a very spirited animal it was deemed advisable to tether him

in desert fashion. It is impossible to conceive a more complete imprisonment; *three* of his legs were fastened together with leathern straps to prevent his kicking, and a rope on each side of his head checked any demonstrations of violence in that quarter.

While we were resting under the trees, two travellers, a Frenchman and a Russian, arrived; they had crossed the mountain this morning, and as they were to sleep at Eh' den, could only pay the usual traveller's visit of an hour to the Cedars. They very much regretted this when they found how comfortably we were established; they also had wished to pass the night here, but had been told by their dragoman that the place was subject to malaria. This is quite a mistake, as no spot can be more thoroughly healthy. The truth is, water has to be brought from some little distance, and as most travellers are entirely at the mercy of their dragoman, it not unfrequently happens that very interesting spots are passed unseen, or receive only a hurried visit, to suit the convenience of these people. However, it is but fair to say that these remarks do not apply to Ibrahim Amatori, who throughout our journey was most civil, obliging, and anxious to please; he supplied us with many comforts for which we had not stipulated in our original agreement; tea, coffee, dinner, or supper, were always to be had, even at unreasonable hours. The tents were large, perfectly clean, and whatever might have been the trouble or fatigue of the day's march or whatever the little *contre temps* which must occur in so long a journey, he was never cross nor put out, and took care that everything should be ready for us on our arrival in the evening.

Before leaving, we walked all round the Cedars, visiting every great tree, and feeling loth to quit so enchanting a spot. Connected as they are with Holy Writ, these trees possess a sacred character, enhanced by their own magnificence and the sense of solemn repose with which they are invested: it is therefore painful to see the number of names which have been idly scored on venerable trunks, and it cannot but be regretted that such men as Chateaubriand and Lamartine should have condescended to sanction by their illustrious names so injurious a practice.—*Our Cruize in the "Claymore."*

---

On the "Cedars of Lebanon" we may add to the foregoing that a party of scientific gentlemen, of whom the Hydrographer to the Admiralty, Captain Washington, R.N., was one, visited them in the summer of last year, and we find the following brief notice of them in the address of the President of the Geographical Society just distributed.

This remarkable group of trees, not exceeding three quarters of a mile in circuit, stands on an elevated plateau, at the head of the Wady Kadisha, and forms the centre of a semicircular basin or recess in the Lebanon from six to eight miles in diameter, at an elevation of 6,400 feet. It is all but encircled by a wall of barren grey limestone mountains, rising some 3,000 feet above the plain. The cedars stand

alone, upon several small knolls, (possibly a broken up moraine deposited by former glaciers,) and there is but one other tree in sight. The trees are about 400 in number, of all sizes: the largest is 40½ feet in girth, but only a few of the old patriarchs remain: there are not more than eight trees above 20 feet in girth. It is understood that Dr. Hooker is of opinion that judging from the number of concentric rings and other indications there is no tree now existing more than 500 years of age, and none less than 30 years.

---

Yacht voyaging is peculiarly English, unheard of among other nations, and is a kind of enjoyment not understood and certainly not known by foreigners. Time was when knights of old sallied forth to the Holy Land from this country to fight the battles of the Church, to recover as they intended the Holy Sepulchre from the grasp of infidels. History abounds in recitals of their glorious deeds, and did not our own St. George gather his laurels and win his fame in the holy wars? But people are grown wiser now-a-days. They think that the Holy Sepulchre is just as well where it is, and instead of rushing there with the implements of war and vows of destruction to the infidel's, our countrymen and countrywomen, too, take a yachting voyage, visit the coasts, run into the harbours, and ramble into the country among the people, with good temper in their hearts and faces: and having sketch-books and such kind of implements in their hands, with a few written words of peaceful import, are received with welcome cordiality where the atmosphere of ignorance, intolerance, and hatred formerly prevailed. Such has been the case with a little party of voyagers, the narrative of whose proceedings forms the substance of an engaging little book which has recently appeared under the title of "*Our Cruize in the Claymore*," published by Chapman and Hall. The *Claymore*, a small yacht of some 140 tons, was just the vessel for the purpose,—one that can make free with the land, handy of rig, and of little draft. She can take any of the tiny creeks and inlets of the shore that a larger craft can't look at. She is perfection in her cabin arrangements of course, for that is the main qualification of a yacht, and independent to go where she pleases at the will of her owner, and well commanded, and consequently well managed, she is perfection in her way. The *Claymore* with her little party soon finds her way to Beirout, whence they travel to Damascus, and happening to be on the Syrian coast when those animosities between the Christians and Druses broke out that have so shocked humanity, was enabled to render valuable assistance in staying the hands of the latter by assuming the character of a vessel of war. Much credit is due to all concerned in this transaction. Jerusalem is next visited, and the *Claymore*, after going to Sautorin, proceeds up the Adriatic and lands her travelling party at Venice.

The narrative of her proceedings forms the journal of Mrs. Harvey, who dedicates her work with a graceful misgiving concerning its value (as to its publication) to the owner of the *Claymore*, Lord Dufferin,—

one which will enhance it the more with the public when they find it written, as it is, by a lady of more than ordinary accomplishments, with the power of telling us what she saw in the most agreeable mode of doing it. Her style of writing is easy and winning as a lady's should be, although it might be somewhat fastidious in us to object to her too often using the personal possessive pronoun to impersonal objects, such as stairs, trees, &c. There is no great harm in this, but it is better avoided, and not to disfigure good writing (the advantage of which Mrs. Harvey so fully possesses) even with such a trifling blemish as this, when it may be entirely avoided. Her handy little volume should be the companion of all Syrian tourists. Our want of space prevents us from saying more now, for we have something to add in the way of hydrography; but we must reserve it for another number.

---

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XXII.—*Affairs at Home and Abroad—Pastime and Duty: a Commander of a British Merchant Ship—Destruction of Porto Novo—United States Civil War—Productions of Siam—Life-Boat Institution.*

The Chairman said he rejoiced to see so many of his friends around him, though he missed some well known faces, a fact which no doubt was to be attributed to the same cause (the season) which had thinned the numerous Clubs of London at this period. There were many matters of considerable interest going forward, to which he might allude in the course of his review, and although the anticipations of war with which it had been said Europe was to be visited this summer had happily not been realised, yet civil war was busy in the once United States of the West, and although wicked powers were at work in doing their utmost to spread it in one of the fairest lands of the East, good sense had prevailed over evil doings, and all was tranquil.

It is highly gratifying, continued the Chairman, to follow the footsteps of Peace in this part of the world,—to read of the doings of that great National Association for the Promotion of Social Science, led by the great veteran of learning Lord Brougham, busily engaged in showing how the people may turn to the best account their energies, with the knowledge with which they are endowed, and who could doubt that their visit would be otherwise than most advantageous. It was a becoming prelude, although an accidental one, to the visit of her gracious Majesty to that part of her dominions, it being her intention to cross to Dublin on the 22nd of August. Again, observed the Chairman, we see at Antwerp a happy reunion going on between our artists and those of the Continent, a congress which must contribute to the advancement of the social principle between adjacent nations,

where rivalry in the art of painting produces contests for fame, and, as has been justly observed in the *Brabanyon des Artistes*,—

*Le vaincu même admire nos succès.*

The walls of the old Burgomaster's halls have had such a warming from the generous flow of friendly sentiments of artists from different lands, as they have but seldom or never had before. He trusted that the artists congress at Antwerp, no less than the visits of the National Association for the Promotion of Social Science would continue to be repeated, evidently to the advantage of civil unity and the interchange of goodwill among nations. While our beloved Queen, in the words of the late Sir Robert Peel, is founding "a temple of peace" in Ireland, and "presiding over the sacrifice of evil passions that dishonour our common faith and prevent the union of heart and hand in defence of our common country," and be it added, also, while she is receiving the homage of Irish subjects, and enjoying the magnificent scenery of the ever green isle, her Prime Minister is "holding a grand court of Shepway (at Dover) according to the ancient usage and custom of the Cinque Ports," and there taking on himself the office of Lord Warden thereof. It is a time honoured custom, one of the most ancient of our institutions, but in these enlightened days smacks a good deal of the dark ages.

This picture must have its contrast, continued the Chairman, and that too in the conduct of the commander of a British merchant ship. They had heard of the recent trial of this person at Liverpool, who had unfortunately, from a technical failure, succeeded in evading the ends of justice. The remarks which had been made on it in one of our leading journals were so much to the purpose that he would read them. They run thus:—

William Wilson, master of the British ship *Express*, was indicted for the wilful murder of William Henderson, steward of the vessel. The details of the case are of the most painful and revolting character, showing on the part of the master a course of deliberate, persistent, and savage cruelty towards the unfortunate steward, which in the end proved fatal. There can be little doubt after reading the evidence that the repeated and violent assaults of the prisoner on the deceased, when weakened by ill health, were indirectly the cause of his death. It appears from the statement of the counsel, supported by the evidence of the sailors who worked the ship, that the deceased was in good health and strength when the *Express* sailed from Liverpool for the coast of Africa last September. After they had been at sea three or four weeks, the master's violence and cruelty towards the deceased began, and from that time to his death, which happened towards the end of January, he seems to have had a strange delight in torturing the wretched victim of his cruelty.

The means and forms of violence employed by the master against the unhappy man were various, such as beating him with his fists,

wounding him with missiles, knives, handspikes, and the like, flogging him with a rope's end, kicking him, knocking him down on various occasions, and on one occasion jumping on his chest after he had been knocked down. The original causes or pretexts for this violence seems to have been of the very slightest kind—mere whim and caprice, indeed. The steward apparently was not quite smart enough to suit the master's taste, or his manner did not please him. But whatever the first ground of difference, the master, having cruelly wronged the unhappy man at the outset, soon conceived a violent hatred of him, and pursued him with unrelenting cruelty to the death. On one occasion, soon after he first began to ill-use him, when he had flung a couple of knives at him, and cut open his cheek, the mate remonstrated against this treatment, advising the captain to send him home, to which he replied with an oath, "I will send him to his long home; he shall never see England again."

"Till the death of the deceased, on the 26th of January, he was from this time repeatedly beaten and kicked by the captain, and rope's-ended with a rope an inch in diameter, part of the spanker-boom-sheet. Just before they entered the Brass River, one day the deceased was seen coming out of the cabin, and the prisoner followed him, seized him, threw him down, kicked him, called for a rope, and gave him two or three dozen blows with it, telling him he should never see England again. The deceased cried out and became insensible, and his body was covered with bruises and discolorations." After entering the river fever broke out on board, and the steward being attacked by it was under the doctor's care. "He prescribed rest and a generous diet for him, and he was recovering; but the fever left him in a state of great depression and weakness, during which time he was unable to return to his duty. The prisoner insisted it was only laziness, and ordered him to pick oakum. The deceased said he could not do it, and the prisoner then beat him and kicked him again, and he was found by the doctor on the 23rd January with his head swollen and bruised, and his eyes blackened."

One more illustration of the captain's treatment will more than suffice:—"After that the captain ordered the deceased up to pick oakum; the deceased said he could not do it, when the captain seized him by the shoulders, threw him down on his back violently on the deck, and then jumped upon his chest and kicked him in the side. The deceased laid insensible, blood issuing from his nose and mouth, and from the corner of one of his eyes. While this violence was going on the deceased said, 'Oh, don't, you will kill me,' and afterwards said that the captain had better kill him than use him in that way. The captain said he had better jump overboard, as he would never see England again." He never did see England again, having died a few days after.

Few, after reading this account, will deny that the brutal captain helped to fulfil his savage threat of sending the deceased to his long home. No doubt, under the peculiar circumstances of the case, the deceased having been weakened by fever, the capital charge could

hardly be sustained, but surely such a series of brutal attacks, with the severe injuries they inflicted, afford ample ground for a verdict of manslaughter. And we cannot but regret that from any accident there should have been a miscarriage of justice in the case. The jury were divided as to their verdict, and after two hours' deliberation, one of the jurors being very ill, they were discharged. The prisoner Wilson, however, awaits his trial on other counts of the indictment. We may hope that the evidence in the further trial of this case will be satisfactory and complete. It is obviously of the utmost importance, for the security of the men as well as for the credit of the service, that when instances of cruelty and violence at sea are established they should be visited by the severest legal penalties. The power entrusted to the captain is enormous, and so also is his responsibility. No doubt, the mere possession of such power, in that terrible loneliness of "blue water," offers strong temptations to men of low tastes and brutal temper. They will tend to become overbearing and oppressive, if they do not give way to more criminal passions. Men of a morose character will not hesitate to gratify a depraved craving for excitement by acts of capricious ferocity if there is the least chance of their doing so with impunity. The greater the power, therefore, the more certain and severe ought to be the penalty of its abuse.

By one of those technicalities of the law that sometimes happen, continued the Chairman, this man has escaped conviction, but will be tried on other charges. But there can be no doubt that the best friends of the merchant service cannot but desire to see their ranks weeded of such specimens of *humanity* as this! It is remarkable that these atrocities appear to occur mostly on the African coast, as if the deadly nature of the climate were not sufficient drawback to the chances of a good voyage, but these wretched cases must be super-added.

The late proceedings at Porto Novo, observed the Chairman, most probably instigated by the slave-traders, will form an interesting page in our papers. The *West African Herald* gives the following description of the battle:—

It has already been recorded in this journal four months ago, that the late Mr. Foote, H.M. consul at Lagos, went up to Porto Novo in the gunboat *Brune*, for the purpose of negotiating with the king of that place. The king having refused to accede to the terms of the treaty, and treating the consul's message with contempt, Mr. Foote caused a shot to be fired over the town. This having produced no effect, some shots were fired into the town, and the *Brune* left the place. The Porto-Novians, much elated at the departure of the *Brune*, congratulated themselves, and declared that if the vessel came again they would have her up on the beach, and convert her into a war-canoe for the king. On the 26th of April last the consul went up with a considerable force to recommence hostilities. Commodore Edmondstone commanded in person. The force consisted of H.M. ships *Bloodhound*, *Brune*, and *Fideliter*. The *Bloodhound* could not get



further up the lagoon than Becchy, so that the *Brune* and *Fideliter* had it all to do themselves. They were assisted by ten boats. The Porto-Novians mustered in large force on the banks of the lagoon.

The following is from the native journal, *Iwe Irohin*, published at Abbeokuta:—

The expedition consisted of the *Brune* and *Fideliter*. Each of these had attached to it a number of boats—ten, it is stated. Four of these were armed with 24 and 12-pounder howitzers, the remaining six were rocket-boats. The expedition reached the barrier above Badagry at four p.m. on the afternoon of the 25th of April, and after two hours' hard work pulling and hauling the sailors effected a narrow passage, which was forced by the *Fideliter*. She was immediately followed by the *Brune*, and thus in the space of two hours and a half was overcome what it had taken the Porto Novians six weeks and more to prepare. Some Iso canoes made a miserable attempt to save their reputation by firing a few shots, but a rocket or two from the long 52 of the *Brune* sent them flying up the river at their best pace.

Next morning at seven a.m. the flotilla had reached Porto Novo; and as soon as they came abreast of the town a heavy musketry fire was opened upon them from both sides of the river, which, however, was not replied to by the English for some little time. When once the boats opened fire with rockets, shell, and shot, it was vigorous and well directed, so much so that within an hour the town was in flames, which gradually increased until they rose high above the lofty trees that hitherto afforded the inhabitants grateful shade. The Iso canoes again took to flight, and remained through the day far out of gunshot, watching the game of war in tolerable security. The boats of the squadron were in two divisions, one under the commodore, the second under Captain Raby, of H.M.S. *Alecto*. Finding the town burning furiously in their rear, the defenders of this den of infamy ran for the beach, and advantage was taken of this by Captain Raby, V.C., who was in his gig with two men, to land and spike a gun—not, however, without being severely wounded by the explosion of the gun during the act of spiking. Seeing that the natives had not plucked up courage to cut off this party, permission was given to about fifty marines and blue-jackets to land, in order to set on fire some well built houses that had hitherto withstood the rockets and flames.

The landing was effected without molestation, and a new quarter of the town was hereby set fire to. It appears that the warriors had not up to this time retreated from the town, for Captain A. T. Jones, 2nd West India Regiment, encountered one standing in a doorway, whom he shot with his revolver, and met a second, whom he was about also to despatch, when his revolver missed fire, and had the native rushed at him he must have cut him down before he could draw his sword; but the warrior, deeming prudence the better part of valour, took to his heels and hid himself.

This quarter of the town now being thoroughly fired, at 11h. 30m. the troops re-embarked, and returned to their ships and dined. At one o'clock, being refreshed, and a fresh supply of ammunition served

out, the boats of Captain Raby's division formed in line abreast, and advanced within fifteen yards of the reeds, from whence the natives still kept up a brisk fire from a point rather lower than where the gunboats had anchored, and where it was subsequently discovered they had an ambuscade. From this point it was found difficult to dislodge them, until rockets and round shot found out their weak point, and sent them flying in all directions. Great havoc was committed in their retreating ranks by the grape and canister of the boats, as well as the well-directed shots of the marines. The opportunity was now seized upon by Captains Raby and Jones to land and spike a second gun and carry off their last flag. It was now seen how great had been the havoc inflicted upon the enemy, by whose own account they admit their loss to be 1,000 killed and as many wounded. After this the firing became very weak and desultory, so the English amused themselves by firing shot and shell at the principal houses left standing. About four p.m. the gunboats and flotilla steamed away for Lagos, and rejoined the squadron outside the bar. The vessels composing it have since steamed off in various directions. The loss on the side of the English was only one man killed and five slightly wounded. The result of this lesson has been the signing of a treaty of trade and commerce.

Before we turn our attention to the East, said the Chairman, we may cast a glance at the unhappy civil war going on in the Western States, where, as yet, it would appear that the Southern Confederates seem to be giving the Federals enough to do, defeating them successively; and in reference to the great question of cotton, which concerns not only this country but even the whole world, it appears to be the deliberate intention of the American governments—both North and South—to seal up the new cotton crop; so that not a bale of it (which they can prevent) shall leave the plantations during the continuance of the war. The North believes that the need of money will bring the South to terms: the South is just as firm in the faith that the need of cotton will bring the North to terms, or lead the European governments to interfere. How long these efforts will be successful it is impossible to say. No doubt some cotton will reach the ports, creeks, and bays along the coast—notwithstanding all the recommendations of patriotic factors—and escape the blockade, in spite of the vigilance of the whole United States fleet. But it is clear that any supply that can thus reach us will be of very trifling importance. On the 1st of September, under ordinary circumstances, the new shipping season should commence. What we wish our friends to understand and fully realise is that there is absolutely no prospect of its commencing then, or for months to come.

But there are abundance of places from whence cotton may be supplied, and as soon as the market feels the demand and the prices rise, there need be no doubt that from Egypt to India and Australia and many other places, the market will be replenished.

In reference to our Eastern allies, for we are well allied there both

north and south, there are some grave appearances which it is to be hoped will pass away. The telegrams of late tell us that the friendly relations of the European governments with Japan appear likely to be disturbed:—that the houses of the foreign merchants have been entered and robbed in open day:—that the Japanese government is believed to sanction these proceedings:—that the Governor of Kanagawa had informed Mr. Alcock, who contemplated travelling overland from Nangasaki to Jeddo, that he could give him no assurance of being unmolested on his journey:—that the imperial and rebel successes are alternate, and that a new insurrection has broken out near Peking.

But it is to be hoped that these ugly appearances will prove to be mere temporary pulsations of political affairs, more calculated to affect individuals than national quietude. One great event has taken place in the way of electric telegraph communication, and this was the fact of Bagdad being in communication with Constantinople. While but poor progress is making in electric cables, the wire on shore is hard at work. In reference to the telegraph to Bagdad, the first message received by it was the demise of the late Sultan and the ascent of Abdul Aziz to the throne of the Califfs, a piece of information sent a distance of 1,500 miles, much to the astonishment of the *élite* of Bagdad. Great efforts are being made to get the electric wires to Bussora, from whence it is stated steamers will cross with intelligence to Bombay.

Sir Robert H. Schomburgk, British Consul-General of Siam, contributes to the *Technologist* an interesting report on the vegetable products of that country. Owing to the vast extent of Siam and its geographical situation, lying under the tropics and favoured by periodical rains, these are very numerous. Rice, sugar, and pepper are, however, the staple articles; the first serving not only for home consumption, but a large quantity is exported to China. Several varieties of rice are raised; some account as many as forty, but four species are principally cultivated, namely, the common rice, of a white colour, much resembling the rice of Carolina; the mountain rice; the glutinous, and the red rice. The first kind is mostly exported. Rice, the principal export, of which in 1858 not less than 100,000 tons were exported, principally to China, is grown over the whole plain of Siam. Nakhon-Yaisi and Petrio are the principal sugar districts; but it is also produced at Paklat, Bangpasoi, Chantibon, and Petchaburi, in considerable quantities.

The owners of the mills seldom cultivate the canes themselves, but purchase it standing in the fields from the growers, who have usually money advanced to them by the millowners at the commencement of the season to enable them to plant on their ground; they in return being bound to sell all their cane at a fixed price to the person lending the money, besides paying interest at the usual rate. The cultivation of the sugar-cane has greatly increased. It is mostly in the hands of the Chinese. The extraction of the juice of the cane and its manufacture into sugar are carried on in a very primitive manner, without

any of the modern improvements to obtain from the cane the largest possible quantity of a superior quality of sugar. Large forests of teak exist on the Burmese boundaries. The logs, when dry enough to float, are made into rafts and floated down the rivers to Bangkok, where they are usually sawn up. The most suitable form for exportation is planks five inches in thickness. The supply has almost entirely ceased, owing to the high prices and scarceness of wood. The tree is now fully 50 per cent. higher than it was in former years.

A number of woods, the produce of the forests in the interior of Siam, might become of importance, were their qualities for naval or civil architecture, or as woods proper for ornamental purposes, sufficiently known. Amongst others the Takieng, which, as far as regards size and quality, might become a rival to the teakwood, possessing, moreover, the great advantage that it may be easily bent by artificial means. Trees belonging to the pine genus are not uncommon, principally on the eastern coast of the gulf of Siam, which might furnish liquid bitumen for the preparation of pitch or tar. Amongst dye-woods the principal is the sapan, (*Cæsalpinia Sappan*), of which large quantities are exported. It is the spontaneous produce of the forests of the northern provinces of Siam and the frontier hills dividing that country from Tenasserim. There are enormous forests of this wood in the upper parts of the country and down the west coast of the gulf of Siam.

The greater part of the supplies brought to Bangkok comes from Soupang and Bang Chang, also from the west coast of the Gulf. A beautiful dye of a brilliant yellow is procured from the heart of the jack tree (*Artocarpus integrifolia*). This wood deserves a closer examination whether it might not become of importance to commerce, not only as a dye, but likewise to the cabinet maker. The natives obtain a fine red dye from the roots of the *Morinda citrifolia*. The wood of a species of mangrove yields a red colour, and the bark of the common kind (*Rhizophora Mangle*) is used in tanning, and a small quantity of it is exported. Several species of plants furnishing indigo grow spontaneously in the interior. An attempt has recently been made by a British subject to manufacture the dye from these plants, but he has not succeeded in rendering it profitable, in consequence of which he has given up the speculation. Wood oils, which more properly ought to be called resinous balsams, are yielded by *Dipterocarpus trinervis* and allied species. They give to teak wood a fine polish, and are substituted in house decorations for the coloured paints for verandahs, window sashes, doors, &c.

The balsamic resins which are yielded by numerous trees of the forests of Siam are spoken of as deserving much more attention than they have hitherto received. Amongst the fibres of plants growing in Siam useful for textile fabrics, a species of hemp has been exported which is said to be prepared from a plant resembling a nettle in appearance. This has probably been obtained from the *Urtica tenacissima*, the fibres of which have been pronounced identical with the

celebrated Chinese grass. The real hemp is likewise cultivated, not so much for its fibres, as for extracting its intoxicating and narcotic qualities of the preparation of the haschisch of the Arabs or guncha of the Siamese, which is used for the same purpose as opium, producing, when being smoked, exhilarating effects, with subsequent prostration and sleep.

The cultivation of cotton has not received that attention which it deserves. Small quantities are produced in the Laos country, samples of which Sir R. Schomburgk has transmitted to her Majesty's government. The great distance of the country where it is at present cultivated, and the difficulty of transport to Bangkok from the interior, have no doubt injuriously operated in preventing the development of the trade. He says, "Judging from the countries that produce cotton which I have visited,—namely, the United States, the West Indies, and Guiana,—I see no reason why the alluvial districts of Siam should not produce as fine a cotton as the countries previously stated. A want is seriously felt to effect an extensive cultivation—namely, the scarcity of labourers. The distance of the country where cotton is cultivated from Bangkok is very great; and as the article is so bulky for transport in canoes down the river, this is one of the circumstances which has operated against a greater development of the trade. To obviate this difficulty in some degree, her Majesty's government has included amongst the presents forwarded to the sovereigns of Siam a hydraulic press, to compress the cotton into bales."

The Chairman called on the Secretary to report briefly some of the proceedings of the National Lifeboat Institution during the past month.

The Secretary stated that the Lowestoft lifeboat, which is in connection with the institution, had saved the crew of eight men of the French brig *St. Michel*, of Marans, from Christiana, which, during a gale of wind was wrecked on the Holm Sands on the 25th July. The sea was breaking heavily over the wreck at the time the poor men were taken off; but as the lifeboat was skilfully managed by her intrepid crew, no life was lost. The lifeboat on the following day assisted in bringing the brig into port.

The Alnmouth lifeboat, on the Northumberland coast, belonging to the institution, had also been instrumental in saving, recently, a man who, whilst bathing, had been carried out to sea by a heavy back surf. The promptitude with which the lifeboat was taken out of the boat-house and launched on the occasion elicited the admiration of all who witnessed the operation.

The lifeboat of the institution stationed at Camber, near Rye, was also reported to have rendered, on the 28th July, some service to the emigrant ship *Oithona*, from London, which had gone on shore near Jury Gap.

A reward of £6 was then voted to the crew of the Arklow lifeboat, belonging to the institution, for putting off on the night of the 22nd July, in reply to a signal of distress from a vessel which was dragging

her anchor and in great danger of grounding on an outlying sand-bank. The lifeboat remained by the vessel until the next morning, when, the weather having moderated, she got out of danger and proceeded on her voyage.

The silver medal of the institution was presented to James Toomey, in testimony of his gallant exertions in wading into the surf at the peril of his life, and afterwards assisting to save the mate of the schooner *Industry*, of Whitehaven, which, during a heavy gale of wind, was wrecked off Kingstown, on the Irish coast. Some time since Commander Hutchinson, R.N., harbour-master, Kingstown, was also thanked for his valuable services on that occasion.

It was reported at the meeting that the institution had sent a new lifeboat and transporting-carriage to St. Ives, Cornwall, during the past month. The expense of the boat, £180, was the munificent gift to the society of a lady, who had previously given the institution the value of the lifeboats at Newquay, in Cornwall; Buckie, in Scotland; and Tyrella, in Ireland. Three of the boats had been named, at her special request, *Moses*, *Miriam*, and *Joshua*. The lady had herself witnessed some distressing shipwrecks from which life had been lost from the want of a lifeboat.

Lifeboats were also ready to be sent by the institution to Southport, near Liverpool, Scarborough, and Aberystwith. Lifeboats were also building for several other places. The expense of these numerous lifeboat establishments pressed heavily on the funds of the institution. The average cost of a lifeboat station, including boat and equipments, transporting-carriage, and boat-house, was said to be £450. The society had eight or nine such establishments now completing. Independently of these heavy demands, the large and increasing charges on its 114 lifeboat stations, situated on various parts of the coasts of the United Kingdom, entailed great expenses on the institution; but the committee felt persuaded that a work so truly philanthropic and national in its character would not be allowed by the British public to languish for lack of funds.

The Chairman called particular attention to these few but forcible words, and expressed a hope that every member of the Nautical Club would tell them to his friends.

It was said that Earl Russell had been one of the vice-presidents of the National Lifeboat Institution, and a liberal annual subscriber to its funds, since its first establishment.

It was also stated that a legacy of £100 from the late T. F. Hemington, Esq., of Uplyme; and one of £50 from the late E. Cuthbert, Esq., of Cheapside, had been received by the institution during the past month.

Vice-Admiral Sir James Hope, K.C.B., had sent, through the Hydrographer of the Admiralty, from Hong Kong a very liberal donation of £50 to the institution. The Royal Yacht Squadron had also decided to increase their subscription to £10 a year.

Payments amounting to nearly £1,000 having been made on various lifeboat establishments, the proceedings closed.

## ANOTHER BATCH OF BOTTLES.

We have gleaned the following bottle papers from our recent periodical papers, and place them on record in our own pages as the long established receptacle for them. They all confirm the well known drift of the ocean, and are mostly of very short periods of time and travel,—so short as to render it quite unnecessary to encumber our chart with them. The paper of the American ship *Senator* might, however, form an exception, as we have noted on it.

*The "Pacific."*—The following is a copy, as near as can be deciphered, of the contents of a slip of paper referred to in our correspondent's letter from Stornaway, which appeared in *Shipping Gazette* of 8th June:—

"On board the *Pacific*, from Liverpool to New York. Ship going down. [Great] confusion on board. Icebergs around us on every side. I know I cannot escape. I write the cause of our loss that friends may not live in suspense. The finder of this will please get it published.—Wm. Graham."

The above was written in pencil, occupying both sides of a piece of paper about three inches by two, and appears to have been the leaf of a pocket-book. The paper is much torn and worn.

The foregoing has appeared in the *Shipping and Mercantile Gazette*, and has been alluded to as "A Voice from the Sea." The only thing it proves is a fact very well known,—which is, the drift to these shores from the westward. The probable fate of the *Pacific* was fully discussed, as our readers will remember, in the volume of this work for last year.

*American ship "Senator."*—The Rev. Andrew Crother, Consul of United States at Turks Island, communicated to the State Department the following copy of a paper picked up on that island, March 19th, 1861:—"January 25th, 1861.—American ship *Senator*, Liverpool for New Orleans, lat.  $19^{\circ} 39' N.$ , long.  $64^{\circ} W.$ ; temp.: air, 75; water, 72. Please publish." The drift was  $W. 15^{\circ} 20' N.$ , 400 miles, and, supposing the bottle found on the day that it reached the island, it was moved very nearly eight miles per day, or one-third of a mile per hour.—J. M. Gilliss, Superintendent U.S. National Observatory.—*Shipping Gazette*.

*A.n.*—The foregoing will appear under its designating initials in the chart preparing. It takes the usual course of the equatorial current.

*Teignmouth, August 7th.*—Picked up off the Start on the 6th inst. by Captain Netting, of the *Cornish Trader*, of Truro, a bottle containing a piece of paper with the following report, viz.:—"February 2nd, 1861, lat.  $47^{\circ} 26' N.$ , long.  $9^{\circ} 50' W.$ , ship *Ella*, of London, on her beam ends, seven feet of water in the hold, blowing a hurricane,

ballast shifted, wood ends started. God help us all. Messrs. Howell and Leak, Bristol." The original has this day been forwarded to the address on it.—*Shipping Gazette*.

*Weymouth, August 4th.*—Picked up on Chisel Beach, near the Langton Coast-Guard Station, a bottle with paper inside, containing the following:—"Barque *Lancaster*, Quance Master, from Trinidad, out thirty-seven days, lat. 49° 49' N., long. 10° 56' W., and eighty-seven from Cape Clear. All well. Put overboard June 19th, 1861.

*Scilly, St. Mary, June 29th.*—Found washed on shore at Porth Low, St. Mary, Scilly, on the 26th June, 1861, by Mr. James Edwards, of Porth Low, a sealed glass bottle containing a memorandum and two cards. The following is a copy of the memorandum:—"Rogers, Brothers, ship and insurance brokers, exporters of government steam coal, coke, &c., Cardiff. Quitted Cardiff, May 15th, 1861, on board the barque *Marquis of Bute*. Cape Clear bearing N.N.E., fifty miles, the 20th May, 1861. Myself and my son Henry on board, bound for Quebec. William Hescroft Commander. All well. Self and son happy and most comfortable.—John Rogers, Henry L. Rogers.

---

### Nautical Notices.

#### PORT BLAIR, ANDAMAN ISLANDS, as a Refuge in Foul Weather.

*Moulmain, 7th June, 1861.*

Sir,—I have not seen in your pages any particular notice of Port Blair, the settlement lately formed on the Andamans. It is important, however, to know that these hitherto inhospitable islands now contain a sheltered port under the British flag. And, although it is as yet only a penal settlement and can form little inducement for a ship to call at, except for the purpose of putting to rights after a partial disablement incurred beating down the Bay of Bengal,—even as such it will not be undervalued by those who would rather push on their voyage than put back.

I have already given my opinion in the *Nautical Magazine* as to the best mode of beating down the bay against the strength of the monsoon in May, June, and July. But, in connection with Port Blair, I may repeat it here, as, after a larger experience of the navigation of this part of the world than falls to the lot of many, I have no doubt of that opinion being correct,—at least I have always acted upon it when circumstances seemed to warrant it, and with perfect success. It is as follows:—

On leaving the Sandheads in the above months, and the weather has set in stormy, which is very likely to be the case (I do not mean an actual gale, but blowing hard), and the wind hanging to the southward, so that you cannot weather the Andamans without tacking to



the westward, I consider that these boards to the westward are mere waste of time, with unnecessary tear and wear to ship and crew. It is better in such cases—and they often happen—to pass through the Preparis Channel, and proceed to the settlement under the lee of the Andamans in smooth water, than to contend against the heavy swell of the bay with a deep-laden ship, at the risk of damage and putting back, or even foundering, as many ships have done within my recollection. I speak in earnest and as a practical sailor when I state that most if not all of these crippled and foundered ships might have pursued their voyage with ease and safety by the course above recommended. A ship crippled in the matter of spars will find all that she requires for the cutting on the Andamans, and good spars they are, as I have reason to know. She might also caulk leaky and strained butts and wood ends, and, in short, put sufficiently to rights to proceed on her voyage, instead of putting back to Calcutta at a ruinous loss to all parties.

After passing inside of the Andamans, let her stand on to the southward close-hauled on the starboard tack, and it will be very unusual if she cannot weather the Seyer Islands. But if she cannot weather them the passage is safe inside of them, if they are not approached under four miles, so that she will soon afterwards be able to make over to the coast of Pedier and get round Acheen Head with facility by attending to Horsburgh's *Directions*, and find little difficulty in reaching the Trade-wind, which at this season blows right home to the equator.

I am sorry that I can give you no reliable information about Port Blair or what they are doing there, but will see if I can pick up something about it in *our line* and send it on. It is certainly worth knowing, however, that one may now find shelter there among friends, instead of man-eaters, a circumstance that has long kept prudent people aloof from that neighbourhood. By the way, the philanthropic superintendent of Port Blair, Captain Haughton, has sent over three Andamanese to Moulmain for education; who honoured the writer with a visit. They appear rollicking, good-tempered young fellows, with nothing vicious-looking or remarkable about them, and not at all likely to take a *bite* out of a person. In fact, I think their cannibalism is but a traveller's tale.

Yours, &c.,

NORTH.

*To the Editor of the Nautical Magazine.*

[We thank our correspondent for remembering us. He will observe the remarks of "South" in our present number, who seems evidently under some misconception about him. — Ed.]

---

NOTE ON NAVIGATING THE STRAIT OF BELLE ISLE,—By Admiral H. W. Bayfield.

In a previous page we have inserted an important communication

on the subject of navigating the Strait of Belle Isle. Since the receipt of that paper the following remarks have reached us from Admiral Bayfield, and we lose no time in giving them a place in our present number in order that they may receive that consideration to which they are entitled.

The loss of the *Canadian* is indeed a sad affair, but I am only surprised that some similar accident has not happened long before this time. I was consulted by the company years ago respecting the passage through the Strait of Belle Isle, and gave them my decided opinion that the advantage of a few miles less distance from Liverpool to Quebec was not a sufficient compensation for the danger of passing through a strait sixty-five miles long and in its narrowest part only nine miles wide, and which *may be* full of icebergs *at any season of the year*. In August, 1833, I counted no less than 200 bergs and large pieces of ice in the strait. In the following year six or seven large bergs were all that could be seen in the same month. I once found the western entrance of the strait to freeze across in a calm night on the 20th June, which will give you some idea of the climate. Of course it was only a very thin covering of ice, which disappeared soon after sunrise. The main entrance of the gulf, between Cape Breton and Newfoundland, is free from ice, excepting in the spring of the year,—as see *St. Lawrence Pilot*, page 15.

As to the proper time of passing the strait, I think the fall of the year—after the middle of August—the least dangerous, because then northerly winds, attended with clear weather and smooth water, are more frequent; whereas in June, July, and the early part of August, southerly and easterly winds and fog prevail, and render the ice far more dangerous. The index at the end of vol. i. of *St. Lawrence Pilot* gives the pages in which all that I have said of the ice may be found.

---

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of August, 1861, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

Mediterranean, France, South coast, Cannes and Antibes Ports, with views, (2s. 6d.)

Newfoundland, South coast, Placentia Harbour, Commander J. Orlebar, R.N., 1860, (1s. 6d.)

Newfoundland, South coast, Basque Port, Commander J. Orlebar, R.N., 1860, (1s. 6d.)

East India, China, and Australian Lights, second edition, corrected to August, 1861, (1s.)

*Hydrographic Office, 20th August, 1861.*

---

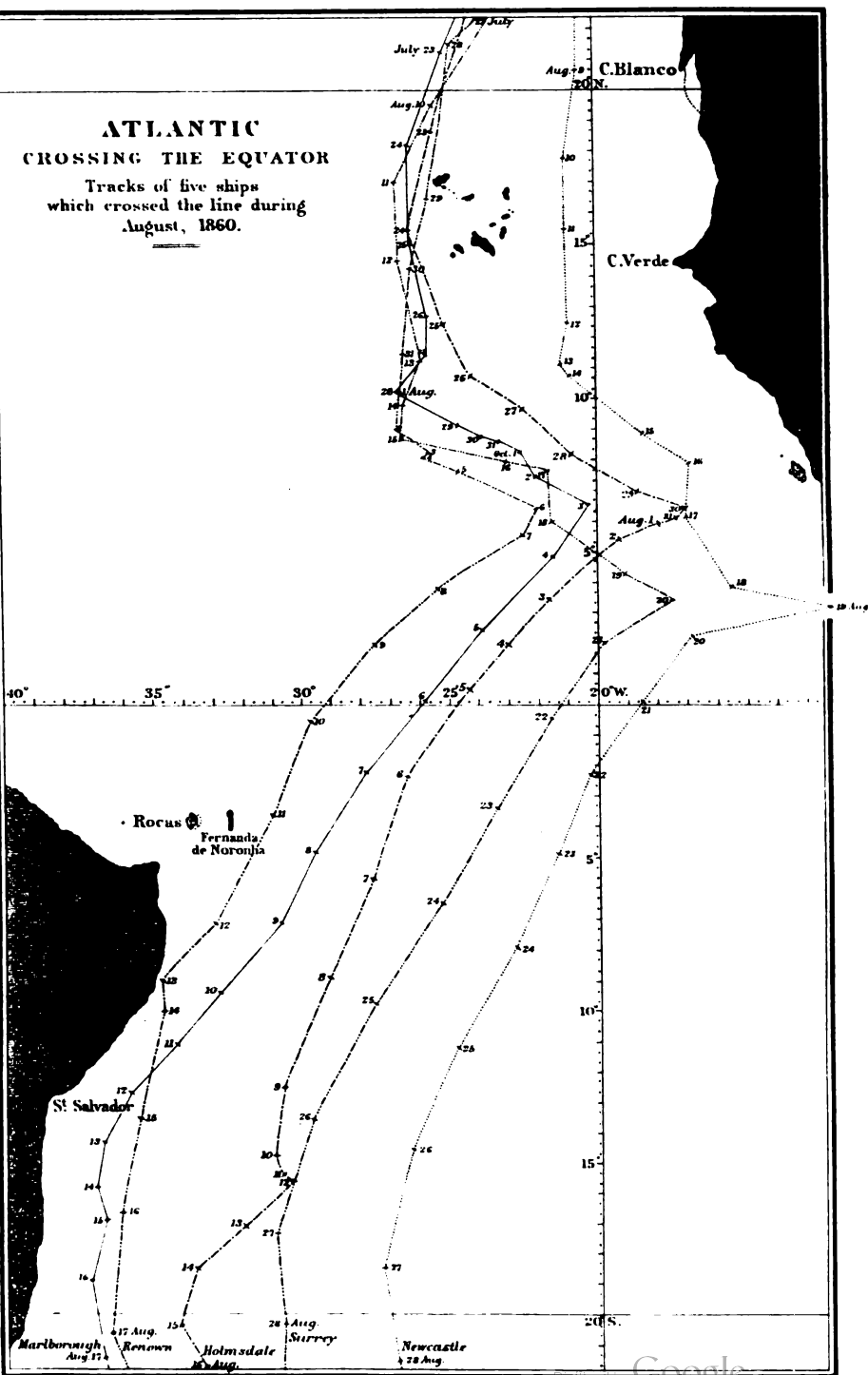
#### ERRATA.

Page 236, head of article, for Anan read Arran.



# ATLANTIC CROSSING THE EQUATOR

Tracks of five ships  
which crossed the line during  
August, 1860.



THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle.

OCTOBER, 1861.

CROSSING THE LINE.

Dear Sir,—With the object of helping to carry out the suggestion in a number of the *Nautical Magazine* for the summer of 1859, where you have the tracks of five ships which crossed the line about the middle of October, 1858, I send the tracks of five ships which crossed the line in August, 1860.

This neat little track chart was kindly drawn out for me by Captain George Case, who commands the *Sovereign of India*.

The *Holmsdale*, *Renown*, and *Marlborough* crossed the line in the early part of the month, the *Newcastle* and *Surrey* towards its end.

In discussing them it may be well to consider the three first apart from the others. The *Holmsdale* and *Marlborough* passed the parallel of  $20^{\circ}$  N. within a day of each other; both seem to have lost the N.E. Trades in about  $12^{\circ}$  N. From this place until they got the S.E. Trades in  $6^{\circ}$  N. the variable winds they experienced differed in direction, but on the same dates coincided in strength; for instance, it will be noticed that the lengths of their runs agree between July 29th and August 2nd, although one ship was seven degrees West of the other; this fact would incline me to suppose that even the variable winds of these latitudes are connected, taking their origin from a common source. The *Marlborough* went from  $6^{\circ} 30'$  N. to the equator in three days, whilst the *Holmsdale* took six days to make the same amount of latitude; and as she was three degrees East of the *Marlborough's* position, the easting might have been blamed had we not the fact that from the 30th to the 2nd, whilst the *Holmsdale* was nearly becalmed, the *Marlborough* was experiencing exactly the

same kind of weather about seven degrees to the westward of her, and both ships took the same number of days from 20° N. to the line.

From 20° N. to 10° N. both the *Holmsdale* and *Renown* gained half a day on the *Marlborough*; from 10° N. to the line the *Renown* and *Marlborough* were nine days, the *Holmsdale* nine and a half, but the *Holmsdale* was East of the other two, and by the time she was in 12° S. she had (in latitude) gained two days on the *Marlborough* and one on the *Renown*, besides being a good day's run East of them both. From 12° to 20° S. the *Holmsdale* and *Marlborough* experienced a series of light winds at a time when the *Renown* was crossing the line with a fine Trade; the *Renown* was baffled near South America for a day, when the wind freshened with her as it did with the ships further South. Hence, circumstances of wind favoured the *Renown*, which, with her speed, prevented her from losing much ground. She was new and in good trim, which gave her advantages that must not be given to the westerly route; if one of these ships had passed East of the Cape Verdes there would have been an interesting comparison. Between the 10th and 16th of August the *Marlborough* had very light winds, but the *Holmsdale* had much lighter though she was several degrees to the eastward of the *Marlborough*; in this part the *Holmsdale* was very much tried,—when the *Renown* came there she ran over the same ground in three days.

The *Newcastle* and *Surrey* crossed the line a fortnight later; the one passed outside, the other inside of the Cape de Verdes, and their passages from 20° N. to 20° S. were of equal length. These facts lead me to suppose that it matters little which side of the Cape de Verdes a ship passes in the end of July and beginning of August; though, as the two ships which crossed the line furthest East made the best passages, one would be inclined to say go *East* of them, at any rate get well to the eastward if you pass outside. I hope to try the eastern route this year.

By referring to the *Nautical Magazines* for the summer of 1859, mentioned above, it will be noticed that five tracks which crossed the line the middle of October, 1858, seemed to show that the best route for that time is *West* of the Cape de Verdes, with a south-easterly course after passing them; but on no account should a ship pass *East* of them.

A continuation of these charts, containing tracks of ships with about equal sailing qualities, or with remarks on their difference, would lead to interesting results. Hoping to see a good muster of them,

I remain, &c.,

HENRY TOYNBER.

*To the Editor of the Nautical Magazine.*

P.S.—A few similar tracks of ships rounding the Cape of Good Hope homeward-bound, especially in the winter months, when some go South and others hug the land, would give some useful information respecting that difficult piece of navigation.

## CYPRUS AND THE KARAMANIA CHARTS.

*Our Cruise in the Claymore* is a charming little narrative, attractive and winning, as all ladies' presents should be. It bears the stamp of "a plain ungarnished tale," not intended for the public eye: but the visit to the East which it describes at the eventful period of the late atrocities of the Druses, under Turkish apathy and connivance, will invest it with an interest that will welcome it to the historian as well as the general reader. By the way we must not omit to remind the compilers of guide books to profit by the remarks of Mrs. Harvey, or their publishers will assuredly have a repetition of them not to their advantage.

In our last number we presented our readers with Mrs. Harvey's account of the cedars of Lebanon, a subject of enduring interest, and we propose enriching our own pages with some more of the treasures with which those of our fair authoress abound. For the present we will accompany her to Cyprus, the unfavoured garden isle of the Levant, in which *she* alludes to Turkish misrule; which, under the new state of affairs at the Ottoman Porte, since the new Sultan looks into things for himself, there is reason to hope will be rectified. The little yacht touches at Kaiffa, on the Syrian coast, and runs over to Cyprus, where we will take up Mrs. Harvey's journal.

*Saturday, June 23rd.*—Light, baffling winds had kept us almost becalmed all yesterday; but to-day we are running by Cyprus, with a gentle breeze, and the sea calm and beautiful. The mountains and hills in the background are lofty and picturesque; but the plains at their feet are *triste* and sunburnt, and by no means as lovely as might be expected in Venus' especial isle.

We anchored off Larnica, the only town in the island that is situated on the sea shore, the others being built a few miles inland, on account of the depredations of the pirates who formerly infested these seas. Larnica consists of an upper and lower town; both are small, but look very clean in comparison with those we had lately seen. The sights of the place are few, the church of St. Lazarus being the only building of any importance. The old cloisters that surround it are picturesque, supported by very rich Byzantine columns; and a campanile, or tower, built about four years ago, is a very favourable specimen of modern Italian architecture. Within the church there is a screen, richly ornamented in the Greek fashion with gilding and pictures, and also the tomb of St. Lazarus. The saint's body is no longer here, having been transported some years ago to Venice. This is the same St. Lazarus whose grave we had so lately visited at Bethany.

The women of Larnica excel in making a peculiar kind of silk lace, which is much sought after by the Greek ladies; it somewhat resembles Irish crochet, and when worked in patterns of flowers and leaves the effect is very pretty. The climate of Cyprus is said to be

the worst in the Mediterranean; but the various consuls we saw all assured us that, with the commonest precautions, fever may be avoided. Much of the miasma doubtless arises from the large tracts of uncultivated land; but this, under an energetic government might quickly be remedied. With that dislike of change for which the Ottoman empire has always been so remarkable, not only do the Turkish officials here offer no encouragement to industry, but they actually discourage as much as possible foreign enterprise. An English company was desirous of establishing a farm on a large scale, and a silk manufactory, in the neighbourhood of Larnica, and for that purpose wished to take for a term of years about three thousand acres; but the pacha refused his consent to the lease, or to the manufactory being established, unless the principals would embrace the Mahometan religion.

It being the Greek eve of St. John, a great display of fireworks took place in the town; bouquets and rockets were thrown up, and a beautiful Bengal light tinged the whole shore and sea a brilliant crimson. We did our best to aid the rejoicings by burning blue-lights and sending up hand-rockets. The sailors called our attention to a comet, which was faintly but distinctly visible; it was about S.W. of Ursa Major, and the tail, which, though luminous, was very transparent, extended an immense distance across the heavens.

*Monday, June 25th.*—Arrived off Baffa, the ancient Paphos. Near the place where we anchored, it is said that Venus rose from the sea, in a shell drawn by doves and encircled by Houris and Graces. Cyprus is sadly changed from the days when the dainty goddess first trod the earth. No myrtle groves, no bowers of roses, surround the marble temples erected in her honour. A number of modern ruins strew the sea shore, half concealed by clumps of prickly pears, thorny acacias, and fields of tobacco; and the lovely nymphs who, with flowing hair and white feet, wandered along these golden sands, are now replaced by stout, sunburnt Greek women, whose awkward gait and ungainly movements have long ago renounced all connection with the Graces.

It was impossible to gain any information respecting the ruins. All the Greek and Arabic that could be mustered among us only enabled us to learn that a town had formerly stood here, and had been destroyed by a bombardment; but the name of the town, the date of its destruction, and who were its destroyers, we could not discover. The ruins were of considerable extent, the remains of several churches could be traced, many of the arches and doorways being still entire. It was grievous to see the number of beautiful marble columns, half buried in the ground, or serving as pillars for gateways and sheds. We wandered among them for some time, and then, mounting the donkeys that had been sent for, we rode up to Baffa.

This is a wretched little place, containing all the dirt and disagreeables of Turkish and Greek towns; but it is worth seeing, on account of the pretty glen that runs up under its walls. From among



the crevices of the rocks, wild figs, vines, and mulberries grow in charming confusion, their branches interlacing and forming a perfect network of foliage; little springs trickle from among the stones, collecting at last in the middle in a large pool or fountain, overshadowed by a few old chesnut trees. Here the women and children of the place were assembled to draw water, and, to judge by the talking and laughter that was going on, to enjoy also the pleasure of a little gossip. Among the assembled groups we looked in vain for any beauty; but the gay colours of the costumes, and the bright eyes of their wearers gave a brilliant finish to the picture, lighted up as it was by the last rays of the sun, which flashed in lines of gold through the branches of the trees.

For those who are not accustomed to ride on pack saddles, it is by no means an easy matter to preserve the exact position by which a balance is obtained; a little too much inclination to the right, and you are on your back; bend forward in the slightest degree to the left, and in an instant you are on your nose. When, in addition to these disadvantages, is added that of the saddles being made of tough splinters of wood, of such an uncompromising shape that no number of shawls can conceal their hardness or soften their knobs, it must be confessed that the bare back of a donkey would be in comparison a seat of luxury; but it seems that this would be impossible. A pack-saddle to a Cyprian donkey is a part of his being; he eats, sleeps, and lives in it, and without it would become a lost animal. Such being the custom of the country, we had also to endure the pack-saddles. While on the plain, all bore their sufferings with silent fortitude; but when the donkeys had to climb the rocks, endurance became no longer possible, and we all jumped to the ground, preferring any amount of walking to a ride which, like the Irishman's sedan-chair, was on the glory of the thing.

*Thursday, June 28th.*—Ran over to the coast of Anatolia, intending to land if possible at Patara, near which are the famous ruins of Xanthus. We went in a boat to the mouth of the river, but the surf was beating so heavily over the bar that it was impossible to cross it. We rowed for some distance along the beach, hoping still to effect a landing; but a long line of breakers, extending as far as the eye could reach, obliged us to give up the project.

This coast has a stern, wild magnificence, which is very imposing; and its lonely grandeur was heightened by the heavy lead-coloured clouds which were rolling in masses down the sides of the mountain, sometimes completely enveloping their summits, sometimes separating in long zigzag lines of light, disclosing the snowy peaks and the black chasms and hollows rent in their rocky sides.

A low moaning was now heard along the shore, as if the caverns of the deep were opened, and the spirits of the storm were assembling in solemn conclave. The sea began to heave with a long sullen roll, that showed its anger was aroused. As the heavens grew darker and darker, a flock of between two and three hundred pelicans flew rapidly across the bay, their white wings looking like a streak of light against

the black clouds. A sudden flash, and then the thunder came crashing among the mountains, with a roar that seemed to shake their giant strength, and was echoed back and back again, till the very air vibrated with the mighty sound. It was inexpressibly grand and awful; but rapidly as the storm had come on, so rapidly did it pass away; and a little more than half an hour after the heavens had been first overcast, the blue sky re-appeared, and the sun was shining brightly, while the thunder was still growling among the more distant peaks.

Although the coast is so precipitous that deep water may generally be calculated upon, it is nevertheless in places very treacherous, besides the dangers of sudden currents and gusts, which come rushing down the ravines, there are shoals and concealed rocks, which make navigation difficult, especially as many of them are not laid down in the charts; very few trading ships therefore ever pass this way.

As we were sailing merrily along quite unsuspecting of danger, a sudden change in the colour of the sea attracted Mr. Harvey's attention; and though the charts gave deep water, the lead was immediately cast, and four and a half fathoms was the startling cry. Down went the helm, round went the sails, and the good little *Claymore*, as if quite as much horrified at such an inhospitable neighbourhood as we could be, shot away from the shoal, which we could see distinctly as we hung over the side.

The concluding part of this extract startled us in our imagined hydrographic security, till we remembered the principle of the late Hydrographer to the Admiralty, Admiral Sir Francis Beaufort, which we have often quoted, and do so again, since it cannot be too widely known, that "there are no charts of any part of the world so accurate, nor any directions so perfect as not to require frequent revision and amendment." There it stands in the opening page of our earliest volume in 1832, and a very good lesson does it instil into any one.

But the length of time we have been busily surveying the Mediterranean, and not only ourselves but the French also, and the Italians, had almost impressed us with the belief that the Mediterranean charts were all but perfect. So, on a little cool reflection and looking into the whereabouts Mrs. Harvey alludes to the rock which had nearly sent the *Claymore* and her freight to the bottom, we found that the very coast on which it was situated had been surveyed by Sir Francis Beaufort himself! Yes, the mouth of the same Xanthus which the *Claymore* was about to visit, of so much interest in ancient history, had fallen under the examination of that officer while commanding H.M.S. *Frederickstein*, as an ordinary vessel of war on the Mediterranean station. The circumstances are peculiar, but they are on record, and we will briefly state that the charts of the coast in question being so defective, he was directed to survey it, and did so *at his own expense!* The case is without parallel in the annals of any navy, and the Admiralty charts of Karamania are the fruits of that survey. And the charts are so good as to require no re-survey, but the off-

shore soundings to them are wanted, and even these, from the coast being so seldom visited, are very seldom required; but here is a little yacht that goes prying into out of the way places, finding out those dangers which most assuredly the charts *ought to show*.

If the fair authoress of the *Claymore's* cruize were a sailor, we should make some attempt at getting the whereabouts of this danger for the benefit of the chart and the safety of navigators. But on this score we do hope that these remarks will meet her eye, and induce her to call on her husband in the Queen's name to contribute all he can to complete the Admiralty charts with the position of this danger, even approximately, either through our own pages or any other channel which he might prefer. He will find us ready and desirous to attend to his information: a note to our publisher's will be sufficient, and this, for the safety of navigators—even of yachts which may be hereafter on the same errand as the *Claymore*,—we do hope he will make time to send us. We shall then have additional reason for taking another leaf from the *Claymore's* interesting cruize.

---

#### ON THE MANNING AND OFFICERING OF THE BRITISH NAVY.

A strong conviction has arisen and is gradually increasing among Englishmen of all classes, that the state of the "personel" of the Navy of England, that right arm of our island strength, is in a high degree unsatisfactory. Whatever may be the variety of opinion as to the experiments daily making in the "materiel" of our war ships, none, it may safely be assumed, can be found to doubt that heart of oak or mail of iron will be alike useless if we lack on occasion the true hearts of oak, who, in old days, if their own ships failed them took those of the enemy, aye, in open boats against stout war ships, and thus turned his scientific advantages against himself.

Many have been the remedies tried and many more have been suggested, but hitherto the unpalatable fact remains that in the event of a war there exists no supply of seamen (without resorting to the hated impressment system) by which to man and send to sea a fleet of such strength and with such promptitude as would secure to this country that "first broadside" which her sons have always believed to be "half the battle."

We are not now to consider whether the said impressment is in anything more unjust than the ballot which in war time calls the rest of the male population into the ranks of the army. But we are to devise a means by which we may be enabled to man a fleet without enfeebling by impressment that very commerce which it is the fleet's first mission to protect.

What then are the remote causes of this acknowledged deficiency, and where may we seek a remedy? Let us start with the axiom that

nothing good is to be had without paying for it its full value, and then examine how we may get the utmost value for our money.

Some writers have advocated a higher rate of pay for the Navy; but this in practice would, it is to be feared, be found to be a fallacy, for, given an open market, then if the supply be not increased such a course only raises the general price of the article in demand. Evidently it is the supply which must be increased, and *how* to do this would appear to be the only question.

First then, and as an immediate although only supplementary measure, restore the apprentice system, which if at first it seems to press hardly on the shipowner, has yet a compensative power of increasing the supply, and therefore cheapening the article of which he stands in need, and has always been popular with the mercantile officer.

But this, while certain to increase the number of merchant seamen, is by no means so certain to increase the number of those immediately available for war purposes. The difference between the work required of a merchant seaman and a man-of-war's man is daily becoming more marked. Repairs to a merchant ship's rigging and the work necessary on fitting out, are now for the most part executed by the men belonging to some contractor for such work, and who never leave the shore. They are riggers and not seamen. The crew of the merchant vessel, when they are anything but lubbers, is composed of *seamen*, but not riggers. Of course there are exceptions everywhere, and I do not mean to say that we have not some seamen as good as ever trod a deck in the merchant service; but the temptation to fill up with those who are not so, has been over strong for the owners of late years. Accurate artillery, too, demands trained gunners, and these are not to be had in the merchant service. For all these reasons and many more which might be mentioned, it is necessary that the increase in the numbers of seamen available for manning our fleets should be principally obtained by schools afloat, and entries of larger numbers of 1st and 2nd class boys.

But this is only a part of the question. It yet remains that we should consider how we may—having created a good supply of the article—ensure that it shall come to our market. If it were wheat, we might let this alone; but men are, as a celebrated political economist remarks, the most difficult possible article of transportation in such a case.

The continuous service system has certainly not accomplished what we want; nay, some contend that it is an ingeniously contrived sieve which catches all the dross and lets the gold run through, for while *Jack Tar*, at least during his active days, can always get a ship and likes his liberty, *Jack Spit* is not so certain, knows when he is well off, and sticks to the Navy like a leech.

I beg to suggest, therefore, to the consideration of those whose province it is to regulate such matters, whether we may not accomplish the end we have in view by some such plan as the following.

Let lists be opened at all the ports of volunteers for the Navy under a new system—to be continued till the total number so enrolled

reaches, including those actually serving in the Navy, or so many of them as choose to enter, the number of 100,000 seamen or any other number deemed sufficient for all war purposes.

Then each year estimate the total number required for the service of that year,—place them on full pay and use them as required. Let the pay be a fair remuneration, a fair market price, for such labour, and not made up of pennies here and pennies there which a favourite may get and a faithful drudge may miss,—and adopt some more simple plan of provisioning than giving a man more than he can eat and paying him the difference.

Then let the remaining seamen have leave for one, two, or three years, with the understanding that a retaining fee, a sort of half-pay, will be accruing to them during their absence, and will be paid to them on their return within the specified time,—to be forfeited if they do not so return. If war be imminent, retain all who are coming home and let no more go out. I need scarcely expatiate to any one who knows the habits of seamen on the security of the *moral* tie you would thus have to the absentees,—nor on the well known fact that the best seamen are those who have been everywhere and seen everything, aye, from a fishing boat to a pirate. Having by such means made the entry to the Navy a boon, we may then easily keep up the discipline in it to the highest point, although reducing the corporal punishment to the lowest possible amount, by conferring on all captains or officers commanding a full power of discharge of *proved* and incorrigible offenders without any other check than this;—that an officer commanding, the discharges from whose ships were constantly in excess, should be always liable to be displaced from command,—after fair trial. Officers under the present system will do one of two things. Either they will make “cooked” returns (I hope this is not often the case) or they will abstain from punishment where they know that it ought to be inflicted, — that those returns may not seem unduly large. I will put a case. A. leaves a ship from ill health or other causes in which his mistaken kindness or easy temper or the cause I have before mentioned has induced a slackness of discipline under which no ship can be “smart” or even “happy.” B. relieves him, puts on the screw, and finds to his disgust that his punishment returns, being large, are animadverted upon in no pleasant terms by his superiors. The natural result is, that he says,—Oh, it’s no concern of mine. I don’t love punishment. Let the discipline go to the dogs. But this ruins the service, and soon brings mutiny. I do not speak of the cases which no doubt *have* existed, where the new broom was anxious to sweep *too* clean; but this has occurred even where the utmost tact and temper have been shown.

This power of discharge must reside in the captain alone. In no other way can he have that authority without which command for any good purpose is impracticable. If he has to refer to the admiral or some other distant authority, the time passes, and justice is not done. The result being that the example loses its effect, even if the

crime is ever punished at all. And no fear need be entertained that captains generally would misuse the trust and authority thus reposed in them, for independent of other considerations, it is clearly not a captain's interest and can never be his wish, to get rid of a *good* man. Centralization may be a good thing for red tapists at home, but it is certainly bad for both blue and red jackets abroad.

There will be, it is true, one serious objection to even this way of abolishing corporal punishment; it is, that in some cases men would no doubt commit crime in order to be sent home from a ship or a station of which they were tired. But in such a case it is never worth while to keep a man (at least during peace) against his will; for he works badly himself and discourages others by his grumbling.

It will of course be objected to this plan that it involves increased expence for the retaining fee proposed; but I beg to point out that it is less expensive on the whole and likely to be more productive of good effect than the bounty to which recourse has been had with very little success.

No doubt a standing navy is the true solution to all our difficulty,—if it were not too expensive, and if, also, it were not liable to the serious objection that seamen are never *excellent* when for a portion of their life they are kept either in harbour or, worse, in barracks. This I believe to be the only reason why the French system fails to turn out as good seamen as our own, leaving for the moment the difference in the characteristics of the two nations out of the question. But the system which I have outlined is not liable to this objection. It does not confine to barracks any seaman, for as soon as a man returns from his one, two, or three years,—his tour of foreign service, he is at liberty to go where he pleases, for a certain fixed time, and when at the end of that time he perhaps finds himself “hard up,” he knows that in the harbour where he was last discharged from a man-of-war, a certain sum is awaiting his arrival. I do not think the sum need be a very large one either to ensure his return. Probably £5 per year of absence would be enough, £10 would be magnificent even for petty officers. How many a good seaman comes to England with but little due to him. How many more lose what they do receive in the port where they are discharged. Let every such man, if he has been on leave from the Navy, have a power of appeal from the subtle toils of the crimps to the nearest naval officer, or, failing that, to the nearest magistrate, and let his journey be paid on receipt of the proper voucher that money *is* due to him. Thus would a tie to the Navy be created, the stronger in that it is only felt when a benefit is to be conferred, for I would never interfere with a man who does not choose to come back to his leave. He would forfeit his half-pay, and that would be all. But to make this system fully efficient in its working, it would be advisable that the remains of all the expedients which have been tried and failed hitherto should be swept away, for it would puzzle, as Jack says, a Philadelphia lawyer to wade through the accumulated conditions of entry which now exist if a new system were

superadded to them. Sailors like a definite rate of pay per month, and will not take the trouble to understand the subtleties of good conduct stripes and consequent increase of pay. Neither can they nor indeed any one else understand that regulation as a boon which increases the quantity of bread which they cannot eat, and diminishes the money paid as savings for it.

A greater and more simplified change is certainly necessary than has yet been accorded as regards the meat. Under the present regulations, if the salt meat, one pound per man, is proved to have boiled down to less than half its weight, one third more may be added to it. But the practical working of this is as follows:—A bad cask is opened, *i.e.*, not sufficiently bad to be condemned, but bad enough to shrink. Jack finds his dinner short, and growls accordingly. Next day the same thing occurs, and the least patient John among the Jacks, or it may be Joey, goes on the quarter-deck and complains. Scales are produced, and the weight having been duly proved to have fallen below par, the additional issue is authorised. But a man will seldom do this twice, for first, he has lost the heat of his dinner and some considerable time which perhaps prevents his smoking; next, the additional meat he received was not cooked, and could not be cooked that day, so it was very little use to him; thirdly, the weight must be proved to have fallen below half in each case, and on each day, so that on the whole he probably puts up with the loss, and consoles himself with the trite proverb that “A good growl is better than a bad dinner.” The meat should be weighed cooked and free of bone; there is no insuperable difficulty in doing this in any case, and I am sure it would do more towards popularising the Navy than the increase of chocolate or the abolition of “cat.” I do not indeed advocate so loose a system as that pursued in most merchant vessels, of opening a cask and letting the men help themselves, because however well it may work for a small crew, it would never do for a large one. But it is not unnatural that a man who has been under such rules, should not like the occasionally, as I have shown, scanty fare of a man-of-war’s man as regards beef and pork.

I have done nothing more in this paper than, as I said, to *outline* the features of a new system. Of course much thought and many alterations would have to be given to it before it would be workable. But I hope that my brother officers will not deem me too presuming in thus bringing the idea to their notice, and that they will receive it with whatever favour its merits may seem to deserve.

In my next paper I propose to speak of the system of officering our ships, and to show how, with benefit to both, the Mercantile Marine may be, to a certain extent, amalgamated with the Royal Navy.

[Our correspondent, if he refers to the *Nautical* for 1858, will find that his *principle* of retaining men by paying them only when they *come for service*, has been anticipated by Captain Sheringham.—ED.]

THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,—  
*Address of the President, Wm. Fairbairn, Esq., F.R.S., LL.D.*

It has been justly observed by the *London Review* that—"The meetings of the British Association are always scenes of excitement and admiration for the man of science, and the present perhaps exceeds any of its forerunners in the interest which is manifested respecting it. On no occasion, not even excepting that of Aberdeen, when the Prince Consort was President, has the number of members amounted to those drawn together by the man, who, although he attaches LL.D., F.R.S., and various other distinctive and honourable titles to his name, is known, respected, and will ever be remembered as William Fairbairn. Learned societies and universities do what is most befitting when they dignify such an individual, and proud may he be of those honorary distinctions: but when the plain name itself exceeds the attraction of titles, and is honoured with such enthusiasm as was manifested at the opening meeting of the British Association on Wednesday evening (4th September), the man may justly be grateful for the respect so lavishly bestowed upon him, whilst the nation at large cannot but feel proud of the talented, upright, and deservedly beloved citizen of Manchester." With our cordial approval of the foregoing well merited eulogium, we now preserve for our own readers, who are far away in distant climes, some ploughing the ocean and others carrying on their duty ashore as well as afloat,—we preserve for them what was said in Mr. Fairbairn's address on this interesting occasion,—in which they will find a general view of the state of subjects in general that, if we mistake not, will much interest them.

A careful perusal of the history of this association will demonstrate that it was the first, and for a long time the only institution, which brought together for a common object the learned professors of our universities, and the workers in practical science. These periodical reunions have been of incalculable benefit, in giving to practice that soundness of principle and certainty of progressive improvement, which can only be obtained by the accurate study of science and its application to the arts. On the other hand, the men of actual practice have reciprocated the benefits thus received from theory, in testing by actual experiment deductions which were doubtful, and rectifying those which were erroneous. Guided by an extended experience, and exercising a sound and disciplined judgment, they have often corrected theories apparently accurate, but nevertheless founded on incomplete data or on false assumptions inadvertently introduced. If the British Association had effected nothing more than the removal of the anomalous separation of theory and practice, it would have gained imperishable renown in the benefit thus conferred.

Were I to enlarge on the relation of the achievements of science to the comforts and enjoyments of man, I should have to refer to the present epoch as one of the most important in the history of the world.



At no former period did science contribute so much to the uses of life and the wants of society. And in doing this it has only been fulfilling that mission which Bacon, the great father of modern science, appointed for it, when he wrote that "the legitimate goal of the sciences is the endowment of human life with new inventions and riches," and when he sought for a natural philosophy which, not spending its energy on barren disquisitions, "should be operative for the benefit and endowment of mankind." Looking, then, to the fact that, whilst in our time all the sciences have yielded this fruit, engineering science, with which I have been most intimately connected, has pre-eminently advanced the power, the wealth, and the comforts of mankind, I shall probably best discharge the duties of the office I have the honour to fill, by stating as briefly as possible the more recent scientific discoveries which have so influenced the relations of social life. I shall therefore not dwell so much on the progress of abstract science, important as that is, but shall rather endeavour briefly to examine the application of science to the useful arts, and the results which have followed, and are likely to follow, in the improvement of the condition of society.

The history of man throughout the gradations and changes which he undergoes in advancing from a primitive barbarism to a state of civilisation, shows that he has been chiefly stimulated to the cultivation of science and the development of his inventive powers, by the urgent necessity of providing for his wants and securing his safety. There is no nation, however barbarous, which does not inherit the germs of civilisation, and there is scarcely any which has not done something towards applying the rudiments of science to the purposes of daily life. Amongst the South Sea Islanders, when discovered by Cook, the applied sciences,—if I may use the term,—were not entirely unknown. They had observed something of the motions of the heavenly bodies, and watched with interest their revolutions, in order to apply this knowledge to the division of time. They were not entirely deficient in the construction of instruments of husbandry, of war, and of music. They had made themselves acquainted with the rudiments of shipbuilding and navigation, in the construction and management of their canoes. Cut off from the influence of European civilisation, and deprived of intercourse with higher grades of mind, we still find the inherent principle of progression exhibiting itself, and the inventive and reasoning powers developed in the attempt to secure the means of subsistence.

Again, if we compare man as he exists in small communities with his condition where large numbers are congregated together, we find that densely populated countries are the most prolific in inventions, and advance most rapidly in science. Because the wants of the many are greater than those of the few, there is a more vigorous struggle against the natural limitations of supply, a more careful husbanding of resources, and there are more minds at work. This fact is strikingly exemplified in the history of Mexico and Peru, and its attestation is found in the numerous monuments of the past which are seen in Cen-

tral America, where the remains of cities and temples, and vast public works, erected by a people endowed with high intellectual acquirements, can still be traced. There have been discovered a system of canals for irrigation; long mining galleries cut in the solid rock, in search of lead, tin, and copper; pyramids not unlike those of Egypt; earthenware vases and cups, and manuscripts containing the records of their history; all testifying to so high a degree of scientific culture and practical skill, that, looking at the cruelties which attended the conquests of Cortes and Pizarro, we may well hesitate as to which had the stronger claims on our sympathy, the victors or the vanquished.

In attempting to notice those branches of science with which I am but imperfectly acquainted, I shall have to claim your indulgence. This association, as you are aware, does not confine its discussions and investigations to any particular science; and one great advantage of this is, that it leads to the division of labour, whilst the attention which each department receives, and the harmony with which the plan has hitherto worked, afford the best guarantee of its wisdom and proof of its success. In the early history of astronomy, how vague and unsatisfactory were the wild theories and conjectures which supplied the place of demonstrated physical truths and carefully observed laws. How immeasurably small, what a very speck does man appear, with all the wonders of his invention, when contrasted with the mighty works of the Creator; and how imperfect is our apprehension, even in the highest flights of poetic imagination, of the boundless depths of space! These reflections naturally suggest themselves in the contemplation of the works of an Almighty Power, and impress the mind with a reverential awe for the great Author of our existence.

The great revolution which laid the foundation of modern astronomy, and which, indeed, marks the birth of modern physical science, is chiefly due to three or four distinguished philosophers. Tycho Brahe, by his system of accurate measurement of the positions of the heavenly bodies; Copernicus, by his theory of the solar system; Galileo, by the application of the telescope; and Kepler, by the discovery of the laws of the planetary motions, all assisted in advancing, by prodigious strides, towards a true knowledge of the constitution of the universe. It remained for Newton to introduce, at a later period, the idea of an attraction varying directly as the mass, and inversely as the square of the distance, and thus to reduce celestial phenomena to the greatest simplicity, by comprehending them under a single law. Without tracing the details of the history of this science, we may notice that in more recent times astronomical discoveries have been closely connected with high mechanical skill in the construction of instruments of precision. The telescope has enormously increased the catalogue of the fixed stars, or those "landmarks of the universe," as Sir John Herschel terms them, "which never deceive the astronomer, navigator, or surveyor." The number of known planets and asteroids has also been greatly enlarged. The discovery of Uranus resulted immediately from the perfection attained by Sir William Herschel in

the construction of his telescope. More recently, the structure of the nebulae has been unfolded through the application to their study of the colossal telescope of Lord Rosse. In all these directions much has been done by our present distinguished Astronomer Royal, and also by amateur observers in private observatories, all of whom, with Mr. Lassells at their head, are making rapid advances in this department of physical science.

Our knowledge of the physical constitution of the central body of our system seems likely, at the present time, to be much increased. The spots on the sun's disc were noticed by Galileo and his contemporaries, and enabled them to ascertain the time of its rotation and the inclination of its axis. They also correctly inferred, from their appearance, the existence of a luminous envelope, in which funnel-shaped depressions revealed a solid and dark nucleus. Just a century ago, Alexander Wilson indicated the presence of a second and less luminous envelope beneath the outer stratum, and his discovery was confirmed by Sir William Herschel, who was led to assume the presence of a double stratum of clouds, the upper intensely luminous, the lower grey, and forming the penumbra of the spots. Observations during eclipses have rendered probable the supposition that a third and outermost stratum of imperfect transparency encloses concentrically the other envelopes. Still more recently, the remarkable discoveries of Kirchoff and Bunsen require us to believe that a solid or liquid photosphere is seen through an atmosphere containing iron, sodium, lithium, and other metals in a vaporous condition. We must still wait for the application of more perfect instruments, and especially for the careful registering of the appearances of the sun by the photoheliograph of Sir John Herschel, so ably employed by Mr. Warren de la Rue, Mr. Welsh, and others, before we can expect a solution of all the problems thus suggested.

Guided by the same principles which have been so successful in astronomy, its sister science, magnetism, emerging from its infancy, has of late advanced rapidly in that stage of development which is marked by assiduous and systematic observation of the phenomena, by careful analysis and presentation of the facts which they disclose, and by the grouping of these in generalisations, which, when the basis on which they rest shall be more extended, will prepare the way for the conception of a general physical theory in which all the phenomena shall be comprehended, whilst each shall receive its separate and satisfactory explanation. It is unnecessary to remind you of the deep interest which the British Association has at all times taken in the advancement of this branch of natural knowledge, or of the specific recommendations which, made in conjunction with the Royal Society, have been productive of such various and important results. To refer but to a single instance; we have seen those magnetic disturbances, so mysterious in their origin and so extensive in simultaneous prevalence—and which, less than twenty years ago, were designated by a term specially denoting that their laws were wholly unknown—traced to laws of periodical recurrence, revealing, without a doubt, their origin

in the central body of our system, by inequalities which have for their respective periods, the solar day, the solar year, and still more remarkably, an until lately unsuspected solar cycle of about ten of our terrestrial years, to whose existence they bear testimony in conjunction with the solar spots; but whose nature and causes are in all other respects still wrapped in entire obscurity. We owe to General Sabine, especially, the recognition and study of these and other solar magnetic influences and of the magnetic influence of the moon similarly attested by concurrent determinations in many parts of the globe, which are now held to constitute a distinct branch of this science not inappropriately named "celestial," as distinguished from purely terrestrial magnetism.

We ought not in this town to forget that the very rapid advance which has been made in our time by chemistry is due to the law of equivalents, or atomic theory, first discovered by our townsman, John Dalton. Since the development of this law its progress has been unimpeded, and it has had a most direct bearing on the comforts and enjoyments of life. A knowledge of the constituents of food has led to important deductions as to the relative nutritive value and commercial importance of different materials. Water has been studied in reference to the deleterious impurities with which it is so apt to be contaminated in its distribution to the inhabitants of large towns. The power of analysis, which enables us to detect adulterations, has been invaluable to the public health, and would be much more so, if it were possible to obviate the difficulties which have prevented the operation of recent legislation on this subject. We have another proof of the utility of this science in its application to medicine; and the estimation in which it is held by the medical profession is the true index of its value in the diagnosis and treatment of disease. The latest developments of chemistry, however, have been in connexion with the useful arts. What would now be the condition of calico-printing, bleaching, dyeing, and even agriculture itself, if they had been deprived of the aid of theoretic chemistry? For example: Aniline—first discovered in coal tar by Dr. Hoffman, who has so admirably developed its properties—is now most extensively used as the basis of red, blue, violet, and green dyes. This important discovery will probably in a few years render this country independent of the world for dye stuffs; and it is more than probable that England, instead of drawing her dye stuffs from foreign countries, may herself become the centre from which all the world will be supplied. It is an interesting fact that, at the same time in another branch of this science, M. Tournet has lately demonstrated that the colours of gems, such as the emerald, aqua-marina, amethyst, smoked rock crystal, and others, are due to volatile hydro-carbons, first noticed by Sir David Brewster in clouded topaz, and that they are not derived from metallic oxides, as has been hitherto believed.

Another remarkable advance has recently been made by Bunsen and Kirchoff in the application of the coloured rays of the prism to analytical research. We may consider their discoveries as the com-

mencement of a new era in analytical chemistry, from the extraordinary facilities they afford in the qualitative detection of the minutest traces of elementary bodies. The value of the method has been proved by the discovery of the new metals cesium and rubidium by M. Bunsen, and it has yielded another remarkable result in demonstrating the existence of iron, and six other known metals, in the sun. In noticing the more recent discoveries in this important science, I must not pass over in silence the valuable light which chemistry has thrown upon the composition of iron and steel. Although Despretz demonstrated many years ago that iron would combine with nitrogen, yet it was not until 1857 that Mr. C. Binks proved that nitrogen is an essential element of steel, and more recently M. Carou and M. Fremy have further elucidated this subject; the former showing that cyanogen, or cyanide of ammonium, is the essential element which converts wrought iron into steel; the latter combining iron with nitrogen through the medium of ammonia, and then converting it into steel by bringing it at the proper temperature into contact with common coal gas. There is little doubt that in a few years these discoveries will enable Sheffield manufacturers to replace their present uncertain, cumbrous, and expensive process, by a method at once simple and inexpensive, and so completely under control as to admit of any required degree of conversion being obtained with absolute certainty. Mr. Crace Calvert also has proved that cast iron contains nitrogen, and has shown that it is a definite compound of carbon and iron mixed with various proportions of metallic iron according to its nature.

Before leaving chemical science I must refer to the interesting discovery by M. Deville, by which he succeeded in rapidly melting 38 or 40 pounds of platinum—a metal till then considered almost infusible. This discovery will render the extraction of platinum from the ore more perfect, and, by reducing its cost, will greatly facilitate its application to the arts.

It is little more than half a century since geology assumed the distinctive character of a science. Taking into consideration the aspects of nature in different epochs of the history of the earth, it has been found that the study of the changes at present going on in the world around us enables us to understand the past revolutions of the globe, and the conditions and circumstances under which strata have been formed and organic remains embedded and preserved. The geologist has increasingly tended to believe that the changes which have taken place on the face of the globe, from the earliest times to the present, are the result of agencies still at work. But whilst it is his high office to record the distribution of life in past ages and the evidence of physical changes in the arrangement of land and water, his results hitherto have indicated no traces of its beginning, nor have they afforded evidence of the time of its future duration. Geology has been indebted for this progress very largely to the investigations of Sedgwick and the writings of Sir Charles Lyell. As an example of the application of geology to the practical uses of life, I may cite the discovery of the gold fields of Australia, which might long have remained hidden but

for the researches of Sir Roderick Murchison in the Ural Mountains on the geological position of the strata from which the Russian gold is obtained. From this investigation he was led by inductive reasoning to believe that gold would be found in similar rocks, specimens of which had been sent him from Australia. The last years of the active life of this distinguished geologist have been devoted to the re-examination of the rocks of his native Highlands of Scotland. Applying to them those principles of classification which he long since established, he has demonstrated that the crystalline limestone and quartz rocks, which are associated with mica, schists, &c., belong by their embedded organic remains to the lower silurian rocks. Descending from this well-marked horizon, he shows the existence beneath all such fossiliferous strata of vast masses of sandstone and conglomerate of Cambrian age; and, lastly, he has proved the existence of a fundamental gneiss, on which all the other rocks repose, and which occupying the North-Western Hebrides and the west coasts of Sutherland and Ross, is the oldest rock formation on the British Isles, it being unknown in England, Wales, or Ireland.

It is well known that the temperature increases as we descend through the earth's crust, from a certain point near the surface, at which the temperature is constant. In various mines, borings, and Artesian wells the temperature has been found to increase about  $1^{\circ}$  Fahrenheit for every sixty or sixty-five feet of descent. In some carefully conducted experiments during the sinking of Dukinfield Deep Mine,—one of the deepest pits in this country,—it was found that a mean increase of about  $1^{\circ}$  in seventy-one feet occurred. If we take the ratio thus indicated, and assume it to extend to much greater depths, we should reach at two and a half miles from the surface strata, at the temperature of boiling water; and at depths of about fifty or sixty miles the temperature would be sufficient to melt, under the ordinary pressure of the atmosphere, the hardest rocks. Reasoning from these facts, it would appear that the mass of the globe, at no great depth, must be in a fluid state. But this deduction requires to be modified by other considerations, namely, the influence of pressure on the fusing point, and the relative conductivity of the rocks which form the earth's crust. To solve these questions a series of important experiments were instituted by Mr. Hopkins, in the prosecution of which Dr. Joule and myself took part; and, after a long and laborious investigation, it was found that the temperature of fluidity increased about  $1^{\circ}$  Fahrenheit for every 500 lbs. pressure, in the case of spermaceti, bees'-wax, and other similar substances.

However, on extending those experiments to less compressible substances, such as tin and barytes, a similar increase was not observed. But this series of experiments has been unavoidably interrupted; nor is the series on the conductivity of rocks entirely finished. Until they have been completed by Mr. Hopkins, we can only make a partial use of them in forming an opinion of the thickness of the earth's solid crust. Judging, however, alone from the greater conductivity of the igneous rocks, we may calculate that the thickness cannot possibly be

less than nearly three times as great as that calculated in the usual suppositions of the conductive power of the terrestrial mass at enormous depths being no greater than that of the superficial sedimentary beds. Other modes of investigation which Mr. Hopkins has brought to bear on this question, appear to lead to the conclusion that the thickness of the earth's crust is much greater even than that above stated. This would require us to assume that a part of the heat in the crust is due to superficial and external rather than central causes. This does not bear directly against the doctrine of central heat, but shows that only a part of the increase of temperature observed in mines and deep wells, is due to the outward flow of that heat.

Touching those highly interesting branches of science, Botany and Zoology, it may be considered presumptuous in me to offer any remarks. I have, however, not entirely neglected in my earlier days to inform myself of certain portions of natural history, which cannot but be attractive to all who delight in the wonderful beauties of natural objects. How interesting is the organisation of animals and plants; how admirably adapted to their different functions and spheres of life! They want nothing, yet have nothing superfluous. Every organ is adapted perfectly to its functions; and the researches of Owen, Agassiz, Darwin, Hooker, Daubeny, Babington, and Jardine, fully illustrate the perfection of the animal and vegetable economy of nature.

Two other important branches of scientific research, Geography and Ethnology, have for some years been united, in this association, in one section, and that probably the most attractive and popular of them all. We are much indebted to Sir Roderick Murchison, among other members of the association, for its continued prosperity, and the high position it has attained in public estimation. The spirit of enterprise, courage, and perseverance displayed by our travellers in all parts of the world have been powerfully stimulated and well supported by the Geographical Society; and the prominence and rapid publicity given to discoveries by that body have largely promoted geographical research. In physical geography the late Baron von Humboldt has been one of the largest contributors, and we are chiefly indebted to his personal researches and numerous writings for the elevated position it now holds among the sciences. To Humboldt we owe our knowledge of the physical features of Central and Southern America. To Parry, Sir James Ross, and Scoresby, we are indebted for discoveries in the Arctic and Antarctic regions. Geography has also been advanced by the first voyage of Franklin down the Copper Mine River, and along the inhospitable shores of the Northern Seas, as far as Point Turn-Again; as also by that ill-fated expedition in search of a north-west passage; followed by others in search of the unfortunate men who perished in their attempt to reach those ice-bound regions, so often stimulated by the untiring energy of a high-minded woman.

In addition to these the discoveries of Dr. Livingstone in Africa have opened to us a wide field of future enterprise along the banks of the Zambesi and its tributaries. To these we may add the explorations of Captain Burton in the same continent, and those also by Captain

Speke and Captain Grant of a hitherto unknown region, in which it has been suggested that the White Nile has its source, flowing from one of two immense lakes, upwards of 300 miles long by 100 broad, and situated at an elevation of 4,000 feet above the sea. To these remarkable discoveries I ought to add an honourable mention of the sagacious and perilous exploration of Central and Northern Australia by Mr. M'Douall Stewart.

Having glanced, however imperfectly, at some of the most important branches of science which engage the attention of members of this association, I would now invite attention to the mechanical sciences, with which I am more familiarly acquainted. They may be divided into theoretical, mechanical, and dynamics, comprising the conditions of equilibrium and the laws of motion : and applied mechanics, relating to the construction of machines. I have already observed that practice and theory are twin sisters, and must work together to ensure a steady progress in mechanical art. Let us then maintain this union as the best and safest basis of national progress, and, moreover, let us recognise it as one of the distinctive aims of the annual reunions of this association. During the last century the science of applied mechanics has made strides which astonish us by their magnitude ; but even these, it may reasonably be hoped, are but the promise of future and more wonderful enlargements. I therefore propose to offer a succinct history of these improvements, as an instance of the influence of scientific progress on the well-being of society. I shall take in review the three chief aids which engineering science has afforded to national progress, namely, canals, steam navigation, and railways ; each of which has promoted an incalculable extension of the industrial resources of the country.

One hundred years ago the only means for the conveyance of inland merchandise were the pack-horses and wagons on the then imperfect highways. It was reserved for Brindley, Smeaton, and others, to introduce a system of canals which opened up facilities for an interchange of commodities at a cheap rate over almost every part of the country. The impetus given to industrial operations by this new system of conveyance, induced capitalists to embark in trade, in mining, and in the extension of manufactures in almost every district. These improvements continued for a series of years, until the whole country was intersected by canals requisite to meet the demands of a greatly extended industry. But canals, however well adapted for the transport of minerals and merchandise, were less suited for the conveyance of passengers. The speed of the canal boats seldom exceeded from two and a half to three miles an hour, and in addition to this, the projectors of canals sometimes sought to take an unfair advantage of the act of parliament, which fixed the tariff at so much per ton per mile, by adopting circuitous routes, under the erroneous impression that mileage was a consideration of great importance in the success of such undertakings. It is in consequence of short-sighted views and imperfect legislation that we inherit the numerous curves and distortions of our canal system. These defects in construction rendered canals almost useless for



the conveyance of passengers, and led to the improvement of the common roads and the system of stage coaches; so that before the year 1830 the chief public highways of the country had attained a remarkable smoothness and perfection, and the lightness of our carriages and the celerity with which they were driven still excite the admiration of those who remember them.

These days of an efficiently worked system, which tasked the power and speed of the horse to the utmost, have now been succeeded by changes more wonderful than any that previously occurred in the history of the human race. Scarcely had the canal system been fully developed when a new means of propulsion was adopted, namely, steam. I need not recount to you the enterprise, skill, and labour that have been exerted in connection with steam navigation. You have seen its results on every river and every sea; results we owe to the fruitful minds of Miller, Symington, Fulton, and Henry Bell, who were the pioneers in the great march of progress. Viewing the past, with a knowledge of the present and a prospect of the future, it is difficult to estimate sufficiently the benefits that have been conferred by this application of mechanical science to the purposes of navigation. Power, speed, and certainty of action have been attained on the most gigantic scale. The celerity with which a modern steamer, with a thousand tons of merchandise and some hundreds of human beings on board, cleaves the water and pursues her course, far surpasses the most sanguine expectations of a quarter of a century ago, and indeed almost rivals the speed of the locomotive itself. Previous to 1812 our intercourse with foreign countries and with our colonial possessions depended entirely upon the state of the weather. It was only in favourable seasons that a passage was open, and we had often to wait days or even a week before Dublin could be reached from Holyhead. Now this distance of sixty-three miles is accomplished in all weathers in little more than three hours. The passage to America used to occupy six weeks or two months; now it is accomplished in eight or nine days. The passage round the Cape to India is reduced from nearly half a year to less than a third of that time, whilst that country may be reached by the overland route in less than a month. These are a few of the benefits derived from steam navigation, and as it is yet far from perfect, we may reasonably calculate on still greater advantages in our intercourse with distant nations.

I will not here enter upon the subject of the numerous improvements which have so rapidly advanced the progress of this important service. Suffice it to observe that the paddle-wheel system of propulsion has maintained its superiority over every other method yet adopted for the attainment of speed, as by it the best results are obtained with the least expenditure of power. In ships of war the screw is indispensable, on account of the security it affords to the engines and machinery, from their position in the hold below the water-line, and because of the facility it offers in the use of sails, when the screw is raised from its position in the well to a recess in the stern prepared for that purpose. It is also preferable in ships which re-

quire auxiliary power in calms and adverse winds, so as to expedite the voyage and effect a considerable saving upon the freight.

The public mind had scarcely recovered itself from the changes which steam navigation had caused and the impulse it had given to commerce when a new and even more gigantic power of locomotion was inaugurated. Less than a quarter of a century had elapsed since the first steam-boats floated on the waters of the Hudson and the Clyde when the achievements thence resulting were followed by the application of the same agency to the almost superhuman flight of the locomotive and its attendant train. I well remember the competition at Rainhill in 1830, and the incredulity everywhere evinced at the proposal to run locomotives at twenty miles an hour. Neither George Stephenson himself, nor anyone else, had at that time the most distant idea of the capabilities of the railway system. On the contrary, it was generally considered impossible to exceed ten or twelve miles an hour; and our present high velocities, due to high-pressure steam and the tubular system of boilers, have surpassed the most sanguine expectations of engineers. The sagacity of George Stephenson at once seized upon the suggestion of Henry Booth, to employ tubular boilers; and that, united to the blast pipe, previously known, has been the means of effecting all the wonders we now witness in a system that has done more for the development of practical science and the civilization of man, than any discovery since the days of Adam.

From a consideration of the changes which have been effected in the means for the interchange of commodities, I pass on to examine the progress which has been made in their production. And as the steam engine has been the basis of all our modern manufacturing industry, I shall glance at the steps by which it has been perfected. Passing over the somewhat mythical fame of the Marquis of Worcester, and the labours of Savery, Beighton, and Newcomen, we come at once to discuss the state of mechanical art at the time when James Watt brought his gigantic powers to the improvement of the steam engine. At that time the tools were of the rudest construction, nearly everything being done by hand, and in consequence wood was much more extensively employed than iron. Under these circumstances Watt invented separate condensation, rendered the engine double-acting, and converted its rectilinear motion into a circular one suitable for the purposes of manufacture. But the discovery at first made little way; the public did not understand it, and a series of years elapsed before the difficulties, commercial and mechanical, which opposed its application, could be overcome. When the certainty of success had been demonstrated Watt was harassed by infringements of his patent and lawsuits for the maintenance of his rights. Inventors and pretended inventors set up claims and entered into combination with manufacturers, miners, and others to destroy the patent and deprive him of the just fruits of his labour and genius. Such is the selfish heartlessness of mankind in dealing with discoveries not their own, but from which they expect to derive benefit. The steam engine, since it was introduced by Watt, has changed our habits in almost

every condition of life. Things which were luxuries have become necessities, and it has given to the poor man, in all countries in which it exists, a degree of comfort and independence, and a participation in intellectual culture unknown before its introduction. It has increased our manufactures tenfold, and has lessened the barriers which time and space interpose. It ploughs the land, and winnows and grinds the corn. It spins and weaves our textile fabrics. In mining, it pumps, winds, and crushes the ores. It performs these things with powers so great and so energetic as to astonish us at their immensity, whilst they are at the same time perfectly docile, and completely under human control. In war it furnishes the means of aggression, as in peace it affords the bonds of conciliation; and, in fact, places within reach a power which, properly applied, produces harmony and good will among men, and leads to the happiest results in every condition of human existence. We may therefore well be proud of the honour conferred on this country as the cradle of its origin, and as having fostered its development from its earliest applications to its present high state of perfection.

I cannot conclude this notice of the steam engine without observing the changes it is destined to effect in the cultivation of the soil. It is but a short time since it was thought inapplicable to agricultural purposes, from its great weight and expense. But more recent experience has proved this to be a mistake, and already in most districts we find that it has been pressed into the service of the farm. The small locomotive, mounted on a frame with four wheels, travels from village to village with its attendant, the thrashing machine, performing the operations of thrashing, winnowing, and cleaning, at less than one-half the cost by the old and tedious process of hand labour. Its application to ploughing and tillage on a large scale is, in my opinion, still in its infancy, and I doubt not that many members of this association will live to see the steam plough in operation over the whole length and breadth of the land. Much has to be done before this important change can be successfully accomplished; but, with the aid of the agriculturist preparing the land so as to meet the requirements of steam machinery, we may reasonably look forward to a new era in the cultivation of the soil.

The extraordinary developments of practical science in our system of textile manufacture are, however, not entirely due to the steam-engine, although they are now in a great measure dependent on it. The machinery of these manufactures had its origin before the steam engine had been applied, except for mining purposes; and the inventions of Arkwright, Hargreaves, and Crompton, were not conceived under the impression that steam would be their moving power. On the contrary, they depended upon water; and the cotton machinery of this district had attained considerable perfection before steam came to the aid of the manufacturer, and ultimately enabled him to increase the production to its present enormous extent. I shall not attempt a description of the machinery of the textile manufactures, because ocular inspection will be far more acceptable. I can only refer you to

a list of establishments in which you may examine their operations on a large scale, and which I earnestly recommend to your attention. I may, however, advert to a few of the improvements which have marked the progress of the manufacturing system in this country.

When Arkwright patented his water frames in 1767, the annual consumption of cotton was about four million pounds weight. Now it is one thousand two hundred million pounds weight—three hundred times as much. Within half a century the number of spindles at work, spinning cotton alone, has increased tenfold; whilst by superior mechanism, each spindle produces fifty per cent. more yarn than on the old system. Hence the importance to which the cotton trade has risen, equalling at the present time the whole revenue of the three kingdoms, or £70,000,000 sterling per annum. As late as 1820 the power loom was not in existence, now it produces about fourteen million yards of cloth, or, in more familiar terms, nearly eight thousand miles of cloth per diem. I give these particulars to show the immense power of production of this country, and to afford some conception of the number and quality of the machines which effect such wonderful results. Mule spinning was introduced by Crompton in 1787, with about twenty spindles to each machine. The powers of the machine were, however, rapidly increased; and now it has been so perfected that two thousand, or even three thousand spindles are directed by a single person. At first the winding on, or forming the shape of the cop, was performed by hand; but this has been superseded by rendering the machine automatic, so that it now performs the whole operation of drawing, stretching, and twisting the thread, and winding it on to the exact form, ready for the reel or shuttle as may be required. These, and other improvements in carding, roving, combing, spinning, and weaving, have established in this country an entirely new system of industry; it has given employment to greatly increased numbers, and a more intelligent class of workpeople.

Similarly important improvements have been applied to the machinery employed in the manufacture of silk, flax, and wool; and we have only to watch the processes in these different departments to be convinced that they owe much to the development of the cotton manufacture. In the manufacture of worsted, the spinning jenny was not employed at Bradford until 1790, nor the power loom until about 1825. The production of fancy or mixed goods from Alpaca and Mohair wool, introduced to this country in 1836, is perhaps the most striking example of a new creation in the art of manufacture, and is chiefly due to Mr. Titus Salt, in whose immense palace of industry at Saltaire, it may be seen in the greatest perfection. In flax machinery, the late Sir Peter Fairbairn was one of the most successful inventors, and his improvements have contributed to the rapid extension of this manufacture. I might greatly extend this description of our manufacturing industry, but I must for the present be brief, in order to point out the dependence of all these improvements on the iron and coal so widely distributed amongst the mineral treasures of our island. We are highly favoured in the abundance of these minerals, deposited

with an unsparing hand by the great Author of Nature, under so slight a covering as to bring them within reach of the miner's art. To them we owe our present high state of perfection in the useful arts: and to their extended application we may safely attribute our national progress and wealth. So that, looking to the many blessings which we daily and hourly receive from these sources alone, we are impressed with devotional feelings of gratitude to the Almighty, for the manifold bounties he has bestowed upon us.

Previously to the inventions of Henry Cort, the manufacture of wrought iron was of the most crude and primitive description. A hearth and a pair of bellows was all that was employed. But since the introduction of puddling, the ironmasters have increased the production to an extraordinary extent, down to the present time, when processes for the direct conversion of wrought iron on a large scale are being attempted. A consecutive series of chemical researches into the different processes, from the calcining of the ore to the production of the bar, carried on by Dr. Percy and others, has led to a revolution in the manufacture of iron; and although it is at the present moment in a state of transition, it nevertheless requires no very great discernment to perceive that steel and iron of any required tenacity will be made in the same furnace, with a facility and certainty never before attained. This has been effected, to some extent, by improvements in puddling; but the process of Mr. Bessemer—first made known at the meetings of this association at Cheltenham—affords the highest promise of certainty and perfection in the operation of converting the melted pig direct into steel or iron, and is likely to lead to the most important developments in this manufacture. These improvements in the production of the material must, in their turn, stimulate its application on a larger scale and lead to new constructions.

In iron shipbuilding, an immense field is opening before us. Our wooden walls have, to all appearance, seen their last days; and as one of the early pioneers in iron construction, as applied to shipbuilding, I am highly gratified to witness a change of opinion that augurs well for the security of the liberties of the country. From the commencement of iron shipbuilding, in 1830, to the present time, there could be only one opinion among those best acquainted with the subject, namely, that iron must eventually supersede timber in every form of naval construction. The large ocean steamers, the *Himalaya*, the *Persia*, and the *Great Eastern*, abundantly show what can be done with iron, and we have only to look at the new system of casing ships with armour plates, to be convinced that we can no longer build wooden vessels of war with safety to our naval superiority and the best interests of the country. I give no opinion as to the details of the reconstruction of the navy—that is reserved for another place—but I may state that I am fully persuaded that the whole of our ships of war must be rebuilt of iron, and defended with iron armour calculated to resist projectiles of the heaviest description at high velocities. In the early stages of iron shipbuilding I believe I was the first to show, by a long series of experiments, the superiority of wrought iron over

every other description of material in security and strength, when judiciously applied in the construction of ships of every class. Other considerations, however, affect the question of vessels of war; and although numerous experiments were made, yet none of the targets were on a scale sufficient to resist more than a six-pounder. It was reserved for our scientific neighbours, the French, to introduce thick iron plates as a defensive armour for ships.

The success which has attended the adoption of this new system of defence affords the prospect of invulnerable ships of war, and hence the desire of the government to remodel the navy on an entirely new principle of construction, in order that we may retain its superiority as the great bulwark of the nation. A committee has been appointed by the War Office and Admiralty for the purpose of carrying out a scientific investigation of the subject, so as to determine—first, the best description of material to resist projectiles; secondly, the best method of fastening and applying that material to the sides of ships and land fortifications; and lastly, the thickness necessary to resist the different descriptions of ordnance. It is asserted, probably with truth, that whatever thickness of plates is adopted for casing ships, guns will be constructed capable of destroying them. But their destruction will even then be a work of time, and I believe, from what I have seen in recent experiments, that with proper armour it will require, not only the most powerful ordnance, but also a great concentration of fire, before fracture will ensue. If this be the case, a well-constructed iron ship, covered with sound plates of the proper thickness, firmly attached to its sides, will, for a considerable time, resist the heaviest guns which can be brought to bear against it, and be practically shot-proof. But our present means are inadequate for the production of large masses of iron, and we may trust that, with new tools and machinery, and the skill, energy, and perseverance of our manufacturers, every difficulty will be overcome, and armour plates produced which will resist the heaviest existing ordnance. The rifling of heavy ordnance, the introduction of wrought iron, and the new principle of construction with strained hoops, have given to all countries the means of increasing enormously the destructive power of their ordnance. One of the results of the introduction of wrought iron, and correct principles of manufacture, is the reduction of the weight of the new guns to about two-thirds the weight of the older cast-iron ordnance. Hence follows the facility with which guns of much greater power can be worked, whilst the range and precision of fire are at the same time increased. But these improvements cannot be confined to ourselves. Other nations are increasing the power and range of their artillery in a similar degree, and the energies of the nation must therefore be directed to maintain the superiority of our navy in armour as well as in armament.

We have already seen a new era in the history of the construction of bridges, resulting from the use of iron; and we have only to examine those of the tubular form over the Conway and Menai Straits to be convinced of the durability, strength, and lightness of tubular

constructions applied to the support of railways or common roads, in spans which, ten years ago, were considered beyond the reach of human skill. When it is considered that stone bridges do not exceed 150 feet in span, nor cast-iron bridges 250 feet, we can estimate the progress which has been made in crossing rivers 400 or 500 feet in width, without any support at the middle of the stream. Even spans, greatly in excess of this, may be bridged over with safety, provided we do not exceed 1,800 to 2,000 feet, when the structure would be destroyed by its own weight. It is to the exactitude and accuracy of our machine tools that our machinery of the present time owes its smoothness of motion and certainty of action. When I first entered this city the whole of the machinery was executed by hand. There were neither planing, slotting, nor shaping machines, and with the exception of very imperfect lathes and a few drills, the preparatory operations of construction were effected entirely by the hands of the workmen. Now everything is done by machine tools, with a degree of accuracy which the unaided hand could never accomplish. The automaton, or self-acting machine tool, has within itself an almost creative power; in fact, so great are its powers of adaptation, that there is no operation of the human hand that it does not imitate. For many of these improvements the country is indebted to the genius of our townsmen, Mr. Richard Roberts and Mr. Joseph Whitworth. The importance of these constructive machines is, moreover, strikingly exemplified in the government works at Woolwich and Enfield Lock, chiefly arranged under the direction of Mr. Anderson, the present inspector of machinery, to whose skill and ingenuity the country is greatly indebted for the efficient state of those great arsenals.

Amongst the changes which have largely contributed to the comfort and enjoyment of life, are the improvements in the sanitary condition of towns. These belong, probably to the province of social, rather than mechanical science; but I cannot omit to notice some of the great works that have of late years been constructed for the supply of water and for the drainage of towns. In former days, ten gallons of water to each person per day was considered an ample allowance. Now thirty gallons is much nearer the rate of consumption. I may instance the waterworks of this city and of Liverpool, each of which yield a supply of from twenty to thirty gallons of water to each inhabitant. In the former case the water is collected from the Cheshire and Derbyshire hills, and, after being conveyed in tunnels and aqueducts a distance of ten miles to a reservoir, where it is strained and purified, it is ultimately taken a further distance of eight miles in pipes, in a perfectly pure state, ready for distribution. The greatest undertaking of this kind, however, yet accomplished, is that by which the pure waters of Loch Katrine are distributed to the city of Glasgow. This work, recently completed by Mr. Bateman, who was also the contractor of the waterworks of this city, is of the most gigantic character, the water being conveyed in a covered tunnel a distance of twenty-seven miles, through an almost impassable country, to the service reservoir, about eight miles from Glasgow. By this means forty

million gallons of water per day are conveyed through the hills which flank Ben Lomond, and after traversing the sides of Loch Chon and Loch Aird, are finally discharged into the Mugdock Basin, where the water is impounded for distribution. We may reasonably look forward to an extension of similar benefits to the metropolis, by the same engineer, whose energies are now directed to an examination of the pure fountains of Wales, from whence the future supply of water to the great city is likely to be derived. A work of so gigantic a character may be looked upon as problematical, but when it is known that six or seven millions of money would be sufficient for its execution, I can see no reason why an undertaking of so much consequence to the health of London should not ultimately be accomplished.

In leaving this subject I cannot refrain from an expression of deep regret at the loss which science has sustained through the death of one of our vice-presidents, the late Professor Hodgkinson. For a long series of years he and I worked together in the same field of scientific research, and our labours are recorded in the transactions of this and other associations. To Mr. Hodgkinson we owe the determination of the true form of cast iron beams, or section of greatest strength; the law of the elasticity of iron under tensile and compressive forces; and the laws of resistance of columns to compression. I look back to the days of our joint labour with unalloyed pleasure and satisfaction. I regret to say that another of our vice-presidents, my friend Mr. Joseph Whitworth, is unable to be present with us through serious, but I hope not dangerous illness. To Mr. Whitworth mechanical science is indebted for some of the most accurate and delicate pieces of mechanism ever executed; and the exactitude he has introduced into every mechanical operation, will long continue to be the admiration of posterity. His system of screw threads and gauges is now in general use throughout Europe. We owe to him a machine for measuring with accuracy to the millionth of an inch, employed in the production of standard gauges: and his laborious and interesting experiments on rifled ordnance, have resulted in the production of a rifled small arm and gun which have never been surpassed for range and precision of fire. It is with pain that I have to refer to the cause which deprives me of his presence and support at this meeting.

A brief allusion must be made to that marvellous discovery which has given to the present generation the power to turn the spark of heaven to the uses of speech; to transmit along the slender wire for a thousand miles a current of electricity that renders intelligible words and thoughts. This wonderful discovery, so familiar to us, and so useful in our communications to every part of the globe, we owe to Wheatstone, Thomson, De la Rive, and others.

In land telegraphy the chief difficulties have been surmounted, but in submarine telegraphy much remains to be accomplished. Failures have been repeated so often as to call for a commission on the part of the government to inquire into the causes, and the best means of overcoming the difficulties which present themselves. I had the honour to serve on that commission, and I believe that from the report, and mass



of evidence and experimental research accumulated, the public will derive very important information. It is well known that three conditions are essential to success in the construction of ocean telegraphs, —perfect insulation, external protection, and appropriate apparatus for laying the cable safely on its ocean bed. That we are far from having succeeded in fulfilling these conditions is evident from the fact that out of twelve thousand miles of submarine cable which have been laid since 1851, only three thousand miles are actually in working order; so that three fourths may be considered as a failure and loss to the country. The insulators hitherto employed are subject to deterioration from mechanical violence, from chemical decomposition or decay, and from the absorption of water; but the last circumstance does not appear to influence seriously the durability of cables. Electrically, india-rubber possesses high advantages; and, next to it, Wray's compound and pure gutta percha far surpasses the commercial gutta percha hitherto employed; but it remains to be seen whether the mechanical and commercial difficulties in the employment of these new materials can be successfully overcome. The external protecting covering is still a subject of anxious consideration. The objections to iron wire are its weight and liability to corrosion. Hemp has been substituted, but at present with no satisfactory result. All these difficulties, together with those connected with the coiling and paying out of the cable, will no doubt yield to careful experiment and the employment of proper instruments in its construction and its final deposit on the bed of the ocean.

Irrespective of inland and international telegraphy, a new system of communication has been introduced by Professor Wheatstone, whereby intercourse can be carried on between private families, public offices, and the works of merchants and manufacturers. This application of electric currents cannot be too highly appreciated, from its great efficiency and comparatively small expence. To show to what an extent this improvement has been carried, I may state that one thousand wires, in a perfect state of insulation, may be formed into a rope not exceeding half an inch in diameter.

I must not sit down without directing attention to a subject of deep importance to all classes, namely, the amount of protection inventors should receive from the laws of the country. It is the opinion of many that patent laws are injurious rather than beneficial, and that no legal protection of this kind ought to be granted; in fact, that a free trade in inventions, as in everything else, should be established. I confess I am not of that opinion. Doubtless there are abuses in the working of the patent law as it at present exists, and protection is often granted to pirates and impostors, to the detriment of real inventors.

This, however, does not contravene the principle of protection, but rather calls for reform and amendment. It is asserted by those who have done the least to benefit their country by inventions, that a monopoly is injurious, and that if the patent laws are defended, it should be, not on the ground of their benefit to the inventor, but on that of

their utility to the nation. I believe this to be a dangerous doctrine, and I hope it will never be acted upon. I cannot see the right of the nation to appropriate the labours of a lifetime, without awarding any remuneration. The nation, in this case, receives a benefit; and assuredly the labourer is worthy of his hire. I am no friend of monopoly, but neither am I a friend of injustice; and I think that before the public are benefited by an invention, the inventor should be rewarded either by a fourteen years' monopoly or in some other way. Our patent laws are defective, so far as they protect pretended inventions; but they are essential to the best interests of the state in stimulating the exertions of a class of eminent men, such as Arkwright, Watt, and Crompton, whose inventions have entailed upon all countries invaluable benefits, and have done honour to the human race. To this association is committed the task of correcting the abuses of the present system, and establishing such legal provisions as shall deal out equal justice to the inventor and the nation at large.

I must not forget that we owe very much to an entirely new and most attractive method of diffusing knowledge, admirably exemplified in the Great Exhibition of 1851, and its successors in France, Ireland, and America. Most of us remember the gems of art which were accumulated in this city during the summer of 1857, and the wonderful results they produced on all classes of the community. The improvement of taste and the increase of practical knowledge which followed these exhibitions, has been deeply felt; and hence the prospects which are now opening before us in regard to the exhibition of the next year, cannot be too highly appreciated. That exhibition will embrace the whole circle of the sciences, and is likely to elevate the general culture of the public to a higher standard than we have ever before attained. There will be unfolded almost every known production of art, every ingenious contrivance in machinery, and the results of discoveries in science from the earliest period. The fine arts, which constituted no part of the Exhibition of 1851, and which were only partially represented at Paris and Dublin, will be illustrated by new creations from the most distinguished masters of the modern school. Looking forwards, I venture to hope for a great success and a further development of the principle advocated by this association, the union of science and art.

In conclusion, my apologies are due to you for the length of this address, and I thank you sincerely for the patient attention with which you have listened to the remarks I have had the honour to lay before you. As the President of the British Association, I feel that far beyond the consideration of merely personal qualifications, my election was intended as a compliment to practical science, and to this great and influential metropolis of manufacture, where those who cultivate the theory of science may witness, on its grandest scale, its application to the industrial arts. As a citizen of Manchester, I venture to assure the association that its intentions are appreciated; and to its members, as well as to the strangers who have been attracted here by this meeting, I offer a most cordial welcome.

ON MECHANICAL INVENTION IN ITS RELATION TO THE IMPROVEMENT OF NAVAL ARCHITECTURE.—*By Nathaniel Barnaby, Esq., M.I.N.A., Draughtsman in the Department of the Controller of the Navy, Member of the late School of Mathematics and Naval Construction. From the Transactions of the Institution of Naval Architects.*

In the year 1260, 600 years ago, vessels of commerce of all sizes were constructed, and to a certain extent equipped, with a view to warlike operations. This state of things existed for many years afterwards, so that if we can discover the principal features of the ships used in the various sea fights of these periods, we shall possess those of the English marine in general.

The most formidable vessels used in the reign of Henry III., who occupied the throne from 1216 to 1272, were the royal galleys. They appear to have had but one, or at most two tiers of oars, with platforms on each side of the vessels over the heads of the rowers. On these platforms were stationed the soldiers, clad in mail, and armed with swords and lances. On the bulwarks in front of them were ranged their shields, made of polished steel. These galleys had but one mast, which was frequently painted with a bright colour or gilded. From the mast, from the extremities of the yard, and from every other available place, gaudy pennons and banners floated on the wind. The sail was made of cotton, painted or embroidered with the arms of the king or some other eminent person. It would appear from the great length of the yard in some of these vessels that the sails were frequently triangular or lateen. At the summit of the mast was a kind of circular box, capable of containing several men. The tops in the larger sort of vessels would hold six men. Their duty was to haul up large stones, bricks, and bars of iron from below and to throw them upon the decks and into the holds of the opposing vessels; and so slightly built were these vessels, that the missiles thus thrown into their holds frequently penetrated their bottoms. They had no means of pumping out the water which entered the vessel through the holes made in this way; and it was no uncommon thing to see half the knights baling out the water, while the others were engaged in a hand to hand conflict with the enemy, to whose vessel they had firmly secured themselves by grappling-irons.

At each extremity of the vessel there was a raised platform called a castle, from which, as well as from the decks, large square headed arrows, winged with feathers or with brass, were thrown by the archers, either by hand or by a machine called a springald. Those also who were fortunate enough to secure the weather gauge frequently threw unslaked lime into the eyes of their opponents. But they possessed a more terrible means of destruction than any of these in the celebrated Greek fire, which appears to have been used up to the time of the introduction of ordnance, more than a century later. Each galley had besides an iron beam, called a spur, projecting from the

proW, with which they pierced the sides of their adversaries. We are informed on good authority that Richard Cœur de Lion, while on his way to Palestine, fell in with a very large Turkish vessel, filled with soldiers. He attacked her with his galleys, but her sides were so high that his soldiers could not reach her decks with their lances, while they suffered severely from the arrows and other missiles thrown down upon them. Richard then ordered his galleys to recede, to form a line, and then to advance at full speed and strike her with their iron spurs. This being done, her sides were stove in many places, and she speedily sank.

The sailing vessels known as "great ships," and which were used in conjunction with galleys for war purposes, appear to have been of four or five hundred tons burthen, according to our present builders' measurement. They were probably eighty or ninety feet long, and from thirty to thirty-five feet broad.

1360.—At this period Edward III., the conqueror of Cressy, was King of England, and had recently won for himself the title of "King of the Sea" by his distinguished conduct in the great naval fight of "Espagnols sur mer." In this engagement, the largest vessels, called Cogs, had from 150 to 300 men each, including sailors, archers, and men in armour. The mailed soldiers were ranged round the sides of the ship, having a breastwork in front of them glittering with shields, and apparently about five feet high. The castles at the extremities of the vessels, which were filled with archers, were so fragile, that by the shock of a collision with another vessel they were sometimes carried quite away, and their occupants thrown into the sea. Many of the vessels were furnished with a rudder on each quarter, or with a single one hung to the stern post. Previously to this period the usual mode of steering had been by oars. From a contemporary account it appears that water was raised from the hold by a windlass and bucket. In the same account we hear of "bowspretes," "baksteyes," "hauceres," "crane-lines," "peyntours," "seysynges," "bow-lines," "botropes," "schetes," "yerde-ropes," "trusse-ropes," "polives," and "shives." Also of "fotekes," "hacchia," "wales," "thofftes," and "kelweyns;" and among the varieties of nails we have spikes, cloutnails, and "led" nails. It appears also from a record of certain payments made at this period that the bottoms of the vessels were graved with a mixture of pitch, tar, oil, and resin.

It was during the reign of Edward III. that guns were first used on the sea; and it seems to have been in the same reign and at the same period that the last row-galleys were constructed in England.\* We

\* From some statements made by Mr. Creuze in the article "Shipbuilding" in the *Encyclopædia Britannica*, one would be led to infer that the use of galleys was discontinued in England and France some time before ordnance was introduced into the English Navy. He says, on p. 9, with reference to "an engagement which took place in 1340," i.e. the battle of Sluys, fought early in the reign of Edward III., that a fact elicited by the accounts of the engagement is, "that there is no mention of galleys as forming any part of the fleets," although "the French force amounted to four hundred vessels."

hear, however, of vessels of a different construction, called "galleons," which could be propelled by oars worked between the guns, at a later period. Such vessels appear to have been used chiefly by the Spaniards, who still possessed some in the time of Elizabeth. Other nations appear also to have continued to use the common galley, with guns mounted at the extremities. As late as 1405, the English government

And with reference to the Roll of Calais, which professes to be a list of the English ships existing in 1344, but of which the completeness is very doubtful, he remarks: "From this Roll we learn that galleys had ceased to be used by England either in her wars or in her commerce, as neither among the King's ships nor among those furnished by merchants is there any mention of them." He then goes on to say: "This fleet was that engaged in the celebrated siege of Calais," (in 1347,) "and it was probably at this time that cannon were first employed by the English." We are able, however, by the aid of some information which was not accessible to Mr. Creuze at the time he wrote, to correct this account to some extent.

There is in the archives of the City of London a copy of the despatch in which King Edward III. announced to his son Edward, Duke of Cornwall, the victory of Sluys. As it is the earliest state paper of the kind in existence, I shall take the liberty of quoting the entire translation given of it by Sir Harris Nicolas in his *History of the Royal Navy*.

"Most dear Son,—We, considering well that you are desirous to hear good news of us, and how it has fared with us since our leaving England, have you to know that the Thursday after our departure from the port of Orwell, we sailed all the day and the night following, and the Friday, about the hour of 'nounge,' we came on the coast of Flanders, off Blankenberg, where we had sight of the fleet of our enemies, which were all gathered together in the port of Swyne; and as the tide did not then suit to meet them, we remained there all that night. The Saturday, the day of St. John," (24th of June, 1340,) "soon after the hour of 'nounge,' with the tide, we, in the name of God, and in the confidence of our right quarrel, entered into the said port upon our enemies, who had placed their ships in very strong array, and which made a very noble defence all that day and the night after; but God, by His power and miracle, granted us the victory over our said enemies, for which we thank Him as devoutly as we can. And we have you to know that the number of ships, galleys, and great barges of our enemies amounted to one hundred and ninety, which were all taken except twenty-four in all, which fled, and some of them were since taken at sea; and the number of men-at-arms and other armed people amounted to thirty-five thousand, of which number by estimation five thousand escaped, and the remainder, as we are given to understand by some persons who are taken alive, lie dead in many places on the coast of Flanders. On the other hand, all our ships, that is to say, the *Christopher*, and the others which were lost at Middleburgh, are now retaken, and there are taken in this fleet three or four as large as the *Christopher*. The Flemings were willing to have come to us at the battle from the commencement to the end. Thus God our Lord has shown abundant grace, for which we and all our friends are ever bound to render grace and thanks to Him. Our intention is to remain quiet in the river until we have made certain arrangements with our allies, and other our friends of Flanders, as to what should be done. Most dear son, may God be keeper of you!

"Given under our secret seal, in our ship-cog *Thomas*, Wednesday, the eve of St. Peter and St. Paul."

The ship *Christopher* referred to in this letter had been taken two years  
NO. 10.—VOL. XXX.

applied to the King of Portugal for the use of his galleys in the war with France.

1460.—At this time guns of iron, brass, and copper, throwing stones and lead shot, had come into general use, and the sailing vessels called “cogs” and “carracks” held the foremost place in the Navy. A vessel of this kind building for King Henry V. at Bayonne in 1419, was 112 feet long on the keel, and 46 feet broad. The elevated and partially detached castles of preceding periods appear to have been suppressed, or rather incorporated with the rest of the vessel, by carrying up the planking and berthing. About this time, also, cabins were introduced for ordinary purposes, including a buttery, pantry, spicery, ewery, and chandlery. The central portions of the holds of these ships were occupied by the galley and cooking apparatus, so that all the stowage was at the extremities. The amount of stowage was so small that every ship fully manned had a tender or “victualler” to accompany her. Pumps of some kind were in use; and we observe that tow immersed in tallow was employed for caulking the seams of the bottom below water.

1560.—During the preceding century, by the introduction of a very simple improvement, suggested, it is said, by Descharges, a shipbuilder of Brest, great changes had been effected in ships of war. This improvement was the formation of port-holes, so that ships could have more than one tier of guns. The dimensions of ships seem to have been rather diminished than increased since the early part of the preceding century, as Sir Walter Raleigh considered the best dimensions

previously; and according to one account, war galleys were the instrument of her capture.

Minot says:—

“Than saw thai whare Christofer stode,  
At Armouth, opon the flude;  
Than wen thai theder all bidene,  
The galayes-men, with hertes kene,  
Eight and forty galays and mo,  
And with tham als war-tarettes two,  
And other many of galiotes,  
With grete nounder of small botes;  
Al thai hoved on the flode,  
To stele Sir Edward mens gode.”

We find, moreover, that the king had a galley, *La Philippe*, building for him at Lynn in 1336; that in 1337 the Prior of Blida was ordered to deliver forty oaks to the king’s carpenter, for building a galley; and that in 1338 there was a certain Helmyng Leget, who was the keeper of the “ships, galleys, barges, balingers, and other the king’s vessels.”

And with regard to ordnance, we find that on the 22nd of June, 1338, a certain ship belonging to the king, called the *Bernard de la Tour*, had “ij canons de ferr;” and that another ship called the *X’pofre de la Toure*, or “Christopher of the Tower,” had on board “ijj canons de ferr ove v chambres, a handgone,” and some old stone bags, probably for holding stone shot.

These facts are sufficient to prove that the use of row-galleys was not discontinued in England *before* the introduction of naval ordnance.

of a great ship to be 100 feet in length, (*i.e.* of keel,) and 35 feet in breadth. This proportionate decrease in breadth without doubt greatly improved the appearance and the qualities of the ships. There seems, however, to have been some naval architect in Scotland who was greatly in advance of his age, as we hear of the *Great Michael*, built there in the early part of the 16th century, which was 240 feet long, and 56 feet broad, and had sides 10 feet thick. She was lost soon afterwards in the Channel; and probably her unhappy end was taken as a warning by the prudent men of that day.

In 1515 the *Henri Grace de Dieu* was built. This was a four-masted ship, mounting in all 122 guns, although she was probably not more than 100 feet long on the keel. She had 30 guns on each of the two principal decks, and three tiers of guns above these at the head and stern; so that the extremities of the ship must have been 30 or 40 feet higher than the midship part. Guns from each of these upper tiers commanded the spar-deck. It appears, from the drawings of the ship, that the fore-castle, like those of a much earlier period, was broader than the top side of the ship, and projected considerably beyond it. Each mast had two round tops and three yards. Although this increase in the number of yards was a great improvement, the ships must have been still unable to sail near the wind, as the distance between the masts was very limited, and with the exception of the two lateen sails on the after masts, they do not appear to have used fore-and-aft sails. They had found that the ships had a great tendency to "hog," or to sink at the extremities; and to remedy this defect they altered their arrangements in the hold, stowing in the middle of the ship rather than at the extremities, and removing their cooking apparatus from the hold to the deck above. They had just learned to use *long* mooring cables for easing the strain upon the anchors, and had applied capstans for raising the anchors. Wood-sheathing had been introduced to prevent the oakum from washing out of the seams, and to obstruct the entrance of the worm. Chain-pumps were also coming into use.

After the accident with the *Mary Rose*, occasioned by the lowness of her ports, and by the fact of the guns being unbreeched, as was the custom, they raised both the gun-decks, or overloops, as Sir W. Raleigh calls them, and fitted breechings to the guns.

1660.—During this century, also, a great advance had been made in the art. This was chiefly due to the labours of Mr. Phineas Pett of Cambridge University, a worthy predecessor of Atwood, Professor Inman, Canon Moseley, and Dr. Woolley,\* as a contributor to the science of naval architecture.

He appears to have been one of the founders of the Shipwrights' Company which was established in 1606, and became of great consequence; for a considerable period all the designs of ships for the Royal Navy were submitted to them for approval. Mr. Pett built at Woolwich, in 1637, the first English three-decked ship of war, the *Royal Sovereign*, or the *Sovereign of the Seas*, as she is sometimes called.

\* All of Cambridge University.

She was afterwards cut down to a two-decked ship. We see in her a great increase in dimensions over the vessels of the preceding century.

Her dimensions were, according to Mr. Fincham,—

	<i>Feet.</i>
Length on the gun-deck . . . . .	173
Breadth extreme . . . . .	50
Depth in hold . . . . .	20
Burden in tons . . . . .	1861

She seems to have carried nearly 150 guns.

If we compare this ship with some of the two-decked line of battle ships still existing in the Royal Navy, we shall see but little difference in dimensions. Take, for example, the *Hogue*; her dimensions are—

	<i>Feet.</i>	<i>In.</i>
Length on the gun-deck . . . . .	184	0
Breadth extreme . . . . .	48	4
Depth in hold . . . . .	21	0
Burthen in tons . . . . .	1861	

There is also a remarkable similarity in the form of bottom of the *Royal Sovereign* and of ships like the *Hogue* built at the close of the last century; but in the height of the water there is a wide difference. The stern of the *Royal Sovereign* could not have been less than 50 feet out of water, while that of the *Hogue* is only 23 feet. The excessive height made the ships of this period so crank, that many of them had to be girdled with thick plank before they could be trusted at sea.

The most remarkable improvements visible at this period were in the practical construction of ships. We find here for the first time the mode of framing the stern by transoms, which existed nearly up to our own time. The entire mode of framing ships was evidently much more substantial, and they accordingly became more durable. This ship of Petti's, for example, built with the famous ship-money, went through all the wars of the Commonwealth, and was finally destroyed by fire at Chatham, while she was undergoing repair, and after she had seen sixty years' service. We may obtain a very good idea of the substantial character of their construction from a record still in existence, which shows that the weights of the hulls were very nearly equal to half the load-displacement, a proportion which holds up to our own time. This record points to another important step which had just been taken, in the discovery made by Mr. Deane, afterwards Sir Anthony Deane, of the mode of measuring the solid contents of the immersed portion of a ship's hull, by which means naval architects became able for the first time to predict the depth to which the ship would sink, both when light and when laden.

1760.—At this period the dimensions of a 90-gun ship were—

	<i>Feet.</i>
Length on the gun-deck . . . . .	176
Breadth extreme . . . . .	49
Depth in hold . . . . .	21
Burthen in tons . . . . .	1827



Those of a 44-gun frigate were—

	<i>Feet.</i>	<i>In.</i>
Length on the gun-deck . . . . .	127	0
Breadth extreme . . . . .	36	3
Burthen in tons . . . . .	725	

Duhamel recommended with regard to these frigates, that those which were intended to be very fast should have their length increased to four times their breadth. About this time great attention was paid to the means of preserving ships from decay. Cross-chocks were introduced at the heels of the first futtocks, and limber courses were formed by the side of the keelson, with limber boards fitted over them. The mode which had hitherto been in use for bending planks, by charring them on one side and wetting them on the other, was superseded by the process of kilning. Ships were also ordered to stand to season for a considerable period after they were in frame. But the large masses of timber in the vertical riders and hanging and lodging knees, the absence of fillings, and the use of great quantities of shingle ballast to give stability to the ships, all tended to promote decay. Some of the ships of this period were sheathed with lead fastened with copper nails, and others had wood sheathing, which was either filled with large headed iron nails, or graved with a mixture of pitch, tar, and brimstone.

(*To be continued.*)

---

#### TESTIMONIAL TO CAPTAIN CRACROFT, OF H.M.S. "NIGER."

We must alter the reading on the stern of this noble barky. In place of "*Hic Niger Est,*" it will soon be "*Hic Niger Fuit,*" for her services have at length come to a close; and on Thursday morning, the 9th of May, she takes her departure for England, much to the regret of the colonists of New Zealand, as well because of the many and important public services rendered by her to this country, as because of the continuous and social courtesies which have subsisted between her captain, officers, and ship's company and our fellow citizens, from the hour of her first arrival to that of her departure from these waters.

The present commission of the *Niger* has been a lengthened one, extending over a period of five years. The earlier portion of that commission was passed, with much distinction, in the China Seas. From China, after proceeding to Bombay to refit, she came on to Auckland, touching at Melbourne and Sydney by the way. She arrived at Auckland on the 1st October, 1859, where she expected to remain for some months and then, after the usual period of commission (three years) had been accomplished, to proceed to England. Almost immediately after her arrival she became a popular ship—the

utter absence of anything like red-tapism, the manly, straightforward, conciliatory disposition of all hands, fore and aft, quickly stamped her a universal favourite. She was the first man-of-war to enter the Manukau Harbour, for which she sailed on the 19th November, 1859, and there embarked the governor, who was proceeding on a southern trip. On her return, she again anchored in the Waitemata on the 16th January, 1860, and there remained until Sunday, 26th February, on which day she was suddenly required to embark detachments of the Royal Artillery and Engineers, with their guns and munitions, and by 2h. p.m., rounded the North Head under full steam and with all plain sail set, to take her part in opening the Taranaki campaign.

How the *Nigers* conducted themselves throughout that campaign will be recorded in lasting and brilliant characters in the annals of New Zealand. To them is due the first, and perhaps the brightest, redeeming feature of that unhappy war; and we have no hesitation in affirming that, had the youth who undertook to land the *Nigers* to the South of Waireka at the commencement of the present year been capable of executing his self-imposed office, with the co-operation of Colonel Young and the gallant 65th, the murderous Taranakis and Ngatiruanuis would have received an amount of chastisement such as would have operated in the most beneficial way, both as respects those insurgent marauders and the unoffending colonists whom they have so ruthlessly robbed and slaughtered.

We know not how many times the *Niger* has passed up and down between Taranaki and Manukau,—how many thousands of men,—how many hundred tons of baggage and warlike stores she has transported. This however is certain, notwithstanding her protracted commission, her complaining machinery, and her sundry defects, both above and below water, she was never out of the way when wanted, nor was she ever astern of younger and fresher ships. These are striking tests of the invariable efficiency of the ship and the promptitude and energy of her officers and crew; and now that she is on the eve of her departure we may be pardoned for mentioning one or two notable facts. She was launched in 1848, and her first commission was even longer than her present one, lasting over some five years and a half. She still wears her first copper, and that well, whilst ships of four years' standing have been coppered twice. If ever ship was worn to her marrow bones that ship is the *Niger*, and it is therefore high time she proceeded to receive the thorough overhaul and refit she is so well entitled to. We trust that her passage may prove speedy and pleasant, and that the long absent ones may experience a joyous reunion with the friends from whom they have been so long sundered. Whether we shall ever see them here again it would be hard to tell, but this we know that we should have a much more lively pleasure in bidding them "welcome back," than in pronouncing the unpleasant word *Farewell!*

---

On Wednesday, 8th May, the subscribers to the testimonial to

Captain Cracroft, of H.M.S. *Niger*, assembled at the Mechanics' Institute for the purpose of presenting him with a substantial evidence from the people of Auckland of the high estimation in which they hold the long, varied, and valuable services which he and his gallant ship's company have rendered to this colony. When Captain Cracroft came upon the platform, having been introduced by J. Williamson, Esq., the Hon. J. A. Gilfillan, M.L.C., and R. Ridings, Esq., the company received him standing and with warm applause.

On the motion of Messrs. Williamson and Bracey, Captain Daldy was voted to the chair.

The Chairman said,—Captain Cracroft, I have been at a loss to conceive why I should have been chosen to perform the difficult but pleasing task allotted to me, when there are so many more competent. I can only give one reason for having undertaken it cheerfully: that I have been long associated with naval discipline, where to hear is to obey. The request was only made to me at four p.m., but, short as the time was, I have endeavoured to nerve myself for the task. I have often stood on this platform to advocate a cause or to fight a political battle, but those were nothing to this. There was something to fight against, it was beating to windward against tide. I feel this is an affair of the heart, and therefore I trust you will forgive any imperfections. It is the first time that I have ever spoken in public where I felt so much. The gentlemen present represent the people of Auckland, but I am sure when these proceedings become public there will be a deep sense of disappointment felt throughout our population that a better opportunity has not been given them of expressing their admiration and good feeling towards Captain Cracroft and his gallant *Nigers*. I can only describe what I know that feeling to be by comparing it to a deep running river; smooth it may be on the surface, but with a current strong and rapid. Sir, the testimonial I have to offer to you is a very small gem, but its water is of the purest, and that is its greatest worth. It is presented indeed by the hand, but it comes from the heart. I might have been called upon to present a testimonial that would have helped to trim the *Niger*, but, without the heart, of what value would it have been. Believe me, Sir, this tribute, though small, is sincere: the inhabitants of this province respect and admire your courage, energy, and decision, which gave a turn to affairs at Taranaki at a very critical moment; but those qualities alone would not have won their hearts as you have done. No, Sir, never forgetting your high station, you have met all with the utmost kindness and urbanity as your fellow men, and when compelled to say no it has been a no of kindness. In contact with all ranks you have won hearts by carrying out the poet's motto "A man's a man for a' that." When you quit our shores you carry with you the love, respect, and kindest wishes of men, women, and children, and your name, in connection with the *Niger*, will remain imprinted on their memories for years to come, accompanied by a sincere hope that we may meet you again.

After you arrive in our fatherland, which we sincerely pray you may do speedily and in safety, we can well imagine with what eagerness and anxiety you will peruse the accounts you will receive from this country. Rest assured, should another unhappy struggle not be providentially averted, the influence of your example will not be lost, and if the Home Government will only find Cracrofts to lead, New Zealand will find Nigers to follow. Sir, on behalf of the people of Auckland, I have to crave two favours at your hands; first, that you will return to the officers and men of the *Niger* the heartfelt thanks of this community for their gallant, kind, and considerate conduct whilst they have been amongst us. Before I make the other request, Sir, I feel bound to explain that I had not been instructed to ask it as a part of the proceedings of this meeting, and I therefore take the matter on myself; for I feel, Sir, were this request not made, I and very many would be guilty of a grave omission; therefore, I beg you will assure your lady that she possesses the respect and admiration, and, Sir, I am sure I do not go too far when I say the love of all—for her womanly and kind-hearted conduct to all, without exception as to rank, and for her unostentatious benevolence to those who needed it. Sir, in the name of the people of Auckland, accept this tribute, and when you reach England let the fact be recorded by the following inscription on a piece of plate, of such form as to you may seem best:—

“Presented to Captain Peter Cracroft, of H.M.S. *Niger*, by the inhabitants of Auckland, New Zealand, as a testimony of the high esteem in which they hold him for his kind and considerate conduct to all classes, for the deep sympathy he has shown, and for the eminent and unremitting services he has rendered to New Zealand during the present unhappy war.” (Cheers.)

As Captain Cracroft commenced his reply the company rose, greeting him with such prolonged and earnest cheering that he was deeply moved by the hearty—the kindly—feelings manifested towards him by all present.

Captain Cracroft said—It is no exaggeration for me to say that I feel quite overcome by this display of kindness on the part of the inhabitants of Auckland on this occasion to one who arrived here a perfect stranger to them some eighteen months ago. If, in connection with the unhappy struggle we all deplore, it has been my lot to achieve anything that in their opinion merits such a demonstration, believe me when I say I wish to take no credit to myself, but to give what is so justly due to those fine fellows whom it has been my good fortune to command (great applause). I accept with sincere pleasure this valuable testimony of your regard, although no such valuable one is needed to call to mind the many friends and unvarying kindness I have experienced here; and I am sure that Mrs. Cracroft will be equally gratified by your expression of kindness towards her, and that she will carry home the most agreeable reminiscences of her sojourn in this distant land. Your thanks I shall not fail to convey

to the *Niger's* officers and ship's company, and, in bidding you farewell, we shall do so in hope of renewing at some future time our friendly intercourse. (Prolonged applause.)

The Chairman said as it might be the last time that the people of Auckland could have an opportunity of testifying their respect for Captain Cracroft, he called for a hearty good cheer. The whole of the assembly again rose and gave the gallant Captain, Mrs. Cracroft, and the *Niger's* officers and crew three hearty English cheers.

*New Zealander.*

---

### AN EARTHQUAKE IN THE EAST.

That one half of the globe, however civilized, enterprising, and charitable it may be, knows but little of the other half, is a fact which may be verified at any time. The effect of an earthquake in March last on the coast of Sumatra, by inundating an island on that coast has naturally suggested the question, where is it? The answer is, on the west coast, and it is said to be one of the Batu group. It is called Simo, but the only island bearing a name at all similar to that, is Simaloe of our best charts. And yet the island called Simo has above a thousand inhabitants, and they appear to have their share of this world's sorrows and sufferings. They could relate their pathetic tales of woe as keen as those of any of our civilized world. But they are shut out from our haunts. Their Dutch masters have furnished us with no charts which would enable the navigator to visit them,—their shores are unexplored, their approaches not examined, reefs where no lead has been to fathom their depths, the very names of the islands themselves, all these are unknown to our charts in this advanced age of civilization and progress in maritime discovery. How long we are to remain so, it is for our Dutch neighbours, the masters of Sumatra, to say.

Here is the story of the effects of an earthquake on one of these islands.

The following are the particulars of the frightful ruin wrought on the island of Simo, one of the Batu group on the west coast of Sumatra, by the earthquake on the 9th of March last:—

Simo before the occurrence had thirteen campongs or villages, four of which, however, although they bore the names of former campongs, only consisted of a single hut, the rest of the houses having been from time to time removed to the other campongs. Besides these campongs there were huts, here and there, inhabited by persons who watched the coconut trees and by swineherds.

Previous to the disaster of the 9th of March, there were on the island one hundred and twenty houses and a population of 1,045; on this unlucky day ninety-six houses were destroyed, and 675 of the inhabitants, besides 103 temporary residents, lost their lives.

The water ran up to the east of the Campong Simo, but spared this campong, which is a little elevated, and being the farthest limit of the inundation, the water appears to have lost much of its force there. Proceeding westwards, the traces of the storm wave were more and more visible in the cocoanut trees torn up and broken, thrown together in masses and in the bent jungle.

Along the whole space swept by the water, being the entire circumference of the almost square island, with exception of the N.E. point, this devastation was more or less apparent for a hundred to a thousand paces from the shore, and in some places even much further inland.

On the south and east side, the shore was inundated and two houses with their inmates carried away, but only a few cocoanut trees were uprooted; at Lubu Lalafa only, on the last side, the water seems to have been stronger, where in a small plantation of 4,000 trees only six remain. This difference in the force with which the water operated, is probably to be accounted for that the sea ran heaviest where it met with most opposition from the rocks.

Of the campongs nothing more is to be distinguished than the stones, here and there, on which the Batu islander places the posts of his house, or which serve as seats in the gatherings in the campongs, and the wells which are found near each campong.

On some places were great piles of trunks of trees, beams and planks of houses, clothes and furniture, and amongst them the bodies of the dead, which had not yet been removed, some in a state of decomposition, others completely stripped of the flesh by the vultures, dogs, and swine, of which last many were also drowned, but a number still wandered in the jungle.

These skeletons and bodies presented a dismal sight, and rendered the atmosphere intolerable. On the place where the campong Gundia stood, on the west side of the island, there was one of these heaps, in which seven corpses were visible, and there must have been many more under it judging by the smell. Amongst the seven bodies was that of a woman, nearly stripped of the flesh, but recognizable by her dress; she lay with the face on the ground, the extended right arm pressed down by a beam, the left arm drawn up, with the hand clutched in the ground; she was apparently trying to escape but was caught by the falling beam. In some places broken skulls and skeletons were found, with the different parts scattered about.

Orders were given to collect the bones and bodies together as soon as possible and bury them; this is not the usual practice of the Batu islanders, who place the bodies of the dead in a well closed chest on an elevated place under a roof, generally near the shore. It may be reckoned fortunate that most of the bodies were carried into the sea, because otherwise the tainted state of the atmosphere would probably have produced a contagious pestilence amongst the remaining population.

The sea appears to have been most violent between the Campongs Simo, Babaniregé, and Lakao, on the west side of the island, where the greatest number of persons perished.

According to the account of a survivor of the Campong Babaniregé, an earthquake was felt at the fall of the evening, shortly before the inundation. All the inhabitants then assembled, by order of the panghulu, on the open space in the middle of the campong, but a moment afterwards they tried to make their escape from thence, as they dreaded the fall of the houses, which were already tottering. They were driven back, however, by a rush of water which approached from the back of the campong. Running back from this they were overwhelmed by another terrific wave, which, out of 282 persons swept off 206. The informant lost his wife and three children, and was himself with other persons swept into the jungle inland, where they were caught by the trees or managed to hold on. According to the account of this man as well as others, two waves met each other at this point and wrought a frightful destruction.

Large masses of rock were carried from the sea for 100 to 200 paces inland. A colossal old jawi-jawi tree, which formerly stood on the bay, lay with its roots and branches broken and twisted, about 200 paces from the shore.

The water appears to have retired with so much force that everything, except the heaps above mentioned, must have been swept into the sea. According to the accounts of persons belonging to other campongs, who escaped death, although with the loss of their relatives and property, soon after the earthquake very heavy reports were heard, like distant cannon shots, on which they observed at a great distance in the sea a wave approaching, that, according to their description, was of the height of a fullgrown cocoanut tree, and which dashed with furious force on the island. Some saved themselves by an immediate flight, the rest were overtaken by the water and swept away, except such as were caught by the jungle, or possessed presence of mind and strength enough to hold on to trees. Three such waves succeeded each other.

Some wonderful escapes took place. A child about a year old was found, two days after the disaster, in the top of a cocoanut tree twelve or fifteen feet in height. Although covered with wounds and suffering from fever, it was still alive. Another child was found alive on the breast of its dead mother.

---

#### CHANGES IN THE WHALE FISHERY.

The whalers are continually changing their cruising grounds. At one time the Greenland fishery attracted the larger portion of the fleet; then the Southern Atlantic; then the South Pacific and the Pacific sperm whaling grounds; still later, the North Pacific drew hither nearly one half the entire fleet. Now this latter cruising ground is declining in popularity, and the South Atlantic and Indian Oceans

receive more attention. A late number of the *New Bedford Shipping List* says:—

Nearly one hundred American ships are engaged in the whale fishery in the Indian Ocean, besides Dutch and French ships. The aggregate tonnage of the American whale fleet in that ocean, is 36,000 tons. The whale fishery extends from Java Head to Cape Leeuwin, a distance of 1,600 miles, and yields a revenue of a quarter of a million sterling annually. In 1838 American and French whalers made at one onslaught off Cape Leeuwin, 10,000 barrels of oil, worth £25,000. In 1845, some American vessels made at one capture, in Champion Bay, 6,000 barrels, and in 1857, American, Dutch, and French whalers made at one onslaught off King George Sound, 12,000 barrels. The American captains of whalers also do a large trade in the Indian Archipelago, by exchanging goods for sandal-wood, bees'-wax, tortoise-shell, and other tropical and inter-tropical productions. English whalers have completely abandoned the Indian Ocean to Americans, French, and Dutch.

---

#### THE OAR.

Probably the most ancient mode of propelling boats through the water by hand-labour, was by means of oars of nearly the same shape, and worked in the same manner, as those now in use. And to all appearance there is no likelihood of a change, for although many savage tribes work their canoes and other narrow boats with hand-paddles, and attain great speed with them, yet seamen of civilized nations, whose boats are mostly of a more burdensome character, and whose bodies are encumbered with clothing, have, without exception, given preference to the oar, as an instrument of greater power, and worked with more convenience.

And, truly, there is no more beautiful instrument than an oar, when we consider its simplicity, the ease with which it is worked, and the readiness with which its position is accommodated to the ever varying motion of the boat and the sea's surface. It has often been proposed—indeed, it is a favourite notion with theorists—to propel lifeboats by rotatory paddle-wheels and screws, such as those of steamers, but the proposition is altogether an impracticable one, and its trial could only result in failure. Where great power and velocity of motion can be applied, as by steam, undoubtedly the rotatory form is the most convenient mode through which to apply it, and accordingly, both screws and paddle-wheels work advantageously, until the rolling or pitching motion of a ship become very violent, when great waste of power ensues; for instance, when a ship rolls so deeply that the paddles are alternately too deeply immersed, and spinning round in the air; or if a screw ship, when she pitches so much that the screw is raised to the



water's surface, or lifted above it. When, therefore, it is considered how much more violent is the motion of a boat in a heavy broken sea than that of a ship, it will be readily conceived that a fixed machine, such as a wheel or screw, even if it could be worked on so small a scale by steam power, would do so at a still greater disadvantage. Whereas the oar, obedient to the quick eye and ready arm, varies its position with every motion of the boat or wave, and in skilful hands is always working at "full power."

But there is another point of importance not to be lost sight of. A paddle-wheel or screw cannot be worked in a lifeboat by steam power, but must be so by means of a crank worked by hand. Now it is known to every one that the muscles of the human body are strengthened by use, and that, therefore, persons engaged on any particular bodily labour have those muscles especially strengthened that are constantly brought into play. Thus, a sailor would stand little chance in a walking match with a professional pedestrian; whilst the latter would as vainly attempt to overtake the former in a race over his ship's mast-head. It follows, then, that, apart from its other advantages, the oar is possessed of this especial one, that it is in daily use by the only class of men on the coasts who are available to form the lifeboat's crew, viz., the hardy race of fishermen and boatmen who earn their daily bread on our shores.

An oar being, then, the only instrument by which a lifeboat can be propelled, too much care cannot be bestowed on it. Its size, weight, length, material, width of blade, balance, mode of attachment to the gunwale; its height above the water, and above the thwart on which the rower is seated, and the distance of the thwarts and oars apart, are all points of much importance on which the speed of the boat, or its power to make way against a head-sea much depend.

An oar is a simple lever, of what is termed the second order, that is, wherein the weight or body to be moved lies between the fulcrum and the motive power; the water being the fulcrum of the lever, the gunwale of the boat the point at which its power is applied to the moving body or weight, and the rower's arms being the source of power.

Fir oars have always been considered the most desirable for lifeboats, as they do not bend so much as ash oars, and as they float much lighter in the water, and will therefore better support any persons in it in the event of accident. Experiments have been made by the National Lifeboat Institution to test the relative strength of oars, when it was ascertained that an oar made from a good white Norway batten, or from a white Baltic spar, will bear as great a strain as any other, each being as free of knots as possible.

The length of an oar must of course be proportional to the width of the boat, and it should be so poised on the gunwale that the rower can raise or depress it or move it in any direction with the smallest effort. An oar should not be less than five inches wide in the blade, or it will expose so small a surface to the water as to cut through it, and so work on a too yielding fulcrum, with comparative loss of power.

The height above the thwarts of the thowl or rowlock in which the oar works on the gunwale should be sufficient to enable the rower to lift the blade well above the waves by depressing the loom or handle; but, on the other hand, it must not be so high as to require him to raise his arms above the level of his chest in rowing, in which case he will row with much less force, and be much sooner fatigued. A height of eight inches from the thwarts to the oar on the gunwale will be found a suitable average.

Lastly, the mode of confining the oar to the gunwale of the boat is of much consequence. The most common modes, in ordinary boats, are rowlocks and double pins, between which the oar works, but as an oar is liable to jam in the rowlock or between the pins, when rowing in a rough sea, and thereby to get broken, or to damage the gunwale, the oars of lifeboats have generally been worked in a rope grummet or ring, over a single iron thowl-pin; a further advantage of this plan being that it enables the oars to lie along the outside of the boat when not in use, and thus save the necessity of unshipping them and getting them in-board on going alongside a wreck, which is a great advantage.

A new description of swivel-crutch, intended as a substitute for a grummet, has recently been planned for the National Institution's lifeboats, by its inspector, Captain Ward, R.N., which is found to have the advantages of the grummet, and to be more convenient in some respects.

As it will be found to be a very useful kind of crutch for general use in boats, we subjoin a sketch of it.

Figure 1 represents the inside of a boat's gunwale, with a section of the oar within the crutch, the latter supported on the gunwale in the position in which it remains whilst the oar is in use. *a* is an ordinary iron thowl-pin; *b*, the crutch, also of galvanized iron, which revolves round the thowl as an axis; *c*, a clamp or chock, which receives the lower end of the thowl; *d*, a section of the oar; *e*, a short laniard with a running eye, which is slipped over the head of the thowl whenever the oar is required to hang over the side; *f*, the gunwale.

Figure 2 shows the oar when let go by the rower and allowed to hang alongside outside the gunwale. *a*, the thowl; *b*, the crutch; *c*, the leathering on the oar, to prevent chafe; *d*, the oar, as hung alongside; *e*, the laniard spliced round the oar, below the leathering, and nailed on to prevent its slipping round or along the oar; *f*, the gunwale.

The principal advantage of the swivel-crutches over grummetts is, that they are of a more durable character, are fixtures, and so not liable to be mislaid or lost, and retain always the same size and shape, whereas a grummet is liable to stretch by use, when the oar will work too loosely in it.

*See sketch.*

Fig 1.

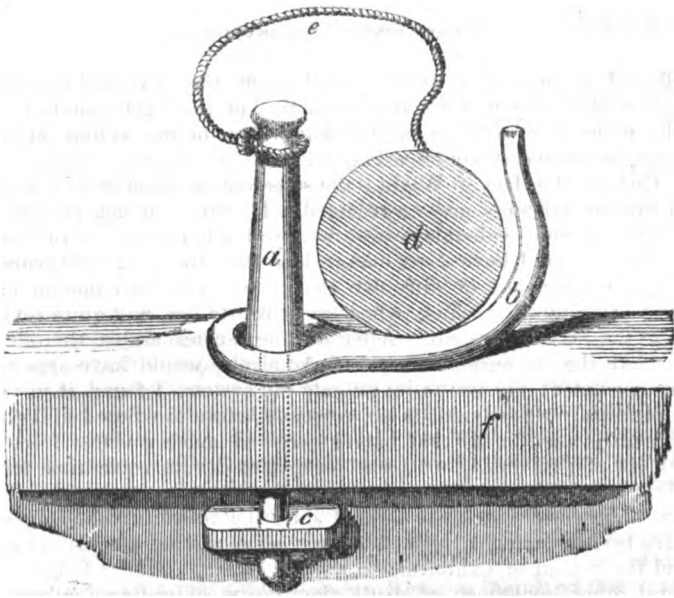
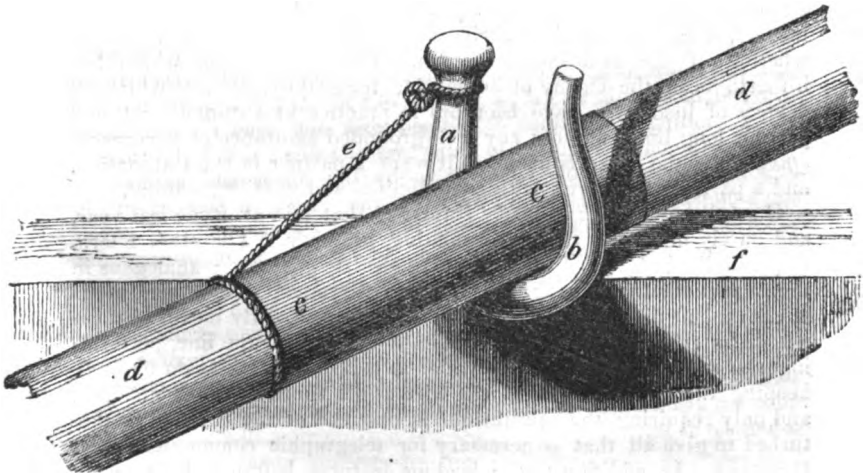


Fig. 2.



## SUBMARINE TELEGRAPHY.

Sir,—It is more than twelve months since the *Nautical Magazine* gave a preliminary and satisfactory notice of the experiments I then made, under the sanction of the Admiralty, of my system of telegraphy, as shown by my experimental cable laid between Stokes Bay and Ryde in the Isle of Wight; the same notice concludes by a hope that further accounts may be received. If, Sir, it is not trespassing too much on your valuable space, will you allow me to give you an account of what I have been doing since that time. I need scarcely mention the amount of difficulty that besets the introduction of a system of telegraphy which, when brought into use, will quite revolutionize the existing system. After waiting a considerable time in the hope that the honourable Board of Admiralty would have appointed some competent persons to investigate my system, I found it in vain, and ultimately was advised to lay my plans before the Board of Trade; and I am pleased to say that I have received much courtesy from the president of that body, who was pleased to devote some time to the subject, so as to clearly understand my system.

In the interval which has elapsed since the notice in your magazine I have been occupied in perfecting my system, and on the 15th of July I had the honour of exhibiting to the Rt. Hon. T. Milner Gibson and several other gentlemen of distinction the models of two submarine cables, which, by permission of the Earl of Mansfield, I have laid down in the ornamental waters at Caen Wood.

These cables exemplify two distinct modes of making the electric circuit, though they do alike depend on one and the same principle, namely, that of deriving their electric excitement from moisture, whether of the atmosphere or sea. Thus, the ocean, which has hitherto been the enemy of submarine telegraphy, against which all devices of insulation have been put in practice at a ruinous cost, and yet, for long lines, without any well grounded assurance of *permanent efficiency*,—the ocean is made, as it were a partner in the transaction, and a partner, moreover, with an unlimited and unfailling capital.

One of these cables is nearly similar to that laid at Ryde last year, and purely illustrates the non-insulating principle. The other I term the Ganglionic Cable, from its having electric generators analogous in their functions to the ganglia in the animal system, interwoven into it at convenient distances with relation to its length. By means of these ganglions relays of power are furnished throughout the line, performing the same office under the water as relays of stations do by land, keeping the whole length of the wire at all times statically charged, and only requiring the equilibrium at one end of the cable to be disturbed to give all that is necessary for telegraphic communication at the other. In addition to the leading features before indicated, my cables will combine simplicity, lightness, avoidance of great bulk, com-

parative inexpensiveness, and freedom from vitiation of communicative properties.

I am happy to record that the experiments were made to the expressed satisfaction of the gentlemen who witnessed them.

I am, &c.,

WILLIAM P. PIGGOTT.

*To the Editor of the Nautical Magazine.*

[Although we have some doubts of the soundness of Mr. Piggott's views, arising from the mutual destruction of the agents which he employs, we leave his letter for the remarks of our readers.—Ed.]

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XXIII.—  
*The Disaster to the "Great Eastern"—First Trip of the  
 "Warrior"—Report of the Royal Life-Boat Institution—  
 Secretary's Memos.*

In again meeting his friends at the Club, the Chairman said that the addition they would now have to make to the records of their proceedings would be marked by disaster! It is not very long since, they would remember, that a man of war, the *Camilla*, disappeared on the coast of Japan. A short time before that the *Perseverance* was totally lost at the Cape Verd Islands; and to these may now be added that of the *Driver*, on a reef off the N.W. point of Isle Mariguana, one of the Bahama Islands, on the third of August. Happily, in this instance no life had been lost, but it was with regret he noticed these losses recurring in the Royal Navy in a time of profound peace. If they could not take care of themselves in these days what should we hear of in war, when so many more are afloat and obliged to risk danger of wreck.

The next event in importance was the breaking down, as it was called, of the leviathan, the *Great Eastern*, and a providential escape had those on board—her four hundred passengers. She has at last got into one of those gales which put her powers as a sea boat to the test, and she came out of the fray in a miserable condition, as had been anticipated by some, himself among the number (as well as some more of us, observed Albert), but even then better than might have been expected, with loss of both paddles, six boats washed away and two others stove, and her rudder disabled, having been lying in a sea-way helpless as a log for nearly three days. The state of confusion on board all that time, and until she reached Cork, has been described as like that of a storm-tossed and disabled derelict, the passengers and crew expecting every moment that she would go down, and it will not easily be forgotten—certainly not by some twenty who, it is said, had limbs fractured and were cut and bruised by the materials and furniture thrown about on board during the time. However, he was happy to say that an official inquiry into all the circumstances would take place by the Board of Trade, from which a correct account of this disaster will be obtained.

And to swell the list of casualties—the term by which these nautical mishaps are known—continued the Chairman, one of those beautiful yachts for which this country alone stands conspicuous, has been run down at her anchorage at Ryde. Here, happily, no life was lost, although ladies and children escaping from their beds in such a transaction was something new. Her name is the *Amazon*, of 70 tons, belonging to a gentleman named Smith, who, it is said, claims £2,500 of the company to which the offending steamer (named the *Prince Consort*) belongs.

As if to contrast with the miseries of the iron mammoth ship, the *Great Eastern*, our first iron ship of war, the *Warrior* left the Thames, off Greenhithe, ran round to Portsmouth, and anchored at Spithead in the short space of eighteen hours; and her behaviour on this, her first trip seems to have met with as much admiration as the ship. To the great credit of all concerned in her there was no hitch anywhere; nothing went wrong—not even with the engines (1,200 h.p., by Penn) and those things which will get a screw loose sometimes. So easy was everything with her—so obedient was she—that she is said to be thoroughly under command in her movements, answering her helm with the most obliging readiness, and is pronounced to be “a model of good temper and obedience.” This is a character which few ships have obtained. But new brooms sweep clean, as is well known, and she may be found hereafter not only to be endowed with those good qualities, but also to be crusty and hardhearted with those who would impose on her. She seems to have attained a speed over thirteen knots, and, for a new ship, had a good passage to Spithead (210 miles), anchoring there at eight on Friday morning, in twenty hours from Greenhithe.

It would appear that we are now pledged to iron ships of war,—the wooden walls of old England are to a large extent to be superseded by iron. He confessed that he was not without his misgivings on this subject, for he was inclined to stick to our wooden walls; but where they are insufficient to resist an Armstrong shot, or bolt rather, he was inclined to believe that the French were right, and that their system of cuirassing or plating them with armour, like the *Warrior*, would turn out to be the best. The great weight of the iron ship was really dead weight—there was not that lively obedience to the lifting action of the sea in them as in our old wooden ships in rising to the passing wave; they were stiff and unyielding in their movements, to which their length also contributed, and the consequence would be that in a scaway, by not rising to the sea, the sea would rise on them, and this would be found something more than inconvenient when ports were required to be open in action.

This, however, was a subject on which much more could be said than was fair to go into at present. But there is no doubt that the *Warrior* has passed through this, her first ordeal, in the most masterly manner. Her powers at sea have yet to be tested. She has yet to look about for a good heavy gale,—one even more than the *Great Eastern* has just succumbed to, one which will try her “good temper

and obedience," not only her's, indeed, but the temper of those on board of her, and that, it is satisfactory to know, she will not be long waiting for at this time of the year.

The Chairman then asked the Secretary what he had to report of the proceedings of their *truly National* Lifeboat Institution. Before, however, he had a reply he wished to make a remark why he had laid some emphasis on the word National. The Lifeboat Institution was in every sense of the word a national one, and not a mere *London Society*. The metropolis was its head-quarters, but the representatives of the institution itself were to be found in every place where it had a lifeboat; and these boats were now found, he was happy to say, at the extreme North of Scotland as well as at the Land's End.

The Secretary then stated that at the last meeting of the institution, Captain Sir Edward Perrott, Bart., in the chair, the following rewards were made:—

£6 10s. to the crew of the Cahore lifeboat, belonging to the institution, for putting off to the rescue of the crew of the Spanish barque *Primera de Torreveja*, from Liverpool to Havana, which, during thick and foggy weather, and in a heavy sea, went on Blackwater Bank, on August 7th. The barque was found with her rudder disabled, one of the pumps choked, and making water rapidly. The master and fourteen men left the vessel in their own boats, and, after one boat had been swamped, succeeded in landing at Ballinamona. One man had been, however, inadvertently left on board the ship. At two p.m. information of the wreck was sent to Cahore, when the lifeboat was immediately launched, and proceeded to the bank. Meanwhile the barque had worked off, and, with the one sailor on board, drifted out to sea. As soon as this was observed the lifeboat bore down to the ship, which she succeeded in overtaking about five miles N.E. from Cahore Point. The crew of the lifeboat, finding on getting on board of the vessel that the water was rapidly increasing in her hold, thought it advisable to run her for the beach near Arklow, which was safely accomplished.

Also, £8 to the crew of the Lizard lifeboat, which likewise belongs to the institution, for going off in reply to signals of distress from the schooner *Hurrell*, of Penzance, which, during a dense fog and a heavy ground-swell, was found to be in a dangerous position near the Old Lizard Head. The schooner was found by the lifeboat in a very critical situation, within a cable's length of a precipitous cliff ahead, and on either side high and dangerous rocks. Her crew, four in number, had collected their clothing and were about to leave her in their own punt, when the lifeboat arrived alongside; had they done so, they would not, in all probability, have reached the shore alive, as the passage between the scattered rocks and the shore is most intricate. At the request of the master the lifeboat remained alongside during the night, and at daylight succeeded in warping the vessel clear of the rocks, and anchoring her in a secure position.

To the crew of the institution's lifeboat at Penmon, Anglesea, also £8, for putting off in reply to a signal of distress from the smack

*Pink*, of Chester, which, during blowing weather and heavy rain, was seen in a dangerous position about a mile from the lifeboat station. On arriving alongside the smack she was found to have carried away her main boom and to have only one cable out, which the master said he feared would give way every moment, and his vessel be driven on Puffin Island. At his request the lifeboat remained alongside until eleven o'clock p.m., when, the weather having moderated, the vessel fortunately got out of danger.

Also, £13 to the crew of the lifeboat of the society stationed at Wicklow, Ireland, for putting off in the night in a heavy sea, with the view of saving life from a wreck, which was, however, from its sudden disappearance, supposed to have foundered before the arrival of the lifeboat.

A pecuniary reward also to Mr. W. H. M'Kay, of Wick, N.B., in consideration of his laudable and prompt service in wading into the sea and rescuing, at some risk of life, the master of the brigantine *Nymph*, of Greenock, which, during stormy weather, had been wrecked near Loch Inchard, Sutherland. It appeared that the poor man had perseveringly clung to his vessel's boat, which had previously been swamped, until she was amongst the breakers close to the shore. Here M'Kay rushed to his help, and succeeded in bringing him safely to land.

---

#### *Secretary's Mems.*

The Dons looking up. The Spanish Admiral Pinzon, with four ships of the squadron of instruction, it is said, will form the escort of the King Consort on his approaching visit to Barcelona.

Arrangements are now being made at the Thames Iron Shipbuilding Works, Blackwall, for the immediate construction of a new iron-cased screw frigate for the Admiralty, of 6,815 tons, the cost of which will amount to about half a million sterling.

The wrought iron roof and domes for the Great Exhibition Building of 1862, are now rapidly progressing at those works.

---

#### MORE BOTTLES.

*U.S. Government Observatory, Washington, 10th August, 1861.*

Lloyd's Agent for St. Michaels (Azores) has forwarded to this office a note found at sea, 1st July, 1861, by one of the island traders. The bottle containing it was picked up in lat. 38° 24' N., long. 28° 2' W. A copy is subjoined:—

“American ship *Senator*, from New Orleans for Liverpool, 31st October, 1860, lat. 38° 22' N., long. 58° 12' W. All well. The



finder will please forward to the Superintendent, U.S. Observatory, Washington, and oblige Roland F. Coffin, Master."

The distance of the point at which the bottle was found from that where it was thrown into the sea is 1,417½ miles in a line E. 30° S. 243 days having elapsed, its average speed was 5.83 miles per day.— M. Gilliss, Superintendent.

This, which appeared in the *Shipping Gazette* of 26th August last, is interesting as having followed the direction of a bottle from H.M.S. *Newcastle*, in 1819–20,—a due East course made good.

The next, although far away from the limits of our bottle chart, is no less interesting as showing the effects of the counter-currents setting eastward to the southward of the great continents.

It appears by a paragraph in the American papers that a portion of the cargo of the American ship *John Gilpin*, lost off Cape Horn in January, 1858, has drifted ashore at or near Bunbury, a small settlement on the East coast of Australia, having floated nearly 8,000 miles. The following is the item referred to:—

A letter dated Bunbury, New Holland, February 18th, states that two casks of oil had been picked up off the coast, not more than 150 miles from land, which came out of the ship *John Gilpin*, of Boston, sunk off Cape Horn, on the night of 29th January, 1858. One cask was marked *V.Y.D.* (*Vineyard*, of Edgartown), and the other *Kutusoff*. They must have drifted there in about three years, from long. 70° W. to long. 111° E.

The whaleship *Congress*, of New Bedford, at Bunbury, also picked up, between Cape Leuwin and Ball Head, a cask of oil covered with barnacles, marked *Kutusoff*, shipped at Honolulu by the *John Gilpin*. The cask was picked up January 1st, 1861, having drifted a distance of about 7,780 miles in a nearly E.b.N. course, or a yearly drift of about 2,600 miles.

The following has taken the usual drift of the Atlantic over to the coasts of Europe, confirming the courses of several other bottles on our chart in the same latitude.

The ship *Albert Gallatin*, on one of her outward voyages to New York early in the present year, experienced very severe weather, and when in lat. 49° 30' N., long. 42° W., the captain (Delano) threw a bottle overboard containing a memorandum to the effect that the vessel was suffering from a violent gale, and requesting any person who picked up the bottle to report the circumstance. The memorandum was dated February 9th, and on the 7th March the *Albert Gallatin* arrived, in a leaky and distressed state, at New York. On August 19th the bottle was picked up off the island of Iona, North of Scotland.

It has made good a course of E. 28° N., with a progress of seven miles per day; which may have been more, from the time it may have remained unobserved.

## Nautical Notices.

## PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 397.)

Name.	Position.	Where.	F. or R.	Ht. in Feet.	Dist. in Mls.	Remarks, &c. [Bearings Magnetic.]
22. Hogland	South Point	Gulf of Finland	F.	..	..	Est. 1st Aug., '61. Height not stated.
23. McArthur Head	Islay Sound	54° 45' 9" N., 6° 2' 9" W.	F.	128	17	(a.) Est. 1st Nov., '61. (b.)
24. Rivadisella	Bay of Biscay	43° 28' 7" N., 5° 7' 3" W.	Ft.	370	17	Est. 20th Aug., '61. West extreme of entrance.
25. Roman Rocks	Simons Bay	34° 10' 7" S., 18° 27' 5" E.	R.	54	12	Est. 16th Sept., '61. Interval 30 seconds in which the light shows 12 seconds. (c.)
26. Reef off New Zealand	.....	.....	..	..	..	(d.)
27. Abrolhos	Brasil	17° 57' 7" S., 38° 41' 5" W.	R.	189	17	Est. —. Period of revolution 1 minute in which the light is shown.
	Nafragados	St. Catherine 27° 49' S., 48° 42' 0" W.	R.	149	18	Est. —.
28. Thatchers Is.	Massachusetts Bay	42° 38' 2" N., 70° 34' 2" W.	F.	165	20	Est. 1st Oct., '61. Near Cape Ann.
29. Cape San Antonio	Spain, South coast	38° 48' 5" N., 0° 12' 7" E.	..	570	25	Re-established on 30th Oct., '61.
	Patras	.....	..	..	..	Light-tower blown down on 19th Aug., '61.
30. Archipelago.						
Sigri Island	Mytleni Isl.	31° 13' N., 25° 51' 2" E.	R.	180	24	Est. 16th Aug., '61.
Ponente Pt.	Tenedos Isl.	39° 50' N., 25° 58' 7" E.	F.	59	14	Est. 16th Aug., '61.
Gadare Island	Ditto	39° 50' N., 26° 6' 2" E.	Ft.	59	12	Est. 16th Aug., '61.
Dardanelles:						
Seddul Bahr	Europe Cape	Near Cape Hellas	F.	52	4	Est. 16th Aug., '61. Green lights.
Barber Point	Asia Cape	40° 5' 3" N., 26° 2' 2" E.	R.	59	12	Est. 16th Aug., '61. A red light one mile S.W. of the point.
Cape Peskieri	Ditto	40° 16' 7" N., 26° 34' 2" E.	F.	56	4	Est. 16th Aug., '61. Two vertical red lights.
31. Marmora Sea:						
Cape Khoraz	Europe Cape	40° 41' 2" N., 27° 17' 2" E.	Ft.	180	22	Est. 16th Aug., '61.
Erekli	Ditto	40° 58' 5" N., 27° 58' 2" E.	F.	164	11	Est. 16th Aug., '61.
Kutali	Islands	40° 30' 6" N., 27° 28' 1" E.	F.	49	10	Est. 16th Aug., '61. Between Kutali and Rabby Island.
Palio Point	Artaki	40° 29' 4" N., 27° 40' 7" E.	F.	138	5	Est. 16th Aug., '61. Two red lights vertical.
32. Bosphorus:						
Pilon de Serail	Europe Cape	.....	F.	39	4	Est. 16th Aug., '61. Two green lights vertical.
Kandili Point	Asia Cape	.....	F.	112	4	Est. 16th Aug., '61. Two red lights vertical.
Roumili Hisar	Europe Cape	.....	F.	46	4	Est. 16th Aug., '61. Two green lights vertical.
Khanlijah Pt.	Asia Cape	.....	F.	92	4	Est. 16th Aug., '61. Two red lights vertical.
Yeni Keni	Europe Cape	.....	F.	46	4	Est. 16th Aug., '61. Two green lights vertical.
Therapia	Ditto	.....	F.	46	4	Est. 16th Aug., '61. Two green lights vertical.
Umur Bank	Asia Cape	.....	F.	46	4	Est. 16th Aug., '61. Two red lights vertical.
Jeron Point	Ditto	.....	F.	46	4	Est. 16th Aug., '61. Two red lights vertical.

(a.) 22.—Also, that on and after the 1st day of July, 1861, the *upper fixed white light* on the northern hill of Hogland will be again exhibited, the repairs and alterations in the system of lighting being completed.

(b.) 23.—The light will show *white* up the Sound, from the eastern shore of the island of Islay, till it bears about S.½ W.; *red* towards the island of Jura, from S.½ W. till it bears about West; and *white* from West round southerly and as far to the westward as visible, or until obscured by the south side of Islay. Variation 26° 10' W. in 1861.

(c.) 25.—The Castor Rock, with only 15 feet on it at low water springs, lies N. N. E. ¼ E., 2¼ cables from the lighthouse; it is marked by a beacon, with a flag having the word "Rock" painted on it. Between this rock and the lighthouse there are patches of 19 and 24 feet water. To avoid these dangers, a vessel of large draught when passing to the N. E. of the lighthouse should give it a berth of 3½ cables before hauling in for Simons Bay.

When bound to Simons Bay from the southward by day, the lighthouse kept in line with Elsey Peak, N. ¼ W., will lead between the Whittle Rock and Miller Point. By night this bearing of the light is the only guide.

*Caution.*—The light on Cape Point shows a bright face every minute, and the light on the Roman Rocks every half minute.

(d.) 26.—*Reef off Stewart Island, New Zealand.*—This danger consists of two rocks, 3 to 6 feet high, close together, in the track of vessels rounding the S. E. side of Stewart Island. It is 7.1 miles E. b. N. ¼ N. from Owen Island off Lord River, and 7¼ miles S. E. ¼ E. from East Head, north of Port Adventure; in lat. 47° 7' S., and long. 168° 21' E. Variation, 16° 20' E. in 1861.

---

#### ZEALANDIA SHOAL.

We have received the following confirmation of this shoal from its discoverer, Captain J. Foster.

*Ship Zealandia, Manila, July 1st, 1861.*

Dear Sir,—In your volume for 1859, page 443, is my report of a shoal in the North Pacific (Marianne Group) which you have named Zealandia Shoal, after the above ship.

On my passage from New Zealand to Hong Kong, 15th of April last, at 10h. a. m., Sariguan Island bearing west, having a steady N. E. Trade wind, 7 knots, I determined, if possible, to have another look at the above danger, so shaped a course to bring the two islands (Sariguan and Farrallon de Torres) on the reported bearings.

At 3h. p. m. the look-out on the topsail-yard reported breakers a-head: steered to pass about a cable's length to the northward of them, when passing two large patches of black, pointed, and jagged looking rocks were plainly seen, the sea breaking furiously, and at times leaving them dry five or six feet. The water was apparently lower than when I saw the breakers the previous voyage. The rocks were not then visible, or if they had been of coral formation I might have imagined a two years' growth had brought them in sight. The bearings when abreast of the shoal are:—Peak of Saraguan, S. b. W. ¼ W., from four to five leagues; Farrallon de Torres, N. ¼ W.,

the latter not being in a good position for a cross bearing, more dependance may be placed on the former and assumed distance.

It is surprising these shoals have not been reported before, as this channel must be much used by vessels from the colonies to the China Sea. Should you think fit to confirm my former report of these dangers, by publishing this in your Magazine, do so and oblige,

Your obedient servant.

JOHN FOSTER.

*To the Editor of the Nautical Magazine.*

#### AMAZONE BANK, *China Sea.*

The following has not yet appeared in the chart. It is S.E. from the Camboja River, and to the N.E. about fifty miles.

The *Hongkong Register* of May 6th publishes the following report from the master of the *Amazone*. About seven a.m. on the 20th ult., he observed a bank or shoal, which did not then appear to be more than three feet below the bottom of the ship. The exact locality is not stated, but the latitude by observation at noon on the same day was  $9^{\circ} 16' N.$  and long.  $107^{\circ} 29' E.$  This bank, we understand, is not marked on any of his charts, nor on Horsburgh's charts for 1846.

We commend it to the attention of seamen.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of September, 1861, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

England, South coast, Plymouth Sound and Hamoaze, with views, Commander H. L. Cox, R.N., 1860, (5s.)

England, West coast, sheet 9, Liverpool Bay and views, corrected to 1861, (1s. 6d.)

Ireland, North-East, Lough Larne, with views, Mr. R. Hoskyn, Master, R.N., 1860, (2s. 6d.)

Mediterranean Sea, Malta Island, Valetta Harbour, Captains Graves and Spratt, R.N., 1860, (3s.)

Mediterranean Sea, Rhodes Island and plan of ports, Commander Graves, R.N., (3s. 6d.)

Mediterranean Sea, Syria, Iskanderun to Markhab, Commander Mansell, R.N., 1860, (3s.)

English Channel Pilot, vol. I., 2nd edition, Mr. J. W. King, Master, R.N., 1861, (4s.)

West India Pilot, vol. I., Captain E. Barnett, R.N., 1861, (5s.)

Vancouver Island Pilot, Captain G. H. Richards, R.N., 1861, (2s.)

*Hydrographic Office, 20th September, 1861.*

#### TO CORRESPONDENTS.

We regret being obliged from want of space to curtail our Nautical Club Report, but shall supply the omission in our next.

of the Bank (L'Arguin), in twenty hours, when, moving a vessel

\* From Jacob Mossel, Governor-General of Netherlands India, 1757.  
NO. 11.—VOL. XXX.

4 D



# WRECK CHART OF THE BRITISH ISLES FOR 1860.

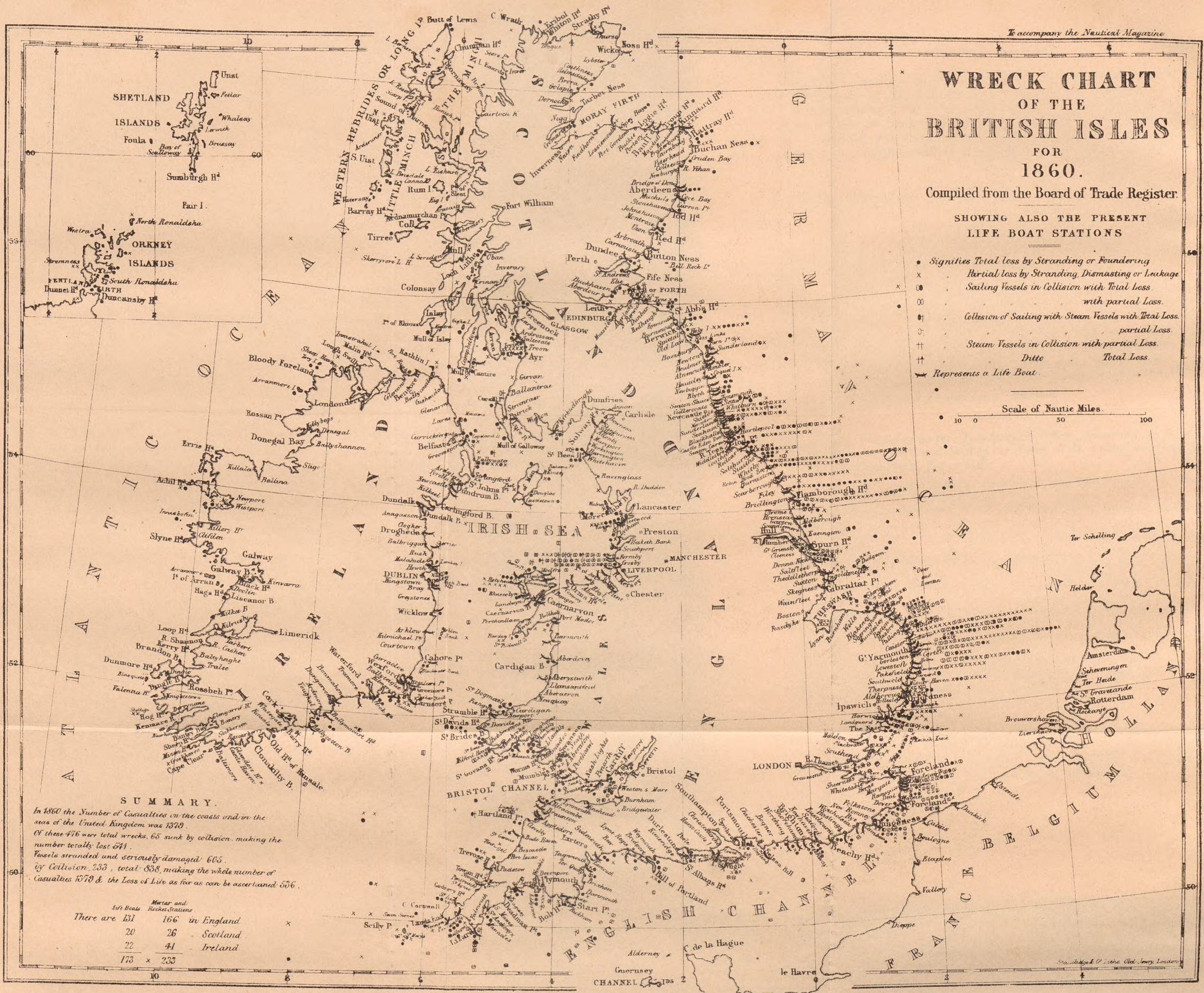
Compiled from the Board of Trade Register.

SHOWING ALSO THE PRESENT LIFE BOAT STATIONS

- Signifies Total loss by Stranding or Foundering
- x Partial loss by Stranding, Dismasting or Leakage
- o Sailing Vessels in Collision with Total Loss.
- o with partial Loss.
- o Collision of Sailing with Steam Vessels with Total Loss.
- o partial Loss.
- o Steam Vessels in Collision with partial Loss.
- o Ditto Total Loss
- Represents a Life Boat

Scale of Nautic Miles.

10 0 50 100



### SUMMARY.

In 1860 the Number of Casualties on the coasts and in the seas of the United Kingdom was 1379.  
 Of these 476 were total wrecks, 65 sunk by collision, making the number totally lost 541.  
 Vessels stranded and seriously damaged 605.  
 by Collision, 233, total 838, making the whole number of Casualties 1379 & the Loss of Life as far as can be ascertained 526.

Muster and		
Life Boats		Rescue Stations
There are 131	166	in England
20	26	Scotland
22	41	Ireland
173	x 233	



THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle.

---

NOVEMBER, 1861.

---

MOSSEL BAY\* AS A HARBOUR OF REFUGE.

The great importance in these days of increasing maritime adventure, so that every port on the line of coast comprehending any British colony should be known to mariners, has induced me to recommend to the notice of navigators a harbour situated about thirty-six leagues to the eastward of Cape L'Agulhas, which offers not only the advantage of perfect security during the winter solstice (months of May, June, July, and August), but, moreover, obviates the necessity to vessels which can fetch to the harbour from the offing of further bearing up for some two hundred miles.

In the paucity of shelter on this iron-bound coast the maritime public may be congratulated on the existence and eligibility of another port still further to the eastward,—namely, Algoa Bay; yet, if the safety of Mossel Bay during the Cape winter can be proved, it may also claim a further advantage, namely, that one short day's run before the transient easterly breezes, which at times occur, even in the winter months, will place a vessel well to the westward of L'Agulhas.

A remarkable case of this was that of the *Bally*, from Canton to Quebec, in August, 1850. The captain of this vessel, leaving Mossel Bay with a steady rise of the barometer, got well to the westward of the Bank (L'Agulhas), in twenty hours, when, meeting a fresh

\* From Jacob Mossel, Governor-General of Netherlands India, 1757.  
NO. 11.—VOL. XXX. 4 D

gale at S.W., he was enabled to stand away to the north-westward with a flowing sheet.

The proper inference to be drawn from this fact is inevitable: that Mossel Bay is literally a *bay*,—it being the deepest indentation found in any part of the South African coast between Simons Bay and Delagoa Bay. Neither Algoa Bay nor Plettenberg Bay must be excepted in this particularity of formation; and the Knysna and Port Natal, though excellent harbours within their bars, afford no shelter without.

Before attempting a particular description of Mossel Bay as a harbour of refuge, the following is a brief account of the present state and prospects of the locality:—

Previous to the year 1841 there existed on the present site of the village only four thatched stone buildings. One of these was long used by the old Dutch Colonial Government as a grain store, which grain was received from the farmers at a fixed price. The remaining produce of the district, consisting of hides and butter, was conveyed by wagons to Cape Town, the wagons returning with such few necessaries (groceries and clothing) as the farmers required. Although the custom of receiving grain was discontinued on the advent\* of the English Government, the old practice of transmission by wagon of produce to the distant metropolis prevailed to, comparatively, a recent date.

The introduction of wool-bearing sheep, however, occasioned a change in this system—if such it may be styled,—which was the mere result of necessity.

In 1843–4 mercantile firms began to establish themselves in the bay; and from that period a rapid growth of mercantile competition, and, consequent thereon, convenience to the rural public has taken place, and at present scarcely one wagon in a year proceeds on the old route.

Until the year 1858 the resources of trade and produce were restricted by the hitherto insuperable barrier of the Zwaartberg range of mountains, forbidding all communication with the vast interior of the colony; and the area of production being thus confined solely to the thinly populated district of George and a small portion of Riversdale, it was not difficult to foresee that a certain ultimatum, dependent on the then amount of population, would shortly be reached.

The opening of the Meiring Poort (or Road) that year, through a gorge of the before-mentioned mountain range, into the pastoral division of Beaufort and the interminable interior, has for ever dissipated these calculations; and the subsequent rise in the value of landed property, both within and beyond the coast districts, has altogether baffled computation.

The new village of Aliwal is situated on the North side of the Cape St. Blaize, on a gradually rising ground, bounded 250 yards

\* Error.—Not till 1826.



from the heads of the bay by a rather abrupt range of rocky cliffs, and to the westward by hills of gravel, rock, and sand. It is at present composed of about 130 houses, the greater number substantially built, and many of them roofed either with slate or zinc; several very handsome stores of two stories, and under slated roofs, have recently been constructed, and various other buildings, together with a district gaol, are in course of erection.

An Episcopal chapel and a Dutch church give respectability and character to this place. Several eminent mercantile houses are established; many retail stores, three hotels, an apothecary's dispensary, and various provision shops necessary to the convenience of society. A "public reading-room" has also recently been opened, with the necessary accompaniment of colonial newspapers and English periodicals, together with a small but very select library, lately imported.

The population of the village consists at present of somewhat above 600 souls. The civil establishment is composed of a resident magistrate (who is civil commissioner to the district), a collector of customs, a district surgeon, and a small police force. An Episcopal clergyman and a minister of the Dutch Reformed church reside in the village.

Master-mariners and ship-owners are requested to observe the following facts, namely:—

1. That the post-cart departs three times a week from the village to the extremity of the colony, arriving in Cape Town in thirty-six hours, thus affording communication, by the monthly mail steamer, with England.

2. That an accredited agent for Lloyd's is established in the village.

No port charges exist. A reservoir of excellent water is being conducted by pipes to the beach for the use of shipping.

#### *Port and Anchorage.*

This subject may be introduced by observing that the continuous westerly gales met with in a higher latitude than that of Cape L'Agulhas often remit in violence near the land several days previous to their termination outside. In other words, a vessel experiencing tedious westerly gales forty miles off the land may frequently find finer weather by standing in upon the coast, particularly to the eastward of the cape; she has then, optionally, a short bear up to a contiguous port. An unintermitting westerly (violent) gale at Mossel Bay of a week's continuance is of late unknown.

Mossel Bay is formed by a bend of the coast, terminating in a bluff and (below that) a low point called Cape St. Blaize: lat. 34° 10' S., long. 22° 18' E. To justify the term bay (inlet of the land) to this locality, it may be remarked that a line being drawn true North from the point to the opposite shore (distant five miles), will give a radius depth of two miles and a quarter to the arc (of the bay): Thus, supposing a vessel to put to sea with the wind at S.E. (per compass), and making even no better than a seven point course good, she still leaves the anchorage with Robben Island (round which is

also plenty of water) two good miles on her beam. The importance of this advantage will be duly acknowledged.

*Directions.*

The point of Cape St. Blaize may be rounded pretty closely, remembering that a rock called the Blinder, or Windvogel, lies about one-third of a mile off the East end, on which the sea breaks heavily at low water.

The windmill on the bluff is not visible coming along shore from the westward, owing to intervening land, but will be seen from the southward, and the bay thereby identified. The town of Aliwal will be seen half a mile inside the point on opening the bay.

The proper anchorage in the bay from April to September is in from four and a half to five fathoms water, the mass of the village bearing South; or, more determinately, with Bland's jetty-head bearing S.  $\frac{1}{2}$  W., per compass, when the extremity (visible) of the point will bear S.E.b.S. Ships' boats may land either at the jetty-head (stairs) or on the beach, there being no surf!

Anchorage ground, clay, with a thin super-stratum of sand. High water at full and change at 3h., with a rise of seven feet.

The harbour at this season is safe from all winds to the westward of South, as south-easterly winds are then unfrequent, moderate, and of but transient duration. The heaviest gales during the year are from the W.N.W. One only has occurred in the bay during this year (1859), namely, from midnight of the 15th of May till the evening of the 19th, with subsequent alternate stiff breezes from S.W. and calms to the end of the month; the water of the bay perfectly smooth throughout the month.

Winter gales commonly commence from the N.N.W., with heavy gusts, unsteady both in direction and force; then veering to W.N.W. or West. They blow very hard in continuous gales, with barometer low, 29.6 in.; finally, shifting somewhat suddenly to S.W., they blow themselves out with steady breezes and occasional showers. A somewhat heavy swell at this latter period at times sets round the bay, but nothing to cause apprehension for the safety of vessels, or even interruption to the landing with light boats.

From the months of September to April, vessels ought not to anchor under five a half fathoms. Strong breezes from S.E. to E.S.E. at this season (summer) occasionally prevail, bringing, after a few hours' continuance, into the bay a heavy break of sea; when a stout coir spring, stretched along inboard and nipped (lashed) to the chain before the bits or windlass, will ensure safety, especially with good and long ground tackle and judicious reduction of tophammer. These gales seldom continue thirty hours. A rise of the barometer generally occurs, and vessels may commonly beat out at the commencement (usually gradual) of the breeze if desirable, and clear the point with one good board. Moderate S.W. winds, however, even in this season of the year, are very common.

The distance of the N.W. beach (head of the bay) from the an-

chorage, affording good scope for beating out to sea, as has been before remarked, distinguishes Mossel Bay very favourably.

Subjoined is an account of the number of vessels which have anchored in the bay, and casualties occurring, since the establishment of an agent for Lloyd's in 1851. Also a monthly abstract of winds and weather during the year 1859, noted by the writer.

#### *Addenda.*

Since the foregoing was written the exports of wool and hides have largely increased. Several thousand feet of iron piping for the supply of water have been laid through the streets, a branch of which is being carried to a new jetty for the use of shipping. This jetty is now in course of erection by Mr. Pilkington, C.E., on a contract of £4,500.

The Board of Harbour Commissioners for the improvement of the port have lately requested the Colonial Government to have a fresh survey of the port, with a view to the erection of a lighthouse on the bluff, which may be defrayed by the wharfage dues, Mr. Andrews, C.E., having lately estimated the cost at no more than £700.

H. W. LAWS, *Harbour-Master.*

#### *Number of Vessels Anchored in Mossel Bay since November 1st, 1851.*

1851, November and December, vessels anchored . . . . .	17
1852, Throughout the year, " " . . . . .	70
1853, " " " " . . . . .	64
(One loss, namely, Feb. 15th, schooner <i>Mary</i> parted and wrecked in a strong S.E. breeze. Oct., cutter <i>Anna Catharina</i> drove ashore, also in a S.E. breeze: afterwards repaired, got off, and sailed for Cape Town.)	
1854, Throughout the year, vessels anchored . . . . .	43
1855, " " " " . . . . .	40
1856, " " " " . . . . .	49
1857, " " " " . . . . .	65
1858, " " " " . . . . .	100
Total . . . . .	448

#### *Certificates from Shipmasters using the Port.*

Having been requested by the Harbour Board to state my opinion on Mossel Bay as a port of refuge for vessels bound round Cape Agulhas during the prevalence of westerly gales,—it is certainly much more easy of access than any anchorage to the eastward of Cape Agulhas, and it is very seldom but what you can have easy communication with the shore, and get water or stores if required. Twice, on my passage from East London to Table Bay, I have sought shelter in the bay from strong westerly gales, and always been able to fetch easily into the bay, and then ride securely with a single anchor and a long scope of cable, as it is excellent holding ground. I have rode out three strong S.E. gales in the bay, and had no occasion to let go a second anchor, as I found, by veering to eighty fathoms, the vessel rode quite easy, and with little strain on the cable; and it is my opinion that during the con-

## Abstract of Winds, Weather, &amp;c., during the year 1859.

Months.	Ther. Mean	Winds.	Days.	Remarks.	An- chored.
Jan.	72½	S.W. to West	8	Fine weather throughout the month; showery on 11th and 18th; easterly winds very moderate, smooth water.	st. 4
		S.E.	9		sh. 5
Feb.	73½	Calm	11	Wind alternating a few days each way; 18th rainy; easterly winds moderate; fine, with smooth water, throughout.	st. 3
		S.W. to West	9		sh. 4
Mar.	72	S.E., easterly	7	Strong easterly on 18th, little sea; 22nd to 25th, fogs and calms; fine throughout, with smooth water.	st. 2
		Light or calm	12		sh. 3
April	67	Easterly	4	Generally fine; squally West with rain on 18th and 19th; light variable airs and calm prevailing; smooth water.	st. 3
		S.W.	3		sh. 4
May	66	Light to calm	24	First half of month light westerly and calms; 15th to 19th, heavy gales N.W. to W.S.W., then fresh breezes S.W., with intervals of light weather, to end of month; boating uninterrupted; 28th, heavy squall W.N.W.	st. 4
		S.W. to West	8		sh. 5
June	65	S.S.E.	2	2nd to 4th, heavy gale W.N.W.; light airs till 10th; moderate S.W. or light to end of month; smooth bay.	st. 2
		Light airs	20		sh. 5
July	61	N.W. to West	6	Moderate S.W. or calms till 14th; gale of wind W.N.W. on 15th and 16th, followed by an unusually heavy swell, with light weather, indicating bad weather outside; cloudy and fine to end of month; boating interrupted for three days, i.e., cargo-boats; no rain during the month.	st. 2
		South, westerly	9		sh. 4
Aug.	½	Very light	15	Moderate and steady breeze, westerly, generally prevailing, with fine weather; communication by boats easy throughout; a little rain on 4th.	st. 4
		S.E. (13th)	1		sh. 4
Sept.	65½	W.N.W. to S.W.	14	Moderate breezes; fine, but cloudy; stiff S.E. on 25th and 30th; smooth water; rainy 29th and 30th.	st. 2
		Easterly	2		sh. 3
Oct.	63	Calm or light	14	2nd and 3rd, unusually heavy gale E.S.E. which took off, with heavy rain, midnight of 3rd; another strong breeze, S.E., on 19th and 20th; brig <i>Liberty</i> put to sea with loss of anchors, <i>Snake</i> rode it out; rest of month unsteady, gloomy, and rainy; cargo-boats stopped seven days; rainy on 8th, 11th, 22nd, and 27th.	st. 2
		W.N.W. to S.W.	17		sh. 5
Nov.	65	S.E., light	2	Heavy squalls and strong breezes from off the land, N.W., between 14th and 20th; easterly winds light; smooth water throughout.	st. 2
		Variable light	12		sh. 6
Dec.	70½	Calms	5	Briak and light westerly, with fine weather; easterly winds light; smooth for boats throughout.	st. 2
		S.W. to W.N.W.	15		sh. 7
Nov.	65	S.W. to N.W.	11	Heavy squalls and strong breezes from off the land, N.W., between 14th and 20th; easterly winds light; smooth water throughout.	st. 2
		E.S.E. to S.E.	11		sh. 5
Dec.	70½	Light or calm	5	Heavy squalls and strong breezes from off the land, N.W., between 14th and 20th; easterly winds light; smooth water throughout.	st. 2
		Southerly	4		sh. 6
Nov.	65	N.N.W. to S.W.	14	Heavy squalls and strong breezes from off the land, N.W., between 14th and 20th; easterly winds light; smooth water throughout.	st. 2
		South, easterly	8		sh. 6
Dec.	70½	Calm	4	Briak and light westerly, with fine weather; easterly winds light; smooth for boats throughout.	st. 2
		S.W. to W.N.W.	16		sh. 7
Dec.	70½	S.E. to E.S.E.	11	Briak and light westerly, with fine weather; easterly winds light; smooth for boats throughout.	st. 2
		Southerly	4		sh. 6

tinuance of south-easterly winds there is a strong under-current setting out of the bay to the eastward. And I certainly think that a lighthouse on Cape St. Blaize would be of great advantage, especially to strangers, to point out the entrance of the bay: as the general charts in use give a very poor idea of the place, and they might easily get into some of the bays to the westward of this bay.

A. DREWETT, *Master of the brigantine Prince.*

*Cape Town, January 28th, 1859.*

I, the undersigned, James Glendinning, master-mariner, commanding the bark *Admiral*, declare that I have anchored with said bark in the port of Mossel Bay, on the 30th November last; that I have discharged a full cargo of general merchandise, and reloaded a cargo of aloes and wool; that I have left on the 19th January last; that during said period of seven weeks, the communication with the shore never has been interrupted, and that the ordinary cargo-boats have been able to work continually.

And I further state as my opinion, that for shelter against westerly gales, especially prevalent along the coast in the winter months, this is the safest harbour and the best along the southern coast of Africa. That even with a strong S.E. wind, from which the bay is not protected, any vessel has ample opportunity of beating out, if prepared; and that, comparatively speaking, with little expense, a small breakwater could be made, the materials for which are on the spot, which would render this a perfectly safe harbour for all winds.

If this port were better known, it would be resorted to by many a home-ward-bound vessel now contending every year with dangers in rounding Cape Agulhas.

JAMES GLENDINNING, *Master, bark Admiral.*

*Port Beaufort, December 3rd, 1859.*

Sir,—In compliance with your request I send you my opinion concerning the suitability of Mossel Bay for the purposes of commerce, as a harbour of refuge, and the great necessity of erecting a lighthouse there. I consider Mossel Bay to be one of the best bays on the East coast of the colony of Good Hope. It affords excellent shelter from northerly and westerly gales, which prevail much; it is perfectly sheltered from South (round westerly) to E.N.E., but is open from south-eastward. Vessels windbound in the roads there will always have sufficient warning by the barometer and by the appearance of the weather to put to sea before the S.E. winds set in. These winds, in my opinion, are not so dangerous as is generally supposed, if vessels are properly found and the necessary precautions taken. They seldom blow home, and when they do so their duration is short. Captains can use their own boats almost in any weather with safety, as there is a good jetty at which to land.

Were Mossel Bay better known, no master of a vessel would contend with heavy north-westerly gales (which last so long in these parts) trying to get to Simons Bay, to refresh his crew, repair damages, or provision his ship, which can be done with as much facility, and as reasonably, at Mossel Bay as in Cape Town.

Until a lighthouse is erected (which is a necessary signal to a harbour of refuge and a great boon to vessels) the bay can never become a harbour of refuge to any extent; but were such done, and the mercantile community properly advised thereof, there can be no doubt that any expenses that would be required would be amply repaid.

I am, &c.,

J. FOWLER, *Master of the screw steamer Kadie.*  
*The Chairman of the Harbour Board of Mossel Bay.*

*Mossel Bay, November 28th, 1859.*

Having been requested by the chairman of the Harbour Board to give my opinion on the capabilities of this bay as a harbour of refuge for distressed vessels, or for vessels bound round the Cape of Good Hope in the winter season, during the prevalence of westerly gales,—I beg to state that I consider it to be the safest open bay on this side of South Africa. I have had good opportunity to observe the effect of sea and wind upon vessels riding here, having myself been here as many as twenty times during the last four years, and I may venture to state in every month of the year.

With westerly or north-westerly winds a vessel is as safe as if in a dock; and even with S.E. winds I consider the danger is not so great of parting or driving as in other bays. I have rode out many S.E. breezes, and seldom let go my second anchor. As soon as I observe a S.E. breeze is setting in, I give a long scope of cable, say sixty to eighty fathoms, and clap on my spring to the cable before windlass, then lash the other end of the spring to the stern and pay over same cable, so as to ride by the stern.

I mention this as I consider it to be a precaution which every one should take in all the bays on this coast. But, independent of the last observation made, I consider the danger is not so great as many persons are inclined to think it, as I have observed that there is what is termed an under-tow, which has a tendency to keep a vessel nearer to her anchor, and consequently to take the strain off the cables,—I mean with a S.E. sea. I do think that if this bay was better known, fewer accidents would occur. It is a well-known fact that Cape Agulhas is noted for being a Cape of Storms, and, off there, how many vessels are disabled or spring a leak, and thereby unable to contend against the heavy N.W. gales and accompanying sea. How easy it would be to gain a port of refuge by coasting along and slipping into Mossel Bay. When there and the anchor down lives and property are safe, and communication with shore always practicable. The bay is easily entered, and the anchorage soon gained, by rounding Cape St. Blaize at about the distance of a mile, standing boldly on to six or seven fathoms water, then tacking to the southward; she will then fetch a good anchorage, where it is almost an impossibility to drive or part. Accidents may occur by bad ground tackle or carelessness in dropping the anchor and fouling it, but not otherwise. There is likewise a port-captain and pilot always ready to render their services.

Now, respecting the S.W. winds and the effect they have on this,—it is a well-known fact that a S.W. wind sets in the most sea in every bay on this coast; but, fortunately, it comes into this bay from south-eastward, and, consequently, when the vessels are wind-rode (from S.W.) they lay rolling broadside to the sea, never bringing a strain on to their cables; and I have noticed that winds from a southerly direction do not blow home; and I account for that by the land being deeply indented between Ball Point and Cape Recife.

I have frequently suggested the propriety of having a lighthouse erected on Cape St. Blaize. I think that that, combined with a proper survey and an Admiralty chart published, would cause the bay to be better known, and prove a blessing to many distressed vessels, and be the means of saving many lives and much property.

JOHN BURSTALL, *Master of the Elizabeth Mary.*

*Mossel Bay, November 12th, 1859.*

Having been requested by the chairman of the Harbour Board to give my opinion on the merits of this bay as a harbour of refuge in westerly gales,—from what I have seen of it during the week I have been here, I consider it a very safe bay in westerly gales.

Had I been acquainted with the safety of Mossel Bay, after my vessel sprung a leak, instead of trying to beat round Cape Agulhas to Table Bay, I

should have endeavoured to work my vessel into Mossel Bay. But from the chart of this coast, on which Mossel Bay appears as a place of no shelter, therefore I should not venture in.

If a lighthouse was placed on Cape St. Blaize, I am sure that many vessels, during the prevalence of westerly gales, would take shelter in Mossel Bay.

Mossel Bay is open to the south-easterly winds, but in my opinion a ship might easily beat out to sea.

JAMES MURRAY, *late Master bark Ann Bridson.*

Testimonials of a similar character were furnished by Captain Duncan, of the *Flower of Yarrow*; Captain Staats, of the *Theresa*; Captain Armson, of the *Therese*, schooner; Captain De Groot, of the *Ferdinande*, brig; and various other masters who have visited the port.

[The important survey of the South coast of Africa by Mr. Skead, R.N., has not yet reached Mossel Bay.—Ed.]

#### COTTON CULTURE IN CHINA.

In a recent number of the *Friend of China*, we find an extract from Fortune's work on China, giving an interesting account of the mode of growing cotton in that extensive empire. That paper states that the word cotton is derived from *Kho-ten*, the name of the most western district of China, and it must have been cultivated there centuries before it was known to the western world. We have no means of learning how much cotton is produced there, but probably more than is now produced in India, as its immense population is supplied mostly from home manufacture.

The Chinese or Nanking cotton-plant is the *Gossypium herbaceum* of botanists, and the *Mie wha* of the northern Chinese. It is a branching annual, growing from one to three or four feet in height, according to the richness of the soil, and flowering from August to October. The flowers are of a dingy yellow colour, and, like the *Hibiscus* or *Malva*, which belong to the same tribe, remain expanded only for a few hours, in which time they perform the part allotted to them by nature, and then shrivel up and soon decay. At this stage the seed-pod begins to swell rapidly, and, when ripe, the outer coating bursts and exposes the pure white cotton in which the seeds lie imbedded.

The yellow cotton, from which the beautiful Nanking cloth is manufactured, is called *Tze mie wha* by the Chinese, and differs but slightly in its structure and general appearance from the kind just noticed. I have often compared them in the cotton fields where they were growing, and, although the yellow variety has a more stunted habit than the other, it has no characters which constitute a distinct species. It is merely an accidental variety, and, although its seeds may generally produce the same kind, they doubtless frequently yield the white variety and *vice versâ*. Hence specimens of the yellow cotton are fre-

quently found growing amongst the white in the immediate vicinity of Shanghai; and again a few miles northward, in fields near the city of Poushun on the banks of the Yang-tze-kiang, where the yellow cotton abounds, I have often gathered specimens of the white variety.

The Nanking cotton is chiefly cultivated in the level ground around Shanghai, where it forms the staple summer production of the country. The district, which is part of the great plain of the Yang-tze-kiang, although flat, is several feet above the level of the water in the rivers and canals, and is consequently much better fitted for cotton cultivation than those flat rice districts in various parts of the country,—such, for example, as the plain of Ningpo,—where the ground is either wet and marshy, or liable at times to be completely overflowed. Some fields in this district are, of course, low and marshy, and these are cultivated with rice instead of cotton, and regularly flooded by the water-wheel during the period of growth. Although the cotton land is generally flat, so much so, indeed, that no hills can be seen from the tops of the houses in the city of Shanghai, it has nevertheless a pleasing and undulating appearance, and, taken as a whole, it is perhaps the most fertile and agricultural district in the world. The soil is a strong rich loam, capable of yielding immense crops year after year, although it receives but a small portion of manure.

The manure applied to the cotton lands of the Chinese is doubtless peculiarly well fitted for this kind of crop. It is obtained from the canals, ponds, and ditches which intersect the country in every direction, and consists of mud which has been formed partly by the decay of long grass, reeds, and succulent water-plants, and partly by the surface soil which has been washed down from the higher ground by the heavy rains. Every agricultural operation in China seems to be done with the greatest regularity, at certain stated times which experience has proved the best; and in nothing is this more apparent than in the manuring of the cotton lands. Early in April the agricultural labourers all over the country are seen busily employed in cleaning these ponds and ditches. The water is first of all partly drawn off and then the mud is thrown up on the adjoining land to dry, where it remains for a few days until the superfluous water is drained out of it, and is then conveyed away and spread over the cotton fields. Previous to this the land has been prepared for its reception, having been either ploughed up with the small buffalo plough in common use in the country and then broken and pulverised by the three pronged hoe; in those instances where the farms are small and cannot boast of a buffalo and plough, it is loosened and broken up entirely by manual labour. When the mud is first spread over the land, it is, of course, hard or cloggy; but the first showers soon mix it with the surface soil, and the whole becomes pulverised, and it is then ready for the reception of the cotton seed. Road scrapings and burnt rubbish are saved up with care, and used for the same purpose and in the same manner.

A considerable portion of the cotton lands either lie fallow during the winter months, or are planted with those crops which are ready for gathering prior to the sowing of the cotton seed. Frequently, how-



ever, two crops are found growing in the field at the same time. Wheat, for example, which is a winter crop, is reaped in the Shanghai district generally about the end of May, while the proper time for putting in the cotton seed, is the beginning of that month or the end of April. In order, therefore, to have cotton on the wheat lands, the Chinese sow its seeds at the usual time amongst the wheat, and, when the latter is reaped, the former is several inches above ground, and ready to grow with vigour when it is more fully exposed to the influence of sun and air. The Shanghai season—that is, from the late spring frosts to those in Autumn—is barely long enough for the production and ripening of the cotton, as it is easily injured by frosts; and the Chinese farmer is thus obliged, in order to gain time and obtain two crops from his ground in one year, to sow its seeds before the winter crop is ready to be removed from the ground. When it is possible to have the first crop entirely removed before the cotton is sown, it is much preferred, as the land can then be well worked and properly manured, neither of which can otherwise be done. The method of sowing one crop before the preceding one is ripe and removed from the land, is very common in this part of the country; and even in autumn, before the cotton stalks are taken out of the ground, other seeds are frequently seen germinating and ready to take the place of the more tender crop.

In the end of April and beginning of May—the land having been prepared in the manner just described—the cotton seeds are carried in baskets to the fields, and the sowing commences. They are generally sown broadcast, that is, scattered regularly over the surface of the ground, and then the labourers go over the whole surface with their feet and tread them carefully in. This not only imbeds the seeds, but also acts like a roller to break and pulverise the soil. Germination soon commences; the seeds rooting first in the manure which had been scattered over the surface of the land. In some cases the seed, instead of being sown broadcast, is sown in drills or patches, but this mode is less common than the other. These patches are often manured with bruised oil-cake, which is the remains of the cotton seed after its oil has been extracted. The rains, which always fall copiously at the change of the monsoon, which takes place at this season of the year, warm and moisten the earth, and the seeds swell, and vegetation progresses with wonderful rapidity. Many of the operations in Chinese agriculture are regulated by the changes of the monsoon. The farmer knows from experience that when the winds, which have been blowing from the north and east for the last seven months, change to the south and west, the atmosphere will be highly charged with electric fluid, and the clouds will daily rain and refresh his crops.

The cotton fields are carefully tended during the summer months. The plants are thinned where they have been sown too thickly, the earth is loosened amongst the roots, and the ground hoed and kept from weeds. If the season is favourable, immense crops are obtained, owing to the fertility of the soil; but if the weather happens to be unusually dry from June to August, the crop receives a check which

it never entirely recovers, even although the ground after that period should be moistened by frequent showers. 1845 was a season of this kind, and the crop was a very deficient one compared with that of the previous year. The spring was highly favourable, and the plants looked well up to the month of June, when the dry weather set in, and gave them a check which they never recovered. Abundance of rain fell later in the season, but it was then too late, and only caused the plants to grow tall and run to leaf, without producing those secretions which ultimately go to the formation of flowers and seed.

The cotton plant produces its flowers in succession from August to the end of October, but sometimes, when the autumn is mild, blooms are produced even up to November, when the cold nights generally nip the buds, and prevent them from forming seed. In the autumn of 1844 this happened on the night of the 28th of October, when the thermometer sank to the freezing point, and then ice was found on the sides of the canals and ponds.

As the pods are bursting every day, it is necessary to have them gathered with great regularity, otherwise they fall upon the ground and the cotton gets dirty, which of course reduces its value in the market. Little bands of the Chinese are now seen in the afternoon in every field, gathering the ripe cotton, and carrying it home to the houses of the farmers. As the farms are generally small, they are worked almost entirely by the farmer and his family, consisting sometimes of three or even four generations, including the old grey-haired grandfather or great-grandfather, who has seen the crops of fourscore years gathered into his barns. Every member of these family groups has a certain degree of interest in his employment; the harvest is their own, and the more productive it is, the greater number of comforts they will be able to afford. Of course there are many cotton farms of larger size, where labourers are employed in addition to the farmer's family, but by far the greater number are small and worked in the way I have just described. It is no unusual sight to see the family goats, too, doing their share of the work. Several of these animals are kept on almost every farm, where they are, of course, great favourites with the children, and often follow them to the cotton fields. Although the children with their little hands can gather the cotton as well as their elders, they are not strong enough to carry it about with them, and it is amusing to see their favourites the goats, with bags slung across their backs, receiving the deposits of cotton, and bearing it home to the houses, evidently aware that they too are working for the general good.

However fine the crop may be, the Chinese are never sure of it until it is actually gathered in. Much depends upon a dry autumn, for, if the weather is wet after the pods begin to burst, they drop amongst the muddy soil, and are consequently much injured, if not completely destroyed. When the cotton reaches the farmyards, it is daily spread out on hurdles raised about four feet from the ground, and fully exposed to the sun. As the object is to get rid of all the moisture, it is of course only put out in fine weather, and is always

taken into the house or barn in the evening. When perfectly dry, the process of separating it from the seeds commences. This is done by the well-known wheel with two rollers, which, when turned round, draws or sucks in the cotton and rejects the seeds. It is a simple and beautiful contrivance, and answers well the end for which it was designed. The cotton is now sent to market, and a portion of the seeds are reserved for the next year's crop.

Early in the fine autumnal mornings the roads leading into Shanghai are crowded with bands of coolies from the cotton farms, each with his bamboo across his shoulders and a large sack of cotton swung from each end. With these they hurry into the town, for the purpose of disposing of them to the merchants, who have numerous warehouses from which they send the cotton to the other provinces of the empire. These coolies or small farmers—for many of them bring their own produce to market themselves—are very independent in their dealings. Having reached the first warehouse, the cotton is exposed to the view of the merchant, who is asked what price he intends to give for that particular quality; and should the sum offered be below the owner's expectations, he immediately shoulders his load and walks away to another merchant. At this season it is almost impossible to get along the streets near the sides of the river where the cotton warehouses are, owing to the large quantities of this commodity which are daily brought in from the country. It is bought up by the large cotton merchants, who empty it out in their warehouses, and then repack it in a neat and compact manner before it is conveyed on board the junks.

Before the cotton is converted into thread for the purpose of weaving, it is cleaned and freed from knots by the well-known process common in our possessions in India. This is done by an elastic bow, the string of which, being passed under a portion of the cotton placed on a table, throws it in the air by the vibration which is kept up by the workman, and separates the fibre without at all breaking or injuring it. At the same time the wind caused by the sudden vibrations carries off the dust and other impurities. After this process the Chinese cotton is particularly pure and soft, and is considered by good judges not to be surpassed by any in the world. It is much superior to that imported to China from Hindostan, and always commands a higher price in the Chinese market.

Every small farmer or cottager reserves a portion of the produce of his fields for the wants of his own family. This the female members clean, spin, and weave at home. In every cottage throughout this district the traveller meets with the spinning-wheel and the small hand loom, which used to be common in our own country in days of yore, but which have now given way to machinery. These looms are plied by the wives and daughters, who are sometimes assisted by the old men or young boys who are unfit for the field. Where the families are numerous and industrious, a much greater quantity of cloth is woven than is required for their own wants, and in this case the surplus is taken to Shanghai and the adjacent towns for sale. A sort of

market is held every morning at one of the gates of the city, where these people assemble and dispose of their little bundles of cotton cloth. Money is in this manner realised for the purchase of tea and other necessaries which are not produced by the farms in this particular district.

When the last crops are gathered from the cotton fields, the stalks are carried home for fuel. Thus every part of it is turned to account; the cotton itself clothes them, and affords them the means of supplying themselves with all the necessaries of life; the surplus seeds are converted into oil; the stalks boil their frugal meals; and the ashes even—the remains of all—are strewed over their fields for the purposes of manure. But even before this takes place, the system I have already noticed—of sowing and planting fresh crops before the removal of those which occupy the land—is already in progress. Clover, beans, and other vegetables are frequently above ground in the cotton fields before the stalks of the latter are removed. Thus the Chinese in the northern provinces lengthen by every means in their power the period of growth; and gain as much as they possibly can from the fertility of their land. The reader must bear in mind, however, that the soil in this district is a rich deep loam, which is capable of yielding many crops in succession without the aid of a particle of manure. Nature has showered her bounties on the inhabitants of the Chinese empire with no sparing hand; the soil is not only the most fertile in China, but the climate is capable of rearing and bringing to perfection many of the productions of the tropics as well as the whole of those found in all the temperate regions of the globe.—*Fortune's Tea Districts of China.*

---

ON MECHANICAL INVENTION IN ITS RELATION TO THE IMPROVEMENT OF NAVAL ARCHITECTURE.—*By Nathaniel Barnaby, Esq., M.I.N.A., Draughtsman in the Department of the Controller of the Navy, Member of the late School of Mathematics and Naval Construction. From the Transactions of the Institution of Naval Architects.*

(Concluded from page 549.)

1810.—And now we come to 1810, fifty years ago; a period at which the English Royal Navy was numerically stronger than at any other time before or since. It comprised 248 ships of the line, exclusive of those on harbour service; and 290 frigates. There were in all 1239 ships, or more than twice the number we possess at this moment. In 1810 the *Caledonia*, a first rate of 120-guns, now the Dreadnought Hospital ship at Greenwich, had just been launched. She was then the largest ship in England. Her dimensions were —

	Feet.	In.
Length on the gun-deck . . . . .	205	0
Breadth extreme . . . . .	53	8
Burthen in tons . . . . .	2616	

It is surprising to observe how little difference there was between the vessels of this period and those of nearly 200 years previously. Almost the only things of note were the reduction in height above water, forward and aft, and a slight increase in dimensions. The proportion between length and breadth had undergone but little change; in the *Royal Sovereign* it was 3.46 to 1, and in the *Caledonia* 3.82 to 1. There was in the ships of these two periods almost the same arrangement of decks and ports; the same thin boarding in the front of the forecabin; the same mode of framing the stern; the same disposition of the outside planking in lines crossing the sheer of the ports; nearly the same rig; the same rudder-head, with a hole in the stern to admit the tiller; and probably the same mode of framing the hull. For the ships of 1810 had no diagonal framing of wood or iron, but the old massive vertical riders; no shelf or waterway to connect the beams with the side; no fillings above the floor-head; and no dowells in the frames. Ships were still moored by hempen cables, and still carried immense stores of water in wooden casks.

Up to this period there had been during the 550 years through which we have passed a gradual progress, which had consisted mainly of approximation to the forms and arrangements of Italian, Portuguese, Spanish, and French ships, all of which had been in their turn superior to English ships. The same sluggishness which had prevailed for centuries prior to the invention of gunpowder seemed to be again settling on the Navy, until the advent of steam made it start into new life. The great improvements in practical construction introduced by Sir Robert Seppings just after 1810, while they are an exception to this position, serve to illustrate it. The weakness of the framing of the old sterns and their defencelessness, had been the subject of complaint for many years; yet they were left to be patched up by plasters of wood or iron when they seemed disposed to drop off; and to be blown out by impatient captains who wished to get a gun to bear upon an enemy who was raking him with impunity.\* The great weakness

\* In illustration of this, I may be permitted to cite a report quoted by Sir Robert Seppings in a pamphlet written by him in 1822. This report is of an action fought between the *Blanche* and *La Pique* frigates in 1794. The writer of the report says: "In the action, the *Blanche's* mizenmast and shortly after her mainmast were shot away. Just before this happened, we had, with the intention of boarding, put our helm astarboard, and ran across the stem of *La Pique*, her bowsprit coming over our quarter-deck. To secure her in this situation, Captain Faulkner and myself made every rope we could get hold of fast round our capstan; and the end of the hawser being hauled up, we effectually secured her by passing it also round her bowsprit. The *Blanche's* main and mizen masts being shot away, and the head-sails filling, she lay off before the wind, thus bringing *La Pique* astern towing by the bowsprit. We were immediately much annoyed from her quarter-deck guns, well served and pointed forwards, without our being able to return a gun,

of the upper part of the bow was also known, and line-of-battle ships which had been cut down to frigates gave examples of an improved form, yet nothing was done towards introducing it. Dubamel, in his *Architecture Navale* of a hundred years ago, mentions a proposal to cross the ceilings of ships by oblique iron riders; and a ship built in France in 1780 had diagonal riders in the hold over the ceiling. It had been proposed in 1763 to fill in the spaces between the timbers from the water-line downwards, and to caulk the fillings inside and outside, for the purpose of adding security to the ship and excluding impure air. And Mr. Fincham says that both shelf-pieces and thick waterways had been in use in French and other foreign vessels before Sir Robert Seppings proposed the application of them to English ships. Thus, while the paper read by Sir R. Seppings before the Royal Society in 1814 appears, at first sight, to have been highly novel and speculative, and the subsequent introduction of its recommendations into the Navy an exception to the ordinary cautious rule, neither is really the fact.

It is curious to observe, moreover, what a limited influence the experience and intelligence of private shipbuilders appear to have had during this long period. However slow the progress of the government builders, private shipbuilders were content to follow in their wake. The first letters patent granted for improvements relating to ships bear the date, January 17th, 1618. I have gone through all the patents relating to ships granted between this period and 1810, and I can find no improvement worth recording except in the manufacture of sheathing, and the construction of pumps. Indeed, between the years 1618 and 1800 more than one third of the patents claim improvements in ships' pumps.

But the introduction of steam has worked mighty changes. In 1810 we had not a single steam-ship in England; now, English steamers swim on every sea. In 1810 men were lamenting the rapid destruction of our forests, and predicting our commercial ruin from their approaching exhaustion; now, a prospect of unexampled prosperity opens by the construction of our own ships, and ships for other nations too, not from the limited produce of our soil, but from the vast stores which underlie it. We have now a merchant-ship of ten times the tonnage of the largest ship of 1810, and of more than twice the proportion between length and breadth; and it is my belief that a few years hence she will not be such an exceptional case as she is at present. I believe that the arguments of her designers are unassailable, and that if she had been treated as a ship, instead of being shown to holiday gazers as a monster, she would have proved herself worthy of their confidence. Nor have the constructors of the Royal Navy been

having no stern-ports on the main-deck. We had no alternative left but to blow out the stern-frame. All the firemen, with their buckets, were assembled in the cabin, and both the after-guns pointed against the stern-frame. This made a clear breach on both sides, and the fire was immediately extinguished. We now raked her with good effect, clearing her decks fore and aft, and they soon after called out that they had surrendered."

idle. Steam was not introduced into the royal service until 1822; yet at this moment, exclusive of 67 ships building and converting, nearly three fourths of the Navy is propelled by steam. The screw was not introduced until 1842; yet there are now 345 screw-ships in the service, which is at the rate of 19 screw-ships every year since that period. In 1847 there was not a single steam line-of-battle ship, but at this moment there are 48 two and three decked ships which can be carried into the line-of-battle in storm or calm, at speeds varying between 10 and 15 miles an hour, by the power of from 90,000 to 100,000 horses.

So long as ships were propelled by sails, the largest ships in existence were those used for war purposes; but now that large ships propelled by steam-power have such advantage over small ones in point of speed, especially on long voyages, and can be worked by a comparatively small number of hands, there is nothing to prevent a great increase in the dimensions of merchant-vessels.

But the size of men-of-war is limited, and I believe that they will never again occupy the foremost position either in point of dimensions or of speed. The dimensions of men-of-war are, in my judgment, limited by the following considerations:

First, England and other maritime nations must always have a sufficient number of ships of war to guard all their sea-board, and to defend their foreign possessions; and however large the ships may be, this number must remain nearly the same. To increase the dimensions of these ships will therefore be to increase the expense of the Navy in nearly the same proportion.

Secondly, in naval engagements, one of the objects of the combatants will always be to sink their opponent, and a large ship will never be much more secure than a small one; and while it is possible for a single gunboat to sink the largest ship, it will never be prudent to increase their dimensions and value very greatly. The ship may be cased with armour which to-day is shot-proof; but to-morrow it may be pierced with ease by shot or shell thrown by some new iron monster. We may secure ourselves still further by dividing the ship into numerous water-tight compartments: but this security is practically of a very limited character, and the ship is still exposed to destruction by an explosion or fire caused by a single shell.

Thirdly, we have seen that one of the ancient modes of fighting was by the use of rams for piercing the sides of the opposing vessels. This mode continued in constant use so long as vessels of war were propelled by oars, *i.e.*, so long as the attacking vessels were perfectly under command for rapid advances in any direction, or for retreat at pleasure. Sailing vessels are not under command in this way, and therefore such a mode of fighting has been, for the last 500 years, impracticable. But steam has again given us this control over our ships, and the opinion is growing that we shall revert to this most ancient mode of warfare. Whether it would be prudent, or even practicable, to use line-of-battle ships as rams is very doubtful; but that a class of vessels for coast-defence ought to be, and yet will be, constructed on

this principle, I hold to be certain. There may be something barbarous in the idea of thus cutting down a gallant adversary in fair fight upon the open sea; but the hostile troops which presumed to land upon our shores would find a fitting grave beneath the waves which guard them. And so long as it is possible for a small vessel, at a moderate speed, to penetrate the sides of the strongest ship below the water, as it certainly is, so long will it be imprudent to build large ships of war.

What I have said here may seem to be condemnatory to some extent of the large iron-cased ships building at Blackwall and Glasgow. Rightly considered, however, it is not so. Wooden ships become daily more liable to be set on fire by shells of improved construction, and by red hot shot. But the hulls of these ships being of iron, cannot be set on fire. And while the sides of ordinary iron vessels are converted into a murderous hail by the blows of shot, the sides of these ships are sufficiently strong to resist the most powerful ordnance yet constructed, under all ordinary circumstances. This strength could not have been secured with the speed which these ships will have under less dimensions.

Such ships are, however, far too long ever to be used as rams, as their smaller opponents might, by reason of the greater ease with which they could turn, easily avoid their attacks. The *Warrior* and the *Black Prince* will be, what they were designed to be, the strongest, the safest, and the swiftest men-of-war that ever swam; the latest step in the progress of invention in naval architecture.

From the earliest ages up, as we have seen, to our own time, ships for war purposes have been first in the path of improvement. But this state of things is fast coming to an end; and it is right that it should. Experience has shown us that it would be most unwise for the government of a nation possessing a large navy to initiate improvements which would render it necessary to make extensive and costly alterations; and the smaller maritime powers are generally content to copy their superiors. But no such argument holds against the constant application of *commercial* enterprise for the advancement of our art.

The late Mr. Brunel did much to direct private capital into this channel; and I believe we owe him a large debt of gratitude, not for what he conceived, but for what he has proved, in the *Great Western*, the *Great Britain*, and the *Great Eastern*; and proved in the face of difficulties which nothing but the most daring courage and the most untiring perseverance could have faced and overcome. Henceforth, I trust, our commercial marine will take its proper place in the van of progress.

While the present period is remarkable for the changes which are taking place in the character, dimensions, and modes of construction of our ships, it is no less remarkable for the number of amateur inventors who desire to effect still greater changes. No one who has not had experience in such matters can form an idea of the number and variety of the plans which are submitted to the various government departments in the course of a year.



I can quite understand the feeling with which an enthusiastic inventor receives the formal intimation of the government that his propositions cannot be entertained; for some years ago, when I knew less about the world's ways than I do now, I travelled up from the country to Somerset House with large hopes, which withered and died in the cold presence of the Admiralty Inquisitors. I know from the nature of the examination which my invention received in my presence, that they were unable to tell whether it would succeed or fail; but they required, and I believe they were right, that I should remove the doubt, and should not throw the burden of proof upon them, for my profit. And what my invention was eight or nine years ago, such are nearly all which come before the Admiralty now. With great differences in the amount and value of the labour bestowed upon them, they nearly all have this one character—that they are not discoveries, but mere suggestions which the suggestor or inventor (as he is called by courtesy) is unable or unwilling to embody in a practical form himself, and which he would be glad to get the Admiralty to do for him, that he may have the gain and credit of success, and they the loss and discredit of failure.

I am sorry to say that the majority of patents relating to our profession are of the same character; and if you observe who the men are who obtain such patents, you will not be surprised that it is so.

I find that of the patentees of 292 patents taken out under the old law, for matters relating to shipbuilding, and in which the profession or title of the patentee is stated, there are only twenty who are shipwrights or naval architects. There are eighty who are styled gentlemen; and in addition to these, there is a strange medley of colonels and lieutenant-colonels, graduates of universities, barristers, coal-merchants, wood-dealers, agricultural machinists, upholsterers, goldsmiths, dyers, coachmakers, toymakers, fruiterers, tallow-chandlers, and brewers.

When this mode of conferring privileges was instituted, in the reign of James I., I cannot think it could have been intended that a man should by patenting a crude idea, obtain rights over the labours of men succeeding him, who should overcome the difficulties which attend the development of such ideas, and produce an invention.

The phraseology of the earliest patents is, "Whereas wee are given to understand that our well-beloved subiects have, by their industrie, and att their greate paynes, costs, charges, and expences, devised, found out, and brought to pfecccon, divers Newe, Apte, or Compendious Formes or Kindes of Engines or Instruments," &c.

With this idea before us, what must we think of conferring patent rights for such inventions as the following? "The hydrostatic ship contemplates, in the principles of its construction, superior tonnage, safety, and progression." The ship is to be propelled by water-wheels, called the "Childer's sea-horse wheel." A vessel of 200 feet long is to be propelled by thirty of these sea-horse wheels, twenty feet in diameter and two feet broad. "The best way," says the inventor, "of employing the surface for impulsion which the deck affords will

be by the use of horizontal sails, which act with the wind in any direction; the pressure of the ship's motion against the atmosphere will thus serve to give them an artificial impulsion, besides the one they derive from the actual direction of the wind." It is impossible to form from the specification any more definite idea of what the ship is intended to be than can be obtained from the following luminous description given by the inventor: "There being a beautiful division of weight, power, and resistance throughout the whole of the ship, and no main dependence anywhere, with the five keels, two bases, and three distinct compartments, carrying their lading over the water, not through it; the patent ship ought, like a cat, to have nine lives."

In another patent specification we read of "a new power applicable to the propelling of vessels and boats of every description through the water, and also to the pumping of them;" the invention being to work the pumps or propel the vessels by means of a lever, one end of which floats on the water outside the vessel, and the other is attached to suitable gearing inside; motion being communicated to the lever by the rising and falling of the waves, or of the vessel.

Another patentee says: "I apply the power of men to work ships' pumps, and other pumps, and to machinery for various useful purposes in manner following: I construct a seat, which I call a vibrating chair, the back feet of which turn upon a centre as a centre of motion. A man being seated in this chair with his feet resting on a foot-board, his knees bent upwards, and his hands hold of a rod connected to a bent lever, to which a pump-rod (or crank, and connecting rod for working machinery) may be connected, exerts his strength to great advantage by working with the extensors of his legs while bringing them nearer to a horizontal line, and bending his knees upwards alternately, and at the same time exerting the muscles of his arms and shoulders in working to and fro the rod connected with the bent lever."

These patents were granted under the old law when patenting was a costly proceeding. I might cite others still more absurd, taken out subsequently, but I forbear; these are quite sufficient to show that men may obtain patents without having been at "paynes, costs, charges," or "expences," in finding out and bringing their invention to perfection.

The Council of this Institution will receive many inventions like these, with occasionally some such magnificent idea as the following: "It is proposed to construct a floating-battery and ram of iron, with steel-plated bows on both ends. Her dimensions to be—length, 600 feet; breadth, 112 feet; draught of water, 40 feet. To have seven decks, and 242 guns, rifled and breech-loading. To be propelled by engines of peculiar construction, and by a new motive-power, at thirty-five or forty knots per hour." This is not an imaginary case.

There is probably no employment of the mind more exciting than that of invention. A man conceives an idea: he is delighted with its novelty and importance, and is anxious to secure for himself the profits which must arise from it. He fears to intrust his secret to any person

who is likely to be a judge of its real merits, and is too impatient to spend time in satisfying himself of its practicability. He therefore proceeds at once either to obtain protection for it from the Crown, or to submit it to some public body upon whom he may hereafter be able to establish a claim for compensation.

Naval architecture has little need for such inventors as these; I cannot find that they have ever been of service to it: I do not believe that they ever will be. What it needs is men like Stephenson and Watt, Armstrong and Whitworth, who will patiently work out with their own hands that which their brains have conceived; meeting difficulties at every turn,—at every turn devising the means of overcoming them. Such inventors will not lose their reward.

It must be a source of rejoicing to all sound practical men that the country will have in this Institution a means of testing the merits of the men who seek to affect improvements in our marine; that it may not have to form its opinion of inventors and inventions from newspaper paragraphs and laudatory pamphlets, but may always possess here a body of men in whose judgment and honesty it may place implicit confidence.

The Institution will be, I believe, a terror to the mere seeker of place and profit; a source of encouragement and aid to the patient worker; and a means of directing the application of the intelligence and wealth of our country to the improvement of that art, upon which, under the blessing of God, depends not only her commercial prosperity, but her national existence.

---

#### THE WRECK REGISTER AND CHART FOR 1860.

[From the earliest number of this journal we preserved a record of the wrecks of British shipping down to a late period, when the subject was taken up the government, and ardently followed by the present excellent National Life-boat Institution. If our juvenile mind was shocked at the monstrous sacrifice of life and property in those days, which it most assuredly was, there is little room for congratulation that it has in any way decreased. Full often have we exclaimed against this sad blot in our maritime affairs, and seeing how unequal are the attempts to reduce it on the part of the government, we have recourse to the lamentable conclusion that what can't be cured must be endured, until some more effectual method than those in force be applied. Meanwhile it is highly gratifying to find the perpetual evil lessened by the valuable institution to which we have alluded. And as a sample of the service done to the country by this body of her philanthropic sons, and a recognition of our own former labours in bringing it before the world, we reproduce the wreck-chart of 1860, published by them, and the statistics concerning it, while we are happy to say

that our friends of the Nautical Club do their part in making known the monthly current proceedings of the society within the range of our circulation.—Ed.]

For the past nine years we have periodically called public attention to the Annual Official Register of Shipwrecks on the Coast and in the Seas of the United Kingdom, presented by the Board of Trade to Parliament. It is hardly possible to overrate the importance of this document, for it details, with great accuracy, an average annual loss of 800 lives, and the destruction of about £1,500,000 of property yearly, from these lamentable disasters.

The past year will long be remembered for its stormy character, which penetrated far into the summer, for between the latter end of May and the beginning of June, upwards of 250 shipwrecks occurred.

As might have been expected from the continued succession of bad weather, the number of shipwrecks during the whole year was unusually large, giving a total loss of 1,379. Whilst, however, wrecks and strandings have increased, collisions have happily decreased, being 298 against 349 in 1859; but the whole number of casualties of all kinds in 1860 is 146 above the annual average for the past six years. On the other hand it is satisfactory to find that although the number of wrecks and strandings has been greater than usual, the loss of life has been considerably less, being 264 under the annual average of the past nine years. The total loss of life from the 1,379 shipwrecks during the year was 536, whilst 2,152 persons were fortunately saved by life-boats, the rocket and mortar apparatus, shore boats, and other means—a most gratifying and encouraging result, not only to the poor people themselves thus snatched from a premature death, but also to those who have toiled hard for many years past in organising and completing the means of saving life from shipwreck on our coasts.

With respect to the important services thus performed, there is a terrible sameness in their general character every year, though the details are ever new and ever interesting. It is the same story in one sense, but the several parts of which are infinitely varied. It is always a “brave ship” in distress, always the “winds and the seas roaring,” always some “poor souls” who are in the direst extremity of danger. Happily, too, through the instrumentality of the National Life-boat Institution and other bodies, it is nearly always the same story on the humane side. The life-boat is always ready, and a brave crew is ever at hand to man her.

The great and unprecedented loss of life in 1859 was mainly attributable to the destruction of two or three large passenger-ships. It will be remembered that 870 lives were lost in two great calamitous disasters alone, viz., the wrecks of the *Royal Charter*, on the Anglesey coast, and the *Pomona*, on the Blackwater Bank, on the Irish coast.

The *Register* furnishes, as usual, some curious facts relative to the class of ships that are inevitably wrecked when overtaken by a gale of wind. Of the 2,795 vessels wrecked on our coasts during the past

two years, 1,504, or more than half, were colliers, and of that class; and 1,291 were timber laden, passenger-ships, and vessels in ballast.

Of these our old friends the schooners hold as usual their pre-eminence for wrecking, 912 of them having during the same period gone to pieces. Next to the schooners come the brigs, 644 of which have in the same time met a similar fate. We find that of the 1,379 vessels wrecked last year, 554 were commanded by masters who were *not* required to have certificates of competency.

The annexed table shows that the classes of ships to which casualties most frequently occur are those between 50 and 300 tons burthen, which are usually employed in carrying coal, coke, ores, and stone.

Vessels under 50 tons . . . . .	284
51 and under 100 " . . . . .	393
101 " 300 " . . . . .	557
301 " 600 " . . . . .	105
601 " 900 " . . . . .	25
901 " 1,200 " . . . . .	9
1,200 and upwards . . . . .	6
Total . . . . .	1,379

The direction of the wind which proved most destructive to vessels wrecked on our coasts last year is also given. 111 vessels were wrecked during the prevalence of the wind from S.W.; 128 from W.N.W.; and 104 from N.W. 8 vessels were wrecked during absolutely *calm weather*; 151 in a fresh breeze; 168 in a whole gale; 101 in a storm; and 139 in a hurricane.

We find that 21 wrecks took place from not heaving the lead; 2 from intemperance; 35 from general negligence and want of caution; 39 foundered from unseaworthiness; and 5 from defective compasses.

Some curious facts are given in the *Register* regarding the ages of the ships. It appears that when they should be most vigorous, they are most feeble. Thus we find that during the past three years 377 vessels under three years old were wrecked; and 472 between the ages of three and seven years; whilst 644 of them perished between the ages of fifteen and twenty.

The accompanying Wreck Chart shows clearly the site of each of the casualties from shipwrecks on our coasts during the year 1860. Who can behold such a picture of the loss of hundreds of lives without contributing, as far as his means will allow him, to the mitigation of so much human suffering!

The estimated loss of property last year, as reported by the officers of some of the ships at the time of the several casualties, is given. It is, however, absolutely impossible to ascertain correctly the loss of property from all the disasters that annually occur on our coasts. The destruction of fishing-boats, such as was witnessed lately at Yarmouth and Filey, is not referred to in the *Register*.

We believe that this lamentable state of things, by which a great loss of life and an immense destruction of property take place every year, cannot be remedied until all vessels are subjected to a rigid in-

spection before they put out to sea, in order that it may be accurately ascertained whether they are well found and provided with life-boats and with such a proper and suitable equipment as will enable them to combat successfully with the elements.

We cannot help laying great stress on this point, because the loss of life from shipwrecks on the *coasts* alone of the British Isles within the last eleven years is really frightful to contemplate: it amounted to 6,883. The districts where this immense sacrifice of human life took place—inflicted, we fear, not solely by the visitation of God, but in a great degree through the obstinacy and perverseness of man—are as follows:—

Farn Islands to Flamborough Head . . . . .	523
Flamborough Head to the North Foreland . . . . .	957
North Foreland to St. Catherine Point . . . . .	465
St. Catherine Point to Start Point . . . . .	81
Start Point to the Land's End . . . . .	445
Land's End to Hartland Point, including Scilly . . . . .	330
Hartland Point to St. David Head . . . . .	440
St. David Head and Carnsore Point to Lambay Island and Skerries, Anglesey . . . . .	879
Skerries and Lambay to Fair Head and Mull of Cantire . . . . .	1,453
Cape Wrath to Buchan Ness . . . . .	197
Buchan Ness to Farn Islands . . . . .	271
All other parts of the coast . . . . .	842
Total lives lost . . . . .	6,883

Between the Farn Islands and the North Foreland there are sixty-two lifeboat establishments, and as many life-saving rocket and mortar stations. Here every winter some of the most daring and persevering life-boat services are performed. The poor sufferers are often snatched from the very jaws of death; and, on the lowest calculation, to this large number of 1,480 persons who have perished in this district, one-third more would have swelled the death-roll had it not been for the services of the life-boats and the life-saving apparatus.

From the above account of the loss of life on the coasts it is seen that the most serious wrecks, resulting in the greatest loss of life, do not happen on the N.E. coast of England, as is generally supposed, but on those parts of our coasts most frequented by large foreign ships. A few months ago a large American ship, the *Danube*, was coming up the Irish Channel. Mistaking her position, she found herself on some rocks in Cardigan Bay. A fearful storm was raging at the time. Her signals of distress were observed late in the evening. The Portmadoc life-boat, belonging to the National Life-boat Institution, was immediately launched to the rescue of the crew, who had taken to their boats. After a night of great hardship and ceaseless toil, the life-boat brought on shore seventeen poor creatures, who were more dead than alive. Similar services are constantly being rendered by the Institution's life-boats to foreign ships' crews, and frequently to those belonging to the United States of America.

During the past nine years the total number of all casualties on the

coasts and in the seas of the British Isles are thus given:—in 1852, there were 1,115; in 1853, 832; in 1854, 987; in 1855, 1,141; in 1856, 1,153; in 1857, 1,143; in 1858, 1,170; in 1859, 1,416; and in 1860, 1,379: making a total of 10,336 vessels lost in nine years, or 1 lost in every 210 British ships, and 1 in every 232 foreign vessels, and giving an average annual loss of 1,148 vessels on the coasts and in the seas of the United Kingdom.

We regret to find that the sacrifice of life from this great multitude of shipwrecks amounted to 7,201, or an average of 800 lives that meet with a watery grave from shipwreck every year on the coasts and in the seas of the British Isles.

In our narrow seas it is only natural that a large number of collisions should constantly take place. The number of British and foreign vessels entering British ports, including repeated voyages, every year amounts to upwards of 204,945, representing a tonnage of 29,176,196. Vessels clearing outwards under the same circumstances every year number 209,402, having a tonnage burden of 29,530,906. We must, therefore, be prepared for a considerable number of collisions, although happily it is not increasing. During the past six years they have amounted to 1,788, giving an annual average of nearly 300. No calamity is greater than that of a collision at sea during a dark, stormy night. It is often instantaneous in its destructive effects; and in less than ten minutes afterwards it frequently happens that not a vestige of one of the ships is to be seen, a large number of persons frequently sinking with her.

Having dwelt on the dark side of our picture so long, we must now briefly turn to the brighter and more encouraging side of it.

It appears that during the past five years the number of lives saved on the coast by life-boats, life-saving apparatus, shore and ships' boats, and other means, amounts to 11,496. We cannot refrain here from giving a few examples of noble life-boat services:—

On the 10th of February last, in the fearful gale from the East which caused such destruction to shipping and terrible loss of life on our East coast, the brig *Providence*, of Shields, coal laden, was driven on the Long Scarr Rocks, between the mouth of the Tees and Hartlepool. The Seaton Carew life-boat, belonging to the National Life-boat Institution, was quickly launched, and proceeding to her assistance through a high surf, took off her crew, eight in number, and landed them in safety. She had scarcely done so when she was again called to the aid of the brig *Mayflower*, of Newcastle, also coal laden, which had gone ashore on the East Gaze Sand, off the Tees mouth. The life-boat also took off her crew of eight men, and safely landed them. On the previous day this boat had, in conjunction with the West Hartlepool life-boat, endeavoured to save the crews of the brig *Alliance*, of Guernsey, and schooner *Warnsbeck*, of Shields, which were wrecked on the Long Scarr Rocks, but although every effort was made, they were unsuccessful, owing to the difficult position into which the vessels had driven on these dangerous rocks. As it was, the boat was herself injured and partially disabled thereby. "I wish

you had been here on that disastrous Saturday and Sunday (9th and 10th February)," writes the Honorary Secretary, the Rev. J. Lawson, of the Seaton Carew Branch of the National Life-boat Institution, "I am sure you would have been gratified to see the gallant way in which our crew worked, though composed, as you know, chiefly of landsmen. They were going from 9h. a.m. on Saturday until 11h. a.m. on Sunday, without rest, and not only attending to our own life-boat, but helping to man the West Hartlepool boat when short of hands."

Again, on the 1st January, five men were saved on the Doomed Bar Bank, Padstow, from the brigantine *Nugget*, of Bideford. From January 1st to the 6th, thirty-two men were saved by the Institution's boats, and one vessel was brought safely into harbour. But sometimes darkness is added to the perils which the life-boat men encounter in their exertions on the stormy deep. At Lyme Regis, for instance, the word was given during one of the winter nights that a vessel was in the offing in distress. It was "pitchy dark." A strong gale was blowing and a heavy surf beating on the shore, but the life-boat men felt that duty called, and they did not hesitate. They went to sea as if it were to their fire-sides they were going; and they were successful in saving a ship's crew. The brief narrative of this adventure tells us that very few on shore believed the life-boat "would ever return," the night was so awful; "it was sufficient to appal any one entering the life-boat."

The payments to the crews of the life-boats are placed in the Annual Report of the Life-boat Institution, opposite the services thus rendered. For instance, the sixteen men belonging to the brigs *Providence* and *Mayflower*, mentioned above, were saved for the sum of £25. At Portmadoc, in a heavy gale with a terrific surf, seventeen men were saved for £14. This is about 17s. a head, and flesh and blood is certainly cheap at that rate. The Carnsore life-boat saved nineteen persons, at a cost of £22 14s. Suppose the average expense of saving a man by means of the life-boat is a pound, this is the way to put it before the public,—Will you give 20s. a year to save a fellow-creature from a horrible death? Perhaps you save more than one by that gift. You may save a family from an irreparable loss, you may restore a darling boy to his widowed mother, a father to his young and helpless children. Here is a strong claim upon the national benevolence, and fortunately it is becoming day by day more openly acknowledged, just as the merits of the National Lifeboat Institution become more widely known.

Public and private gratitude calls for the support of this institution, and some instances have been recorded which show how beautifully gratitude works, and how sweetly its work is repaid. The Carnsore life-boat, mentioned above as saving nineteen people from shipwreck, was the "thank-offering" of a lady who was saved from drowning. One sees a striking appropriateness in that thank-offering, as an example of the ruling which brings good out of evil. There is another instance recorded of a similar character. Two ladies, in memory of



a departed sister, place a life-boat at Llandudno, in North Wales, and call it the *Sisters' Memorial*. The memory of departed worth, or departed affection, could not be preserved in a more fitting manner. The memorial is all goodness and all mercy, and has as little of the taint of the world in it as anything else that could be mentioned. It is to keep these benevolences in active operation—to endow them for ever, as it were—that the Life-boat Institution appeals to the public. It is an appeal that will stand any test—a cause that all can assist in—and a cause that only requires to be known to insure a sufficiency of help to keep up its large life-saving fleet of 115 life-boats, and gradually to increase their number.—*The Life-Boat*.

---

#### ON THE OFFICERING OF THE ROYAL NAVY AND MERCHANT SERVICE.

[The following claims careful attention as containing the first outline of the means of practically connecting the *Mercantile Marine* with the *Royal Navy* of England.—ED.]

Mr. Editor,—After carefully referring to the *Nautical Magazine* for 1858, and reading over Captain Sheringham's valuable suggestions therein contained, I cannot find that there is any similarity between the plans for manning the fleet which he there proposes and those which I had the honour to submit to the profession in your number for last month. Had I been able to discover any resemblance I should have considered myself fortunate in following so able a leader. But as that is not the case, I must hope that Captain Sheringham will not refuse his approval under the changed circumstances to the means which I have proposed for accomplishing our common object—the good, first, of our country, and, secondly, of our noble profession as its best defence.

I have now to speak of another subject intimately connected with the former,—the best means of providing good officers for both navy and commercial marine at the least expense to the country, and also in such a mode as to meet the wishes of the mercantile officers for a closer connection with the Royal Navy.

In the French navy a system has for many years been followed which requires that all persons aspiring to command merchant ships calculated for long voyages, *i.e.*, of about 400 tons and upwards, shall have served a certain number of years in the Imperial Navy. They are called “*Capitaines au Long Cours*,” enter as “*Aspirants de Seconde Class*,” and serve, I believe, about six years in that capacity and as “*Enseigne*.” They then receive certificates of competency, and, as I can vouch, generally do credit in their after life to the discipline and training thus obtained.

I would propose, therefore, that some analogous system should be adopted in this country.

An Act of Parliament would be required—of course not retrospective, and therefore not interfering with any “vested interests,”—providing that in future, *i.e.*, after the expiration of a certain number of years, no young man should be held competent to be brought forward for the command of ships over a certain tonnage unless he had served four years in the navy. To do this he must enter the navy at the age of thirteen, and leave it at seventeen to join the merchant service as a mate. The advantage of this to the boy is that he obtains almost gratis a good education in his profession, whether as regards navigation, seamanship, discipline, or gunnery and steam-machinery,—one which will enable him to take his place again in the navy, should his services be required at a later period by the state, during war, with credit to himself and his profession. The advantage to the father is that instead of sending a son into the merchant ship as a pseudo midshipman, paying a heavy premium for doing so, in a situation where, in many cases, if the boy learns seamanship, he learns little else that is good, and far too much that is evil,—where his education is neglected, his manners and morals alike ruined;—instead of all this, he is sent where a careful education, strict discipline, and gentlemanlike association will seldom fail to produce their legitimate effect on character and conduct in after life. Add to this that the premium which he would have given in the merchant ship, of about £160, at a single payment, will in this case be made to the boy himself in a yearly allowance of £40 for four years,—a sum which, with the pay given to naval cadets and midshipmen in the navy, is amply sufficient for their proper maintenance. So much for the advantages derivable to the individuals most concerned. We will now see what advantages are obtained by the state and the commercial marine.

For a very long period difficulties have been felt as regards the entry and advancement of officers in the navy, and this has in a great measure arisen from the fact that for one lieutenant about ten sub-lieutenants and midshipmen are required; for one commander or captain about four lieutenants. But if the entry of naval cadets be so increased as to give this proportion of midshipmen and sub-lieutenants, it soon happens that sufficient advancement to the higher ranks cannot be provided for them, and we have—what I well remember—so-called “young gentlemen” in the position of sub-lieutenants or mates, as they were then entitled, forty years of age, and having passed their examinations for the rank of lieutenant, ten, fifteen, or twenty years, yet still without promotion. How was this remedied? Great efforts were made, and the upper lists were remodelled: further entries were closely restricted. Thus, gradually, and at considerable expense to the state—I fear at some injustice to individuals,—the lieutenant’s list has been cleared.

But in the meanwhile, there having been so few fresh entries, midshipmen first, then sub-lieutenants, and now young lieutenants, or, indeed, lieutenants of *any* age, became scarce. So the door must be

opened wide again, and a fresh influx will in a few years bring back the former state of things. Is this to go on for ever? Are we to oscillate constantly thus between a crammed navy list of unemployed grumblers, and a navy crippled by scantily filled gunrooms. It should not be so, and I hope to show need not be so, if these suggestions be listened to with approval.

The boy who, according to them, will have entered at the age of thirteen, will give to the state for four years, in return for his education, those services which, however light, are yet indispensable to the system of our navy, without afterwards burdening the nation by filling up the pages of a long list of unemployed lieutenants.

Some may object that there would thus be introduced two classes of young officers, continuous and non-continuous servants of the state. No doubt: but this does not interfere with the working of the system in the French navy, nor indeed in our own, where midshipmen and master's-assistants have long messed and served harmoniously together,—the master's-assistants and second-masters—whose parents, in many cases, are not so well able to make the allowance before spoken of—receiving, from their entry, a larger rate of pay than the corresponding ranks of midshipmen and sub-lieutenants. This is, I admit, not exactly a parallel case; but, taking into consideration the position and emoluments of captains of merchant ships at the present time, to which these young men would in time be the only legitimate aspirants,—considering, also, the advantages which I have before spoken of, which would operate as a great inducement for men of good social position and education to send their sons into these situations,—I do not apprehend any difficulty on the score of jealousies between boys or young men so brought together. On the contrary, I believe that in after life a feeling would arise most beneficial to the cordiality which should exist between the two services. Old mess-mates—firm friends in youth—would often meet with pleasure in far-away lands, the one still an officer in the navy, the other in command of a fine merchant vessel, to compare notes and spin yarns over the social board. Having been brought up together and in the same service, they would, I am sure, never cease to remember the seaman's adage—"A messmate before a shipmate, a shipmate before a stranger," &c., &c. And thus indeed the connection between the mercantile and royal navies may with advantage be drawn closer, for there will be no degradation on one side, no jealousy on the other, to embitter the intercourse or interfere with the employment of officers of the mercantile marine, when their services are needed, in the royal navy.

It remains that we consider in what way the merchant service would be benefited by the proposed change, and what would be its immediate working. Supposing the law passed, the navy would at once receive an accession to its younger members sufficient to fill up all the establishments of ships in commission, or even to increase that establishment, which most officers will admit is very desirable in the

smaller vessels, from frigates downwards. No other change would take place for four years. At the end of that time the co-operation of the commercial world would be needful, in order that the boys might begin to be entered as second-mates in merchantmen, where their value would soon be appreciated and they would learn the cargo work, which would have been deficient in their teaching in a man-of-war. There would be no hardship in thus separating them from the service in which they had been brought up, because they entered with that idea and on those conditions, and perhaps the prospect of much better emolument than they could hope for in the navy would be sufficient to outweigh any disappointment which might be felt in some instances. It might perhaps, too, be advisable that while in the navy their rate of pay should be rather that of the master's-assistant than the midshipman; or even that they should continue, while in the rank of mates of merchantmen to receive something annually from the state.

But all these are details easily worked out if the main features of the scheme were approved, and I believe that in no long time the value of officers so educated would be sufficiently evident to make the fact a sure passport to the favour of their employers. For we need scarcely doubt that the disgraceful scenes which now so constantly occupy our police-courts—commencing with brutality and not unfrequently ending in murder—would, if not entirely cease, yet much less frequently occur to show the defective education and want of self-command which are now lamentably prominent as characteristic of many a British as well as American shipmaster. Drunkenness, too, a vice which will always be thought little of by boys brought up in immediate contact with seamen without much restraint, as on board a merchant ship, is now rapidly disappearing from the navy, as regards its officers, because in England gentlemen no longer indulge nearly so much in the so-called pleasures of the bottle.

I trust that eventually drunkenness will cease to be a characteristic of the British seaman; for virtues, like vices, may be propagated downwards: but at present it is unwise for a father who expects his boy to be as much convinced of the value of sobriety as he is himself, to send him as a midshipman in a merchant ship, where the seamen think it necessary to be drunk as often as practicable, and laugh at a youngster thrown among them if he does not "take his grog like a man."

I should be unjust to many most excellent men and good officers did I omit to state clearly that what I have said of the discipline of the merchant service by no means applies universally. In many of our great ocean steamers and clipper ships the discipline scarcely yields to that of my own profession. But my object is to show that there is prospective benefit to all parties in the course I recommend; that many evils now and for a long time past most severely felt, whether by the state or individuals, may thus find their remedy, and to induce those who aim at the removal of these evils to see that they

may find a common ground on which to work, which will yield equal benefits to all parties interested in the question.

An old and most true axiom says that "He only can ever be fit to command who has first learnt to obey;" and discipline, above all things, can only be enforced by one who has the power of commanding himself. These qualities are never obtained in any school but a strict one; for human nature does never of itself, without the aid of moral restraint, based on religious feeling, abstain from evil or seek any other than sensual good. Self-interest, the strongest lever with which the human mind can be moved—the mainspring by which all the wheels of society are set in action, is yet too weak always to make us seek heaven or avoid hell, if the fear of present restraint be not added to the hope of future reward.

I say this because it has been too much the fashion of late years to decry all coercion, to trust to the "perfectibility of human nature;" and in carrying out this theory the discipline even of the navy has received a severe shock, and one the full effects of which we shall never learn till we are once more engaged in war. That such a period may long be deferred I pray as fervently as any man. But sure I am that if such a calamity do occur, neither armour nor Armstrongs will compensate for the difference, which is daily becoming more marked, between the *sailor* of the past and the *sailor* of the present.

J. H. SELWYN, *Captain, R.N.*

*To the Editor of the Nautical Magazine.*

---

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XXIV.—  
*The Chairman's Address—General Views—The Sulina Works—Light Dues in Turkish Waters—Reception of the Italian Chief Cialdini on board H.M.S. "Marlborough"—Madagascar and its Rulers—The Yangtse and Nile Inundations—Training Ships and the Channel Fleet—The "Great Eastern" and her Troubles—The Rudder at Fault—The Japan Troubles—Life-Boat Services—Lungley's Non-Foundering Ship, the "Briton," &c., &c.*

It is the fashion among us, observed the Chairman, in this part of the world, to consider the present as the dead time of the year, when the sports of the country are resorted to in order to make up for the dearth of all events of interest. But human events, like the seasons, seem to have their disregard for all human laws, and to flow fast or slow according to circumstances. Happily, at home we are mere spectators of the world's proceedings, not unconcerned—that could never be of us in the family of nations. We see in the West the war of Freedom *versus* Slavery as far from its termination as ever, and in-

creasing in bitterness. We see preparations on an important scale for another in Mexico to be a kind of lesson wanted there most assuredly, but one that is likely to lead to grave considerations. It is stated that a convention between England, France, and Spain is likely to be concluded, by which the expedition to be despatched to Mexico will consist of three squadrons, and that Spain and France will despatch a military force, consisting of 6,000 men, of which 5,000 will be contributed by the former and 1,000 by the latter. In the East, we are startled with painful events at Japan; events that deeply concern us with a people well known for their readiness to proceed to extremities. In China there seems to be more confusion and distress than trade. In New Zealand, by the last accounts, there were signs of the adjustment of difficulties with the natives. And in India, happily, there was the same tendency to progress.

But he would leave this political glance and turn to matters that more nearly concerned themselves. And, in the way of progress, he was happy to say that the engineering works of Mr. Hartley, our talented countryman, at the Sulina mouth of the Danube, had been most successfully concluded, and their conclusion celebrated, too, on the 3rd of September last by a fête in true English style. Some telling speeches on the occasion were followed by a present from the Sultan, conferring on Mr. Hartley the order of the Medjidie.

He wished that he could compliment the Sultan's officers in respect of the laws for the collection of light dues in the Dardanelles and Bosphorus. Light dues should certainly be paid; but there were serious doubts about the utility of the numerous lights that had been established there, inasmuch as that our ships were not permitted to run by night, and hence the question naturally arose of what use were the lights? Moreover, compelling vessels to anchor at places for the payment of them seemed as if it were intended to throw difficulties in the way of navigation, causing loss of time, and thence of course much expence. The Sultan, it was well known, was a reformer; and it is to be hoped that when this *glaring* absurdity is explained to him it will be remedied.

In a recent account from Naples he had been much gratified at seeing General Cialdini the honoured guest of their own Commander-in-Chief, Vice-Admiral Martin. Our countrymen are not given to doing things by halves, much less our seamen. On this occasion all military honours were rendered to the representative of Italy. On board the Admiral's ship the troops were drawn up on the quarter-deck, the seamen manned the yards, and the bands played the national hymn of King Victor Emmanuel. A salute was fired at the moment General Cialdini went on board. The whole staff of the fleet gave him the most flattering reception. In the evening, after dinner, Cialdini was accompanied on shore by all the boats of the fleet, with Bengal fires. The spectacle was magnificent, as it should be, for it was the welcoming by England of the freedom of Italians from the thralldom of tyranny.

And this reminded him of another event by which an island of no

small consideration in the East had been relieved of a tyrannical ruler. He alluded to Madagascar, whose Queen, Ranavolo, had died from the effects of a cancerous disease. The reins of government were loosened by this event, and a rapid revolution took place, by which the Queen's son was proclaimed King by the title of Rabout Radama the First. He alluded to this on account of the consequences, which were that the Prince being a liberal, the edicts of the Queen forbidding foreigners to enter the island were cancelled, and Madagascar, he hoped, might now be said to have fairly commenced the work of progress, adding, probably, another source of remunerating trade to the enterprise of our merchants.

It was somewhat remarkable that the extensive inundation of the country adjacent to the great river of China, the Yangtse, by the extraordinary manner in which its waters had risen, should have been followed by a similar rising of the Nile; which, by accounts received from Egypt, had done considerable damage to the grain crops, and, unfortunately those of oil and sugar had also suffered. The cotton had shared the evil, too, at a time when we could ill spare it. This extraordinary inundation has destroyed more than fifty villages; part of the railroad is torn up; the telegraph line between Alexandria and Corfu is broken; the palace of Ismail Pacha and another, belonging to Mustapha Pacha, are destroyed.

To refer to home matters, there were one or two which would meet the attention of the Club, and he should be glad to hear the opinions on them. It was with pleasure he observed the system of training-ships becoming popular, and he hoped speedily to see the Thames as successful as the Mersey had undoubtedly been in that institution, the *Conway*, which might be looked on as the pattern establishment, and which had already outgrown its original scale.

There should be more of such establishments as these. Why should not Glasgow or Greenock, Hull, Newcastle, and Leith have their training-ships, commencing on a small scale. Happily, the ships of our Royal Navy were becoming known in some of those places,—the shores of our island home were visited by our men of war now, and many a lad who would hereafter tread the quarter-deck of our military or mercantile navy might never have done so with honour to his country but for the exciting and, he would add, enticing appearance of those ships. He hoped the visit of last summer was but the first of an established annual custom. The repetition of it would not only be beneficial in the way to which he had alluded;—it would be gratifying to the people to see that we had a fleet at home as well as abroad, and it would benefit officers and men in the acquaintance they would obtain of the navigation of narrow seas, as well as with those gales which occasionally visit our shores. That, for instance, which our fleet had encountered to the West of Ireland had been a lesson of the utmost importance in affording opportunities for the display of seamanship, which the experienced would practise and the young and inexperienced would benefit by. There had been some unworthy ob-

servations about expense, but persons who made them should remember that experience must be bought, and that experience in seamanship and the management of our fleets in bad weather was adding strength to the right arm of this country,—a quality, the absence of which when it was required they would be the first to complain about. He hoped that he should never see this country without a fleet of ships of war at home as well as abroad. We should well deserve to lose our high maritime prestige if we forsook our own shores,—if we lost sight of their exposed condition in our desire to make ourselves respected abroad or for the sake of that dangerous bugbear that is sometimes conveniently found in the word economy!

This brings me to another subject, continued the Chairman. Among the topics of the day, the interest excited by the *Great Eastern* has suggested the idea not only that the whole question of the great ship as a mercantile speculation had proved to be fallacious, but also the soundness of the principle generally of increasing the proportions of a ship to the enormous extent that had been done in her. The experiment which had already been made he should have thought had been solved in the gales to which he had alluded, and he had quietly come to the conclusion that when her projector determined on such a proceeding as he had done, of increasing so enormously the proportions of the ship, that he had quite forgotten that the work which would be likely in bad weather to fall on the rudder would be quite beyond its powers. Indeed, to his mind, the control of the rudder over the great body of the ship seemed to resolve itself into the question of the strength on board to direct it and the strength of the after frame of the ship to withstand the shocks of the sea that would be continually assailing it. It was all very well in smooth water, where all was easy, yielding, and “good natured,” but in angry times of wind and sea matters were very different. That ship, in the opinions of seamen, had passed the proportions of control, and indeed he thought even that our ships of war had now arrived at those beyond which it would be dangerous to proceed unless we intended not to profit by the experiment which had been tried in the *Great Eastern*. He would, however, leave this subject to the able friends he saw around him.

The conversation at once turned on the big ship; when some free remarks were passed on civil engineer ship-builders, the absence of all affinity between the stupendous structures of engineers' works on *terra firma* (which was held by them as a *sine qua non*) and the imitations of naval architects on a magnified scale by landmen, without that experience of the effects of a heavy sea on a ship in a gale of wind which seamen only knew (and some seamen only);—in the course of which Redmond made some appropriate remarks, which he concluded with Longfellow's lines—

“Would'st thou, so the helmsman answered,  
Learn the secret of the sea;  
Only those who brave its dangers  
Comprehend its mystery!”



His nautical experience had taught him that when ship-builders or engineers exaggerated models into gigantic dimensions, they had better first pass a few years of practical observation and study of forces on that element for which their work was destined, and they would soon find out that at sea, as well as on shore, the works of man would be overcome by the works of nature, and that the law applied there as well as on shore "thus far shalt thou go and no further."

On this subject the clear remarks of Albert were easily followed. He observed—The uncertainty of all human affairs is exemplified every day, and no less so at sea than on shore. The projectors of the mammoth ship—the disasters of which we have all heard of,—as the production of human hands, could scarcely have expected that their work would be exempt from them. Indeed, of their very versatile nature that vessel has given an ample demonstration. To confine ourselves to her late proceedings,—it was the other day only that she made a prosperous voyage to Quebec, but she attempted another to New York afterwards, and the result is she is lying high and dry at Milford. He was not for disparaging the great ship, although he might look on her, either in all her pride and power afloat or in her present distressed condition, as the verification of a great mistake; and he fully agreed in the observations concerning her which had been made by their worthy Chairman. The disaster which has brought her into her present condition has been thus briefly summed up. She was on her voyage to America, with about four hundred passengers, when, some 280 miles West of Cape Clear, she met a heavy gale and became unmanageable: her damages he would allude to presently. But in consequence of being unmanageable—that is, of being her own master,—she lay for about two days in the most precarious condition, and owed her safety to her strength. Confusion prevailed on board, produced by things fetching way, and a state of things continued not easy to be described. At length the weather moderates and the vessel reaches Cork, from whence she returns to Milford, the passengers expressing themselves thus before leaving her:—

"That we feel it to be our imperative duty to state that the *Great Eastern* was sent to sea thoroughly unprepared to face the storms which every one must expect to meet in crossing the Atlantic; and that, if it had not been for the extraordinary strength of the hull, and the skill which was manifested in the construction of the vessel and her engines, in all human probability every soul on board would have perished. We call particular attention to the ballasting of the *Great Eastern*, the state of her paddle-wheels, the position of the boats, the insecure and most perilous character of her internal fittings, and the careless way in which she was stowed, owing to which carelessness, in fact, a large portion of our luggage has been most recklessly and utterly destroyed."

This was no complimentary legacy to leave behind them, smarting, as they must have been, under not only the miseries they had gone through, but the disappointment of the same short voyage which the ship had made before. There was, however, more than this,—more

than was alluded to by the passengers. Some bad weather encountered in her former voyage had shown those on board that, large and powerful as she might be, she was not so steady in a rough sea as she was in a smooth one; but the hint she threw out then was lost, and the character of her internal fittings was beneath notice,—perhaps the lashing of cabin furniture, to prevent it from fetching way and becoming troublesome, was so likewise. However that may be, here is a manifest of what is required to set her to rights again. A meeting of the principal shareholders has been held, at which it appears those requirements are thus set forth:—

“The chairman stated that notwithstanding the severe trial to which the ship had been exposed, the result of careful surveys was perfectly satisfactory in respect of the hull and machinery; that, excepting the damage sustained by the rudder, the loss of rudder-post and paddle-wheels, and the damage to furniture and other articles, the ship remained in a perfect state.”

He would admit this to be a perfectly satisfactory report as regards the hull and machinery, and yet this carried small hope of profit if, with all their acknowledged strength, the ship was to be unavailable, lying at the mercy of the sea. But why was that? Was not the cause of it in the loss of the rudder and its support?

It had been said that the rudder was too large—that half its breadth would have been sufficient; and yet if this, large as it might be, could not command the ship, how could one half its size do so? To use a familiar argument, without going into the science of hydrodynamics, let us consider the rudder of a ship as it is intended to guide the ship, viz., in the same way as the fish uses its tail to guide its movements. In doing this the fish necessarily employs a good deal of its body before the tail, which of course assists it, and this may be one-fourth, or perhaps one-sixth of its whole length, including the tail. The breadth of the ship's rudder, in this case twelve feet, which is all she can use, bears a miserable proportion to her length of six hundred feet. But, even admitting that the breadth of a ship's rudder generally bears but a small proportion to her actual length, it has far more chance of good effect in ships of a moderate size than when they assume the monstrous length of the *Great Eastern*; for as that length increases there is the length and height also of the ship above water in addition for the wind and sea to act on, all united against the unfortunate rudder, from which effects the fish is entirely free. His argument, in fact, amounted to this, that the more the body of the ship is increased the more the guiding power of the rudder becomes diminished, for the rudder cannot be increased so as to bear the same proportion in its dimensions to those of the hull in the increased body as it did in the smaller one. It may have its proper control in smooth water, yet even that would be less. But when the wind becomes strong and the sea running high, forces come into play in which the rudder would very soon betray its weakness, and this, he apprehended, had been exemplified in the case of the *Great Eastern*—a case not anticipated by civil engineer naval architects.

Admitting the qualifications of seamanship in crews to be the same in the larger as in the smaller vessel, he looked on this as the cause of the evil, and he quite agreed with the observation which he had met with in one of our daily prints that—"The reason why a little cutter can double Cape Horn, and the tiny *Hotham* steamer can sail round Australia, when a *Great Eastern* is almost wrecked on the coast of Ireland, is that the twenty ton cutter and the ten ton steamer *can be steered*. The biggest ship that ever was or ever will be built is but a wisp of straw in the hollow of the wind's hand and the grasp of the angry sea. Wind and sea can be outmanœuvred by skill, but never conquered by brute masses of wood and iron."

Rodmond expressed his full concurrence in the observations of his friend Albert. He might be permitted to add to them his opinion that when projectors built ships so long as to include the crests of several waves in a heavy gale at sea, as they do not condescend to obey the lift of the wave by rising to it, as ordinary ships do, they must expect the wave to rise on them; and this, he considered, was the principal cause of the paddles and boats being washed away, and especially of the injury done to the rudder. It would appear that the controlling power over the rudder was sufficient to keep it under command,—at least it might be so inferred from the injury it had received; and had that power been greater it might have occasioned the loss of the rudder and its post entirely.

As the affair of Yedo is one of historical importance in our transactions with Japan, the Secretary concluded to preserve it entire among their papers:—

On the 4th July, the whole party, excepting Mr. de Wit (the Netherlands Consul-General), proceeded to Yedo, being met half way, at a place called Kawasaki, by the whole staff of the Legation—Mr. Oliphant (newly arrived Secretary of Legation), Mr. Russell (a nephew of the Secretary for Foreign Affairs), also just arrived in Japan, and other gentlemen. An easy occasion, had it been sought, to dispose at one coup of Ministers, Consuls, and Attachés.

They were allowed, however, to reach Yedo in safety, and to secure an instalment of that rest which they doubtless needed after three and thirty consecutive days' journeying. But "one swallow does not make a spring," and one night's slumber is not sufficient to recruit a weary frame. Soon after dinner, I am told, on the evening of the 5th, the chief rose from the table to retire, saying that the day just closing had been the most fatiguing of all (owing to the multitudinous affairs to be attended to), and he had so many hours of sleep to recover. The rest of the company also retired. They, however, shortly assembled again in the garden to admire the comet, which dispersing clouds exposed to view. Most fortunate was this also, for the dominion of sleep was thus postponed a little longer, tending, with other circumstances, to the preservation of their lives. Whilst they were so engaged, a murderous band of ruffians or heroes (in whichever light they may be viewed), was approaching its unconscious victims.

In less than an hour thereafter those who were awake were disturbed by sounds as of wrangling and conflict, which mingled in the dreams of those who as yet but lightly slept. But they were sounds which did not admit of continued slumber—sounds whose terrific significance could not but open the drowsiest eyes.

The Legation is a straggling sort of bungalow, open to the garden at the back, and having passages leading through from stables, kitchens, and in fact any direction. At the front there is a large portico door, a feature of all temple architecture, but except to those who come in that particular direction no obstacle to free entrance or exit. A Japanese house consists of a roof supported upon beams and wooden posts, divided into rooms and passages by paper screens, which slide in grooves between the posts. The transverse beams are generally at a height of about 5ft. 6in. from the floor. Such a building is the temple at Yedo occupied by the British Legation. The minister's bedroom is at the rear corner looking out on the garden, and just beyond the dining and drawing rooms, which do so likewise. The other bedrooms are mostly on either side of a tortuous passage leading from the entrance door to the dining-room. Just beyond the entrance door is a chamber of the priests, opening by a screen into the hall or main passage. Here Mr. Morrison's Chinese servant was sleeping.

The noise which aroused the sleepers and awakened all to the impending peril was a determined effort to burst open the main door, upon which (as described) the blows fell like the discharge of musketry. A legion seemed to be at the work. I should think, if there was time for any sensation, those who appreciated the reality of the attack must have felt the cold hand of death—and such a death—upon them. Japanese assassins, reckless of their own lives, seldom leave their work unfinished, and here they were with clamour and yell within a few paces of their destined prey.

While yet the door stood fast, the Chinaman saw the screen of the priests' room slide open, and a man in complete armour with sword in hand come forward. He did not wait to see more, but with great presence of mind crept on (in the direction the assassin must proceed) to arouse his master. The man turning into a side room afforded him a few moments' start, which were invaluable. He handed sword and pistol to his master, who at the same moment heard Mr. Oliphant, in the passage, calling for assistance. Mr. Oliphant, it seems, occupied a more distant room, and on hearing the noise of what he thought was a brawl ran in the direction, armed only with a heavy hunting whip. In the passage he ran against the two foremost assailants, and must have then immediately received a wound (which is on the right shoulder). Taken in every way at a disadvantage—for, ignorant that an attack was being made, had he been armed and seen them approaching he would have known no reason for firing upon them until they had attacked him—he bravely kept them at bay with his heavy whip: they being protected by the darkness behind them, he exposed by the light of a lamp which they had not yet reached, for they extinguished every light as they approached.

Hearing the call of Mr. Oliphant, Mr. Morrison drew aside his screen and found himself beside the parties striking and cutting at each other—(Mr. Russell and Mr. Wergman were approaching, but quite unarmed). He fired at both the assailants—one being seen to fall back,\* but the other, protected by his armour, was unhurt, and succeeded in again wounding Mr. Oliphant on the left wrist, and Mr. Morrison on the head. Cuts on the posts and transverse beams of the passage showed marks of blows which had missed them, and the protection they had received from the smallness of the space. Sensible of having been wounded (independent of any pain, for in the excitement of conflict pain is not usually felt,) and knowing “out of court” the usual nature of a Japanese sword cut, the sensations of these gentlemen cannot have been agreeable.

The darkness, intensified by the flashes from the pistol, rendered it difficult for the assailed to see their enemies or the effect upon them; but it is certain that after the retaliation, blows intended to be avenging blows were struck, and the latter retreated by a side passage, leaving drops of blood and bloody finger marks upon their track. They kicked down a screen of the room from which they were fired on and in which there was a lamp burning, evidently to lighten their way down the passage, and passing another bedroom one of them must have entered it; a book on the table was cut half through, the mosquito curtains were cut across as with a razor, and a pine bedpost, two inches thick, was broken by a blow which cut an inch deep into it; the mattress was also thrust through in a most malicious manner. By this time, which must have passed quicker than the narration, the six occupants of the building were assembled in the verandah, beyond the drawing room, entirely ignorant of the numbers of their assailants or the direction in which they would come, anticipating only a final struggle and immediate slaughter. Of the six, one was completely disabled, and amongst the rest were only two revolvers and two or three swords, one a dress sword, not a bad weapon for a single encounter, but less serviceable against a rush of heavily armed foes. So with a revolver—when your antagonists emerge from shelter at three or four paces’ distance and do not hesitate to rush on, you are quick if you can give them a second shot, but you will be slain with three undischarged; in this condition, and without a thought of rescue, the windows of an adjoining room were heard to yield to the blows of violent assault, the glass crashed, the framework was smashed in, and then the angle of a passage alone separated the attacking and the attacked. The intervening room was well lighted, and the whole side opened on to the garden which was considered the best position for defence, as there would be space for fighting at close quarters, and from the darkness the assassins could be fired upon as they approached through the lighted room. But to the surprise of all they did not come, and silence soon ensued. The passage from the room into which they last penetrated led (unlighted) in one direction to the hall door

\* His body, shot through the breast, was afterwards found in the garden.

and out by the priests' room, and in the other into the dining room, by the lamps of which it was strongly lighted. It is difficult to suppose they missed their way in the choice between a dark and a light passage, yet they took the former. The inference is that they had in turn become assailed by the Japanese guards, and thought only of retreat; an inference not destroyed by the fact of their having knocked over furniture and inflicted some wild blows in the same and adjoining chamber in their route; but supported by the siege of the main door having been raised, the assailants failing to penetrate in that direction, they only succeeded in driving holes between the heavy cross beams. Here, too, they were probably dispersed by the somewhat tardy but nevertheless effective arrival of the Japanese soldiery. These now filled the grounds, to the number probably of two or three hundred, and with the exception of an occasional cry of "Look out, look out," when a fugitive Looning\* broke loose, there was no further sign of danger.

Two gentlemen of the Legation lived in a cottage in another part of the grounds, to inquire after whom messengers were sent as soon as possible. Some anxiety was felt at the non-return of these after unreasonable delay. At length it was ascertained that these gentlemen had not even been threatened, and were ignorant of the nature of the disturbance until after the arrival of the guards to protect them. Inquiries were also made with satisfactory result as to the safety of the American Legation. Probably the British envoy was the object of the attack, but that would aggravate rather than otherwise the fate of any falling within reach, and it would certainly be no consolation either to the sufferers or their friends; but doubtless, according to their degree, any member of the British Legation would have been a valued sacrifice. A second surprise (if allowed) will not probably prove such a complete failure.

I have not been able to gather at what precise time or in what direction the Japanese assistance first arrived, but most probably as pointed out in the foregoing. Nor is there any clear clue to the exact number of the assassins. At the moment of the attack it was of course impossible even to surmise their numbers; the details would suggest fourteen or fifteen, (or possibly a few more,) say the two who were actually encountered, two to four who smashed through the glass windows, and from five to ten at the front door. There is no evidence of any others either entering or endeavouring to enter the house, and it is impossible to conceive their doing so without penetrating to the drawing room, to which one main passage leads, the side ones only being intricate, the one being lighted and the others dark. Neither would the casualties suggest any great number,—five Loonings were killed and seven soldiers wounded, some very severely.† One of the officers' grooms was also killed. On entering the grounds the assassins

\* Bandit.

† The authorities are also said to have made a return of killed; but this may have been to exaggerate the value of their assistance (the wounded were seen.)

cut down two gatekeepers, and passing through the kitchens demanded of a native servant "where these foreigners were to be found;" and on his denying any knowledge, they wounded him mortally with their swords. One of the priests likewise was cut down, but was not killed, and is doing well. Amongst themselves, the Japanese think very little of death and wounds—affrays are so common: the importance of the present event is the rank of the intended victim, the representative of the most powerful of sovereigns, and the audacity of the attempt. Their deliverance must indeed have been felt by all to have been most providential. Surely such an event cannot be passed over like the previous assassinations.

On the next day Mr. Alcock and the whole party visited the wounded soldiers.

The bodies of the slain assassins remain where they fell, laid low by tremendous gashes of the nature which it was their intention to have inflicted on our countrymen. Besides mangled arms and other wounds the mortal blow seemed generally at the back of the head, through skull and jaws and tongue to the teeth—horrible to look at, but of course attended with instantaneous death. Close in the neighbourhood of the Legation is a suburb called Sinagawa, in a tea house of which the assassins are found to have held a debauch previous to their undertaking. The government is sure to obtain some information, but the question is whether they will communicate it to the foreign authorities. The immediate peril past the diplomatic difficulties commence, and these are almost more formidable than the former; they require certainly much more endurance. Admiral Hope is expected here in a few days with two ships.

One thing is certain, proved by Japanese history, that an enterprise momentarily defeated is not finally quelled, and unless the British government determines, and that speedily, to support and protect its representatives cast into the midst of hostile principalities, these will certainly sooner or later fall the victims of assassination.

P.S.—I have just received another letter from Yokuhama, which says, "A Japanese merchant arrived here about noon of the day after the attack, so that he must have left Yeddo soon after sunrise. He gave a foreign acquaintance many details which could have been learned from some of the escaped band. He stated that he had passed the previous day in Sinagawa, the suburb near the Legation; that a band of thirty or forty men had been knocking about all day, ending by a debauch, some of them in a particular tea-house kept by an old retainer of Prince Mito, and the usual haunt of his people; that they paid their bill of thirty itziboes and went forth to the rendezvous, the gate of the Legation. Here all were to have assembled at the tolling of a bell, which occurred nightly at the same hour in a neighbouring ceremony. Before the time, however, a dog within the gate commenced to bark. Those who were ready thought it was a foreign dog, and that they were discovered. They therefore, on the gatekeeper refusing to open, forced their way in through the side palings, cut him

down and killed the dog. He also said that the village officers had informed the police during the day of the presence of the suspicious band. The truth of this man's statement is evinced by the facts that the entry was effected in the way said, that the gatekeeper was cut down, and the dog lay killed just within the gate. The question becomes important how all these and doubtless further details should be known throughout the village while the blood was still warm in the veins of those who fell. The speedy arrival of effective aid would also almost imply that the government was forewarned. It is said that the usual guard on the grounds being called on for aid, refused, saying, that their duty was to write—in fact, to spy—and not to fight. It is presumable that Mr. Alcock would quickly send these carpet knights about their business."

There were some further remarks which Albert said he wished to make, but he should transgress the limits of time for these discussions. He would defer an allusion to the "Belle Isle Route" for another opportunity. But as novelties were always acceptable and his remarks would be short, he might mention Mr. Lungley's *unsinkable* ship the *Briton*, which had just from the stocks gone through the usual test of speed, &c., with considerable *éclat*. The virtue which she possessed of being free from the common habit of sinking, which ships were so prone to follow, in case of any serious injury that would fill them with water, consisted in her peculiar construction. She was not endowed with watertight compartments from the pernicious system of upright bulk heads, but owed her superiority to the several decks having no other communication whatever with *each other*, and being only accessible each from the upper deck by watertight hatchways, that led only to it. Thus each whole deck became a watertight compartment; and, for instance, supposing the hold to be full of water this would only rise in its hatchways to the level of the surface outside, leaving the space immediately above it entirely free, and hence the ship would still float.

Albert reminded the Chairman that they had not yet heard of the proceedings during the past month of the National Life-boat Institution.

The Chairman thanked him for his reminder, which also supplied him with a great fact—for it was really a great and a gratifying fact, well worth remembering by all—namely, that the lifeboats of our National Institution had, during the last twenty-one months, been the means of rescuing *four hundred and ten* persons from different shipwrecks on the coasts of the United Kingdom.

The Chairman added that as what he had said might be considered as so much assertion, he begged to give line upon line in corroboration of his statement. Here is a list of these noble services to suffering humanity:—



*List of Vessels and Number of Persons Saved from each Vessel by the Boats of the Royal National Life-boat Institution in the last year and three-quarters on the Coasts of the British Islands.*

Schr. <i>Ann Mitchell</i> , of Montrose	1	Sloop <i>Thomas and Jane</i> , St. Ives	3
Schooner <i>Jane Roper</i> , Ulverstone	6	A fishing-boat, Whitburn	4
Brig <i>Pallas</i> , Shields	3	Brig <i>Arethusa</i> , Blyth	8
Ship <i>Ann Mitchell</i> , Glasgow	9	Schooner <i>Dewi Wyn</i> , Portmadoc	8
Smack <i>John Bull</i> , Yarmouth	5	Flat <i>Cymraes</i> , Beaumaris	2
Schooner <i>Catherine</i> , Newry	4	Schooner <i>William</i> , Morecambe	5
Barque <i>Niagara</i> , Shields	11	Smack <i>Gipsy</i> , Newry	4
A barge, Teignmouth	2	Schooner <i>Margaret Anne</i> , Preston	4
Brig <i>George and James</i> , London	8	Brig <i>New Draper</i> , Whitehaven	8
Brig <i>Zephyr</i> , Whitby	6	Schooner <i>William</i> , Liverpool	5
Coble <i>Honour</i> , Cullercoats	3	Lugger <i>Nimrod</i> , Castletown	3
Schooner <i>Eliza</i> , North Shields	7	Brig <i>Providence</i> , Shields	8
Barque <i>Oberon</i> , Liverpool	15	Brig <i>Mayflower</i> , Newcastle	8
Brigantine <i>Nancy</i> , Teignmouth	9	Schooner <i>Village Maid</i> , Fleetwood	4
Smack <i>Wonder</i> , Teignmouth	2	Barque <i>Guyana</i> , Glasgow	19
Brig <i>Scotia</i> , Sunderland	6	Brig <i>Roman Empress</i> , Shields	10
Sloop <i>Three Brothers</i> , Goole	5	Brig <i>San Spiridione</i> , Galaxide	2
Sloop <i>Charlotte</i> , Woodbridge	5	Schr. <i>Voador du Vouga</i> , Vianna	8
Brig <i>Ann</i> , Blyth	8	Fr. brig <i>La Jeune Marie Thérèse</i>	6
Sloop <i>Hope</i> , Dublin	3	Barque <i>Perseverance</i> , Scarboro'	5
Schooner <i>Druid</i> , Aberystwyth	5	Schooner <i>Elizabeth</i> , Bridgewater	4
Barque <i>Vermont</i> , Halifax, U.S.	16	Ship <i>Danube</i> , Belfast	17
Schr. <i>William Keith</i> , Carnarvon	2	Schooner <i>Hortensia</i> , Hanover	4
Brig <i>Flying Fish</i> , Whitby	5	Schooner <i>Oregon</i> , Stonehaven	4
Smk. <i>Elizabeth Ann</i> , Lyme Regis	3	Brig <i>St. Michael</i> , Marans	8
Steam Dredge at Newhaven	9	Spanish barque <i>Primera de Torrevieja</i> —Saved vessel and one of the crew	1
Schr. <i>Admiral Hood</i> , Rochester	6	Schooner <i>Hurrell</i> , Penzance—Saved vessel and crew	4
Sch. <i>Susan and Isabella</i> , Dundee	5	Barque <i>Frederick</i> , London	1
Schooner <i>Rose</i> , Lynn	3	Brig <i>Anne</i> , Plymouth—Saved vessel and crew	8
Brig <i>Podroma</i> , Stockton	11	Schooner <i>Betsey</i> , Peterhead—Saved vessel and crew	6
Brig <i>Eliza</i> , Middlesborough	7	Barge <i>Peace</i> , London	2
Brigantine <i>Freia</i> , Konigsberg	6		
Brigantine <i>Diana</i> , Fredrikshamn	7		
Brig <i>Gloucester</i> , South Shields	7		
Brig <i>Lovely Nelly</i> , Seaham	6		
Brigantine <i>Nuyget</i> , Bideford	5		
Schooner <i>Prospect</i> , Berwick	6		
		Total Lives Saved	410

Now, four hundred and ten persons rescued from a watery grave will man a large line-of-battle ship,—no small contribution in so short a period on the part of the National Life-boat Institution towards helping to maintain our naval supremacy and our great and increasing commerce.

## Nautical Notices.

## PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 566.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
33. Lungo Island	Gulf Bothnia	62° 38-5' N., 18° 6' E.	Ff.	78	12	Est. 1st Sept., '61. (a.)
36. Formentera Island	Mediterra- nean	38° 38' N., 1° 36' E.	F.	518	18	Est. 30th Nov., '61.
37. Pelorus Reef	South Pacific	.....	..	..	..	(b.)
38. Dowling Sh.	North Sea	53° 28' N., 1° 2-7' E.	R.	38	10	Est. Oct., '61. Period 30 seconds, showing a red light.
39. Cape George	Gulf St. Law- rence	45° 52-8' N., 61° 55' W.	R.	400	25	Est. 25th Oct., '61. N.E. extreme of Nova Scotia.
Pubnico	.....	.....	..	..	..	Changed from red to white.
Cape Sable	.....	.....	F.	..	..	Est. 12th Oct., '61. At S.W. extreme of Nova Scotia.

F. Fixed. Ff. Fixed and Flushing. R. Revolving. I. Intermitting. Est. Established.

(a.) 33.—The light is thus described:—A flash lasting seven seconds is preceded and followed by intervals of darkness each being of twenty seconds duration; a fixed light then appears for two minutes and thirteen seconds and is followed by the interval of darkness which precedes the flash.

A new beacon of stone, in the form of a pyramid, thirty feet high, and painted yellow, was to be erected in the place of the old one on the island of Ryvingen, near Mandel, in July last.

(b.) 37.—Pelorus Reef, South Pacific Ocean.—H.M.S. Pelorus, when between New Zealand and the Fiji Islands, on the 12th July, 1861, passed within a third of a mile of a reef, about a quarter of a mile in length, with not more than one or two fathoms water on its western end, whereon breakers were seen. Its position is in lat. 22° 52½' S., long. 176° 27' 50" W. from Greenwich. Pylstaart Island was in sight, and bore N.b.E. distant thirty-seven miles.

After dark on the evening of the same day, when steering N.W. under reduced sail, soundings were obtained with the hand lead in 7 fathoms, followed by two casts in 6½ and 7 fathoms respectively, in lat. 21° 43' S., long. 176° 42' W.

## THE SPANISH COAST BETWEEN ADRA AND ALMERIA.

[Her Majesty's Consul at Adra, with a becoming zeal for the safety of mercantile shipping navigating the Mediterranean, has sent home a description of the Spanish coast in his neighbourhood, with the view of preventing those wrecks which are too frequent there; and he has entered into details with which he justly considers seamen should be familiar. Such laudable exertions in a good cause deserve well, and in seconding them by reprinting his production, we may add that if the excellent example of Mr. Frederick Burr were imitated by H.M. Consuls in other parts of the world in the same masterly style,

navigators would be grateful for the information and the shipping interest would largely benefit thereby.—Ed.]

It may appear almost incredible, but is yet strictly true, that within fifty leagues of the Straits of Gibraltar, and on the Spanish coast, there exists a danger to which due attention has not yet been given. I refer to a broad cape, surrounded by sands and shoals, so low as to be scarcely visible at sea and with not even a name to distinguish it, which, lying pretty much in the usual course of vessels, is a frequent cause of loss and shipwreck to all maritime nations having commerce in the Mediterranean. In proof of this, I have seen wrecked there, in less than a year and a half, and within the district of this vice-consulate of Adra, the following vessels:—four English, two French, one Russian (a steamer), one Swedish, and one Dutch.

These disasters occurred in five leagues of coast, between December, 1858, and April, 1860; and beside the above nine total wrecks, two other vessels—one French, the other American—were stranded but got off again, the former not without considerable expense.

The dangers which cause such frequent and costly disasters, if clearly pointed out, are easily avoided, and I believe I may say, that the official reports which have been made on the subject, and which have been published by some of the governments to which they were made, have already contributed to check these disasters. It is only, however, by the widest publicity possible being given to this information that it can be hoped completely to prevent the recurrence of similar misfortunes, for which purpose I shall now endeavour to condense my previous reports, adding some further remarks to enable this coast to be recognised at once by strangers.

The general features of the Mediterranean coast of Spain are well-known, and may be seen at once by reference to a map or chart. The North and N.E. run of the coast from the straits to Malaga, its easterly direction with almost mathematical straightness from Malaga to Adra, the great semicircular indentation of the Bay of Almeria, bounded on the East by the lofty and well-known cape or promontory of the Cabo de Gata, remarkable, too, as being the point where the line of the Spanish coast entirely changes its direction, running from thence between North and East for about 200 leagues to the French frontier near Rosas, at the foot of the Pyrenees. All these are well-known facts, and may be seen by a glance at the map.

But there is another fact connected with this coast which is not so well known, and which it is the principal object of this notice to point out and explain; for it is not very clearly indicated on most of the maps and charts, and is not very conspicuous or prominent even on the spot to those who are not well acquainted with the locality.

It is that between Adra and Almeria there exists a broad cape, or succession of capes, fringed with sands and rocks, stretching several miles\* south into the Mediterranean, and which forms the western

\* The charts say *three* miles. The dangers of the offing are, however, increased by the back land of the interior being low; thus leading the seaman

boundary of the Bay of Almeria, just as the Cabo de Gata forms its eastern boundary. The former, however, being as low and as flat as the latter is conspicuous and lofty. Thus, to the foreign mariner, when he is entering or leaving the Mediterranean, the Cabo de Gata will appear the only point by which he need direct his course with reference to the Spanish coast; whereas, in reality, before reaching it on the one hand, and after passing it on the other, there is a still more southerly cape nearly in his course. But this latter is low, flat, nameless, and almost invisible at sea; and consequently, at night, or in hazy or stormy weather, it is too frequently the scene of shipwreck and disaster.

Bearing this fact in mind, and the consequent necessity of keeping well out to sea and off the coast between Adra and Almeria, especially at night and in hazy weather, it is not too much to say that in nine cases out of ten shipwreck and disaster would be avoided.

But, in addition to the dangers arising from its position, so much in the course of vessels, the cape in question presents another danger also which it is most essential to point out and fully explain. I refer to an optical deception peculiar to the locality.

This point of land is so low as to be almost invisible at sea, and by night and in that hazy weather so common in the Mediterranean it is quite so. In that case the distant mountains, which are very high and conspicuous, often tower high above the fogs, and are mistaken for the coast itself. In taking declarations and making out protests in cases of shipwreck, I have always found that the captain and crew had no idea of being so near the coast till the vessels actually struck upon it, or upon the equally dangerous sands and rocks which surround it.

This optical deception, so fatal to mariners, I now proceed to explain, referring to the appearances as they are presented to a vessel entering the Mediterranean.

The mountains and elevated land which form the straight line of coast, extending nearly one hundred miles in length, from Malaga to Adra, are suddenly terminated at the latter place by the deep and abrupt valley of the river of Adra. Eastward of that river, the mountains take a somewhat different course, or a good deal north of east, and therefore considerably inland. Thus, at Adra the mountains come down to the coast, and also at Almeria; but in this distance of nine leagues they have receded about two leagues and a half from their former east and west line, thus giving space for the bay of Almeria, and leaving a large plain, known as the Llanos de Almeria, at their base. The projection of this plain south, into the Mediterranean, forms the dangerous line of coast in question, which commences at Adra, and extends eastward nearly as far as the roadstead of Roquetas, about six leagues distant.

Now the mountains here are very lofty, the Sierra de Gador range,

to believe that he is further from the shore than he really is,—one of the most dangerous conditions of navigation, and the cause of wreck in many other parts of the world.—Ed.

which bounds the coast between Adra and Almeria, rising in its western part to 6,000 and even 7,000 feet above the Mediterranean, towards which the slope is precipitous and abrupt. The distant Sierra Nevada range, which will be seen to the westward of the Sierra de Gador, rises to the height of 12,000 feet; but this range is ten to twelve leagues inland, and not, therefore, so prominent as the coast ranges.

It will easily be understood that these elevated ranges, some of the loftiest indeed in Europe, and not far inland, will be very deceptive as regards their height and distance. To the mariner the great difficulty is that these high mountains and their precipitous slopes become blended and confounded with the plains below them. Thus the mountains, particularly at night and in hazy weather, are mistaken for the coast itself, while the intermediate flat land—which may be from two or three to eight or nine miles in breadth—is quite undistinguishable,—in fact, it cannot be seen at all.

The mountains and the coast being thus confounded together, the inexperienced mariner often believes himself leagues from the shore, when he is, in reality, close in upon it and in very shallow and dangerous waters. This, indeed, is the general cause of vessels being wrecked and stranded on this coast, the first intimation of danger being when they actually strike on the sands or rocks.

The dangerous portion of the coast in question commences at Adra, where, immediately east of the roadstead, the river has formed a low alluvial tract, projecting southward into the Mediterranean, where many disasters have occurred. At this point, too, the mountains commence to run north of east to Agua Dulce, about half way between Roquetas and Almeria, where the coast-line again comes up to them, forming cliffs and high land the remaining two leagues to Almeria. The coast from Adra to Agua Dulce (merely a small coast-guard station) is quite flat: it runs first south of east for about four leagues, to Punta de Entinas, which is its most southerly projection; thence north of east to Roquetas and Agua Dulce, about four leagues also. It is the great triangular plain thus formed, having the mountains for its base and the coast-line for its apex, which presents the deceptive appearance which has been described, the most dangerous part being for about two leagues west and the same distance east of Point Entinas, the most projecting point of this cape, and where the greatest number of wrecks occur. The whole line of coast, however, from the roadstead of Adra to that of Roquetas, a distance of six or seven leagues, is more or less dangerous and deceptive, while there is no necessity or inducement whatever to approach it very closely. This dangerous line of coast may be described as follows:—

One league and a half east of Adra, two salt lakes (the Albuferas) being intermediate, is the small village of Balerna—the houses low and a large circular tower in the middle of the place.

The coast then runs considerably to the south, and about a league distant is the dangerous point of Guardia Vieja, which may be known by the fort from which it derives its name. A mile beyond is los

Baños, a mineral spring, with a dozen low houses round it, and opposite which there is shelter for small coasting vessels.

A league further east, or rather S.E., is Point Entinas, forming the most southern point of the cape, and being about three leagues and a half east (or rather S.E.) of Adra, and one league due south of that place. This point is known by a tower and a house for the coast-guard adjoining.

The coast then trends somewhat north of east for a league and a half to Point Elena and the Tower of Cerillos, all low and dangerous, and the scene of many wrecks and disasters.

The coast then runs nearly north for about a league, where, in front of Roquetas, is a spacious roadstead, which affords shelter to innumerable vessels from the prevalent westerly winds. Sometimes, indeed, I have seen a whole fleet of thirty or forty vessels anchored there.

Almeria, about three leagues further East (or rather N.E.) is in the centre of the bay, besides having a pier or breakwater not yet finished. It is thus sheltered from the westerly winds, while shelter from easterly gales is afforded by the Cabo de Gata, five and a half leagues further east, or rather S.E.

As before noticed, the greater part of the cape here minutely described as intervening between Adra and Roquetas, is fringed by hidden sandbanks, and in places by rocky shoals, which extend a long way into the Mediterranean. Thus, any vessel approaching too near the shore is almost sure of being stranded, and the result of my experience is, that in four cases out of five, she becomes a total wreck.

Another source of danger must not be overlooked—the easterly current from the straits which sweeps round this cape at two to three miles per hour, and which if a vessel approaches too near, will always have a tendency to bring her on the sandbanks and shoals which, I should say, extend full a mile from the shore.

Such, then, are the local dangers of this coast, the combinations of which occasion such frequent wrecks and disasters either in or close adjoining the vice-consular district of Adra. It will be seen that this danger lies very nearly in the course of all vessels entering or going out of the Mediterranean, although, as the great majority of them are bound to distant ports, either within the straits or beyond them, they have no need whatever to approach so near the Spanish coast.

Nothing can be more simple than the mode of avoiding these dangers, after having had their nature and existence thus clearly pointed out. On reaching the meridian of Adra or of Almeria, if by day, or on merely approaching such meridian if by night, according as the vessel's course may be eastward or westward, all captains, in addition to keeping a very vigilant lookout on the coast, should keep, say three or four leagues further out to sea while passing the cape in question. In fact, they should keep so far off the Spanish coast that the lofty Sierra de Gador, the principal landmark, should look sensibly lower in the horizon, instead of very lofty and prominent, as it always does when near the coast. Some judgment of the distance may be formed by considering the angle of elevation subtended by heights of

6,000 to 7,000 feet at about twelve miles distance from the coast, and keeping so far out as to reduce that to something approaching one-half, which seems to me, indeed, a very simple and effectual rule for avoiding this dangerous coast. In fact it might not be prudent, nor is it at all necessary, to keep too far from the Spanish coast, and therefore towards the middle of the Mediterranean, where, south of Adra, is the Alboran Island, with its adjacent rocks and shoals, which would be exactly in the vessel's course. Midway between this island and Point Entinas a shoal is also known to exist which has caused many disasters, the distance being about seven leagues from the coast.

Vessels bound for Adra or for Almeria, though not keeping so far from the coast, should keep a good look-out on passing the cape or succession of dangerous points which have been described, the captain being particularly on his guard against the optical deception before noticed of mistaking the mountains for the coast. The Sierra de Gador, in particular, often towers above the fogs and haze, and even at night its dark outline may often be clearly seen against the sky.

I have known some cases in bad weather when a foreign vessel has been off this dangerous coast, the captain hardly knowing where he was. For the benefit of strangers to the Mediterranean, I conclude, therefore, by giving a short description of the most conspicuous objects as seen by a vessel entering from the straits. The mountains cannot be mistaken.

*La Rabita*.—A small port and village three leagues west of Adra, high mountains behind, the houses low, and a fort or castle close by to the eastward.

*Adra*.—Situated at the foot of a high mountain, which has a good deal of cultivation and several white cortigos or farm houses on its slopes. West of the town are several lead smelting works, with high chimneys on the hill behind them, the roadstead being in front of these works. The town extends about a mile east, where a large square tower (part of the ancient castle) is seen, and near it the church.

East of Adra commences the Sierra Alhamilla, a small mountain range from two to five or six miles inland, and, though very abrupt, not more than 1,000 to 1,200 feet high. Further north, or rather N.W., far beyond and towering above this low coast range, the lofty Sierra Nevada\* range will generally be seen. The western end is shaped something like the roof of a house (peak of *La Velea*, 11,420 feet high), a little east of which is a mountain formed of three fanciful peaks (peaks of *Muley Hassan*, 11,700 feet high). Then follows a long range eastward, about 2,000 feet lower than these two principal heights. In the winter the whole range is generally covered with snow, and even throughout the summer there are always large conspicuous patches of snow on the great western peaks of this lofty mountain range.

The Sierra Alhamilla runs about eight or ten miles north of east,

\* This mountain, the highest in Spain, is seen from Gibraltar, and at an enormous distance in all directions.

or towards Almeria, where it joins on to the far more lofty range of the Sierra de Gador, which runs about twenty miles eastward to that city, where it is terminated by the river of Almeria.

*The Sierra de Gador.*—The highest of the coast ranges, whether seen on approaching it from the straits or when opposite to it, after passing Adra, has somewhat the form of an immense wedge, the highest part (an obtuse peak) being the S.W. point, from whence the mountain presents a long and gradual slope both to the northward and to the eastward.

This high and abrupt S.W. peak\* and escarpment of the mountain is about true north from the most dangerous part of the coast, where also the high western peaks of the Sierra Nevada will be seen over the Sierra Alhamilla (the low coast range) about true north-western.

*Roquetas.*—A village of low houses, with a high and prominent church; it has also a fort or battery commanding the roadstead which lies in front of, or eastward of, the village.

*Almeria.*—A large town and capital of the province: cannot be mistaken, being in the centre of the bay. It is encircled northward by high Moorish walls and towers. The square tower of the cathedral rises in the centre, while to the westward is the port and mole. Also the castle of San Telmo, perched on a high crag, behind which runs the road to Adra, cut midway up among high hills and precipices overhanging the sea.

From the above description every part of the coast in question may at once be recognised by strangers to the Mediterranean. All bearings have been expressed with reference to the true, not the magnetic, north.

I have heard an opinion expressed that there may be some local deviation of the compass, that causes vessels unknowingly to approach too near to this coast; and two shipwrecked captains have stated to me that by the compass they considered they were steering quite off the coast when the ship struck. One, however, was an iron steamer, with part cargo of iron on board. In the other case I found, on inquiry, that the compass had previously deviated on the coast of Portugal. These two cases, therefore, admit of easy explanation, and I certainly know no cause for suspecting local attraction at this place, as there are no veins or masses of iron known to exist within a very considerable distance of the coast, though there is a good deal of lead and zinc ore in the mountains.

It may be useful to state, however, that the magnetic variation is, or was five or six years ago, as follows:—Adra,  $19^{\circ} 17' W.$ ; Almeria,  $19^{\circ} 8' W.$

The best Spanish map that has been published places the point and tower of Entinas (or Sentinas) in lat.  $36^{\circ} 41' N.$ , long. E. of Madrid,

\* This peak is called La Cobache. Further east, and in the interior of the mountain, are two high peaks close together, called Les dos Hermanos, and the Pico de Sabinar, highest of all, 7,150 feet above the Mediterranean, are visible also from the coast of Africa.



0° 52'. The longitude of Madrid I have seen stated 15' 9" W. of Greenwich.

It is important to notice also, that in the best and most recent map of Spain, that of Don Francisco Coello, Madrid, 1855, the Point Entinas is shown (as I have described it) projecting about three miles further South than the Cabo de Gata, while in older maps the two capes are shown as being on the same parallel.

The foregoing report contains the result of several years' observation and experience on this coast. I could have wished to make it shorter, but in a matter which may be said to concern the safety of all foreign shipping entering into or going out of the Mediterranean, did not consider it right to omit any of the facts or explanations here given for the benefit of strangers to the coast. That such dangers should exist unnoticed, and without attracting the attention they deserve at the present day, does indeed seem extraordinary; but till the date of my first reports on the subject, in December, 1858, such was the case. Since then, however, I have seen losses on this coast to the amount of about £50,000. Nor, indeed, have I shown the whole number of vessels lately wrecked on this dangerous line of coast, there having been many disasters also near Torre Cerillos and Roquetas, and therefore in the district of Almeria; while I have only noticed the wrecks within the vice-consulate of Adra, and of which, therefore, I have full knowledge. The whole of the dangerous line of coast has, however, been fully described, though many of the recent losses upon it are not included.

Finally, it is deserving of notice that the sea is gradually receding on parts of this coast, having retired considerably more than 100 yards on the beach at Adra within the last thirty years. On this subject, which is not without interest to navigation, I am still collecting information, to be communicated hereafter.

An attentive perusal of the foregoing (the chart in hand, to understand well the localities) may assuredly be made the means of preventing nine-tenths of the continued wrecks and losses of which this coast has hitherto been the scene.

FREDERICK BURR, *Vice-Consul*.

#### FINDING COMPASS DEVIATION AT KRONSTAT.

The hydrographic department of the Russian Imperial Ministry of Marine has given the following notice of an arrangement made in the commercial port of Kronstat to enable mariners to determine the deviations of their compasses, as resulting from the effects of the iron of the ship, or the cargo on board, whilst lying at anchor in the great roadstead of that port: viz. :—

The correct magnetic bearings of the foundry chimney from various parts of the western wall of the commercial port of Kronstat are indicated by a series of marks, ranging between the bearings of N. 89° E. and S. 79° E., painted on the western face of the wall.

The degrees are marked in figures legible from the roadstead of

Kronstat, the even figures being on a black ground, and the odd figures on a red ground, in the following order:—

9	80	1	2	3	4	5
S. 79° E.	S. 80° E.	S. 81° E.	S. 82° E.	S. 83° E.	S. 84° E.	S. 85° E.
6	7	8	9	90	9	
S. 86° E.	S. 87° E.	S. 88° E.	S. 89° E.	East.	N. 89° E.	

indicating as here stated, under each figure.

The half degree between each of the above is also denoted by a white circular mark between them.

The difference between the *bearing* of the foundry chimney as indicated by any one of these marks and that observed from the ship when it is seen in line with it, is therefore the deviation of the compass.

[It will be remembered that this arrangement is similar in principle to that adopted at Liverpool, where the bearings of Vauxhall chimney for the same purpose are legibly painted on the sea face of the dock walls of that port.]

The variation of the compass at Kronstat has been assumed in the above arrangement to be 4° W.

#### NATCHENDALL ISLAND,—*Indian Ocean.*

We find the following in the remarks of H.M.S. *Sphinx*, Commander Geo. F. Day, 1860.

“Whilst on our passage from the Cape of Good Hope to Java Head, on the 3rd of March, about 5h. p.m., observed, about 500 yards on the weather quarter, what, had there been anything marked down on our chart as near there, I should have put down as the round top of a rock. It was seen by three officers besides myself. The water was very smooth at the time and there was a slight ripple round it, like a current. We were under sail, going about 8 knots past it at the time. The next day, on looking at an old chart of 1817, on which the track of H.M.S. *Hornet* was marked down on her voyage out in 1854, I saw that there was an island called Natchengall marked down as doubtful very near the spot we passed, which, on working up our reckoning, was lat. 40° 24' S., long. 52° 47' E. I have not a doubt now but that it was that rock, and regret that I had not seen this old chart before that I might have ascertained it for certain.”

[It is indeed much to be regretted that so precious an opportunity was lost of determining the fact of this being a veritable rock instead of a sleeping whale, preserved by Rochette in his valuable chart of 1817. We trust, however, that the deep sea lead which has been exploring the bed of the Atlantic with so much effect as to displace several vigias from the chart, will tell us something more than it has yet done of the Indian Ocean, for there are several localities in store for it where it may be employed with great advantage. This is one of them and Rodriguez is another.—Ed.]

## FRENCH NAVAL RESERVE.

*Paignton, October 19th, 1861.*

Sir,—From the money article of the *Times* of the 16th inst. I extract the following paragraph:—

“Private letters from Paris state that the Emperor is about to promulgate a complete and radical change in the system of the naval reserve. The whole of the reserve ships are to be maintained in a condition for active service on the shortest possible notice. A number of officers and crews are to be kept on board, and to such an extent that a large fleet can be sent to sea in an incredibly short time.”

Whatever value may be attached to this extensive organization of a naval reserve, I cannot permit our gallant ally to claim the merit of an original idea, however much I may congratulate his Imperial Majesty for his sagacity and foresight in carrying it out. In the *Nautical Magazine* for September, 1858, my own observations on this subject are thus expressed:—

“As far back as the year 1847 I ventured to submit such a plan by stating that I had long been impressed with the opinion that it would be attended with great benefit to the service if a large body of naval officers, with a considerable number of men, were constantly attached to our reserved ships as the inceptive organization of a considerable fleet;—in fact, that we should have, not only *reserved ships*, but *reserved officers* and *reserved men*. In addition to the service of the ordinary, which might with advantage be performed by the reserved force, I proposed that all *dockyard duty*, whether as *riggers* or *such other labour as could with propriety be imposed upon our sailors, should devolve upon them,*” &c., &c.

I am, &c.,

W. L. SHERRINGHAM, *Captain, R.N.*

*To the Editor of the Nautical Magazine.*

## ELECTRIC CABLES.

16, *Argyll Street, W.*

Sir,—I trust you will excuse me for again trespassing on your valuable space, but I am constrained to do so in answer to the Editorial remark you append to my letter in your October number; and as the doubt you express would possibly arise in every mind on reading my letter, under the circumstances, I am sure you will allow me the opportunity of answering it.

You will observe in my letter that I state that the law on which I found my principle is to derive my electric excitement from moisture, *i.e.*, the decomposition of water or of air, and not, as you appear to suppose, by the decomposition of metal; and in my cable my metals are preserved equally well or better than in the so-called insulated

cables. And I am prepared to assert that the quantity of electricity evolved by the decomposition of as much moisture as would be contained in a single drop of water, would be greater than would be obtained by the decomposition of a large quantity of zinc, and I believe I am borne out in this by the researches of Dr. Faraday. The electricity thus obtained would suffice to transmit the whole of the telegraphic communication between England and the continent for a week. I would further make my plans more explicit, with your permission.

Instead of forcing the current by battery power from end to end of the line, with all its attendant evils of induction, leakage, and affinity to short circuit—to say nothing of the difficulty to contend with earth-currents,—I produce in my cable a static charge, and the communication at the distant end is nothing more than the result of a disturbed equilibrium of the electric current existing in the line, and may be more fully explained by the following illustration:—Take a tube, bend it in the shape of a syphon, and fill it with peas; and if you push a pea in at one end you push one out at the other, moving actually but one pea, but putting all in motion.

I am, &c.,

WILLIAM P. PIGOTT.

*To the Editor of the Nautical Magazine.*

#### CYCLONES AND SAXBY'S WEATHER SYSTEM.

Sir,—Having in your last September number entered upon the important subject of cyclones, and given to the world a few opinions, which if proved to be well founded must become of great value to shipping interests, allow me to resume so far as to bring the registration of subsequent weather to bear upon such opinions.

I have pointed out two causes of weather disturbance, which, while derived from the same origin, viz., the interruption caused by the moon's position in declination, are essentially different in their operation: the one being electric and rapid in the production of consequences; the other mechanical and requiring considerable interval of time before its effects are felt in the British Isles,—or as I have named them, *primary* and *secondary*.

As regards the primary, my letters on "Lunar Equinoctials" (as I have been calling them for want of a better name (have perhaps sufficiently informed your readers, although from the nature of the subject it will be as well to complete a two years' public testing (ending in January next) according to my promise.

The secondary, therefore, will now be further considered. In your magazine for July last, I explained that a (*nescis quid*) species of electric action, which we call gravity or attraction, is disturbed or causes disturbance on our earth's surface at periods connected with the moon's motion: that both the sun and moon have such power.

When, therefore, these influences act in combination, or nearly in the same direction as regards our earth, it is but reasonable to expect greater results, especially when another increase of disturbance may be looked for when the moon is at her perigee. We should say that when these three influences are confluent, the greatest effects would result.

Now in your last September number I explained that upon an average cyclones were from nine to twelve days in travelling from the place of their birth (viz., the region of equinoctial calms, and near the line of *no magnetic variation*, not very far S.E. of Barbados) to the British Isles. That cyclones *do* reach us from the southward and westward is an accepted fact. *My object is to show the periods at which such cyclones may be looked for in the English Channel.*

Now, if we take the months of September and the present October we shall find first that in September, the 4th was the time of new moon, the 5th the lunar equinox, and the 7th the time of perigee (the "confluence" already referred to). Taking the moon's declination to be in all cases the greatest agent, and the others as mere accessories, nine days from the 5th will give the 14th as the day of warning for the East coast of England. But as the new moon occurred on the day before, it is not unlikely that disturbances were *accelerated* thereby. Accordingly, a reference to the diagram of barometric registry, &c., will show that during the 13th the barometer fell from 30.29 inches to 29.90, and we had a "gale;" not *very* heavy, but the gale lasted four days, therefore its duration would lead us to suspect that it must have been a heavy one *somewhere*. Looking at the veering of the wind I should say that the centre of the cyclone was due North of us on Sunday the 15th at about noon, and the sudden change of wind at Unst (Shetland) from S.W. to N.E. on the 15th is remarkable, as favouring this notion. But if this were a cyclone, it must have come up Channel from the S.W., (because such is the bearing of the line of equal variation in that locality,) so that its effects would be felt to the southward and westward of Cape Clear many hours before it reached the coast of Kent. Accordingly we find that on the 12th a "terrific hurricane" tried its strength upon the giant sides of the *Great Eastern*, some 280 miles westward of Cape Clear.

We were afterwards visited by a second cyclone, which I will briefly state owed its birth to the lunar equinox of the 11th of September, and reached us nine days after, (viz., on the 20th,) as indicated by the barometer, and was at its height on the 23rd, when I measured the wind's velocity at nearly sixty miles an hour. Accounts from Whitehaven speak of this as "the most fearful gale or hurricane that can be remembered," and describe its sudden shifting from S.S.W. to N.W., evidencing its revolving character: and from data obtained on board this ship, the centre of the cyclone was certainly in that direction, at that time.

As regards the month of October I will show (without encroaching unnecessarily on your space) that the 2nd (at 8h. p.m.) was the period of lunar equinox, 4th, new moon, 5th, perigee (another confluence of

influences). Now on adding nine to the 2nd we should have looked for cyclonic disturbances on the 11th. Need I trouble your readers with details when I assure them that although I have witnessed a "Nor'-wester" off the Cape, I never saw the wind raise up spray like clouds of white steam from the sea surface as it did at Sheerness on the 11th inst? It was a frightful tempest while it lasted, and the wind reached, I should say, sixty-five miles per hour at least; it was felt all through Kent, and was quite unlike an ordinary gale,—besides we have the witness of the barometer, which *emphatically declared* it a cyclone. But a noteworthy circumstance attended this, as I believe it does all cyclones, and one which I have never seen or heard noticed, I give it therefore for the purpose of calling attention to another (possibly) valuable "prognostic." I allude to the "premonitory atmospheric wave." On the 11th inst., (and I mention it to prove the strength of my convictions, (a general muster was held by the commander-in-chief on board the guard ship of the steam reserve. Having noticed the rather rapid fall of barometer since midnight of the 9th, *as succeeding a gradual rise* during that day, and which seemed to me like the premonitory wave of a cyclone, I from this and the state of the barometer confidently informed my brother officers in answer to their remarks on the weather that a *cyclone was approaching*. No other symptoms beyond barometric or the "wave" I speak of could have forewarned in time to have averted danger, for on the same afternoon the scene I have mentioned confirmed by the presence of all the elements of the cyclone that it was upon us and with power. (The "wave" I mention is of the same origin as that which precedes a vessel's bows in her course through the water, for a revolving storm propelled through the air at the rate of some hundreds of miles a day must, from its momentum in traversing a fluid, raise [an atmospheric] wave: and I call this therefore "premonitory.")

As regards the fulfilment of my predictions as to lunar equinoctials, I will only in referring to the *past* say that *without one exception* the periods I had marked have most fully justified my warnings. Details are at the service of any of your readers who need them. But as to the *future* (repeating the dates already given) we may suspect as periods of disturbance,—

November 5th or 6th—11th—19th—26th

December 2nd—9th—16th—23rd—30th.

I also warned against the periods November 2nd to 6th, and December 1st to 3rd, as being periods of the "confluence of influences" spoken of above; but I would further remark that we ought to beware of the cyclonic periods in November and December, viz., 14th and 15th of November, and *especially* the 11th of December, for in December the perigee, lunar equinox, and time of new moon happen within a very few hours of each other, and these occur moreover when the sun and moon's declination nearly coincide in the same hemisphere.

I have, &c.,

S. M. SAXBY, R.N.

THE  
NAUTICAL MAGAZINE

AND

Naval Chronicle.

---

DECEMBER, 1861.

---

**BOMBAY HARBOUR: ITS LIGHTS, DANGERS, AND DEFENCES.**

Numerous plans for the improvement of the port of Bombay have of late been proposed, both for its efficient lighting and pilotage, as well as its defence; but, although acknowledged to be desirable, little or nothing has been done.

The port of Bombay is increasing in importance in a political as well as a commercial point of view, having all the essential requirements for a naval arsenal, as well as a great commercial port. It may be rendered easy of access at all times, either by night or day, in all seasons of the year; but to an enemy, if not inaccessible, it may be made at least very difficult. Besides being the key to our Indian empire on its western coast, it is also the great *dépôt* for military stores, and on these accounts its improvement becomes desirable.

We will first glance at the boundaries of the harbour, its lights and system of buoyage at present, with the improvements of which these are capable; and then glance at its defences, especially those of its entrance, and the protection they afford to our mercantile fleet.

The island of Kenery or Kundaree, about one hundred feet high, forms the southern boundary of the entrance of this harbour. It is a small rocky island  $11\frac{1}{2}$  miles South of the lighthouse. Vessels bound to Bombay should endeavour to make this island, particularly in the S.W. monsoon.

Malabar Hill, remarkable for its low insignificant flagstaff, half way down its sloping side, and the lighthouse on the South point of Colaba island indicate the entrance of the harbour. The lighthouse is

about 130 feet above the level of low water and shows a revolving light, visible from the deck of a ship about sixteen or eighteen miles, but the tower is not so easily discerned in daylight, being lost in the surrounding trees and buildings. The S.W. point of Colaba, on which the lighthouse stands, dries out at low water spring tides to a distance of a mile and three-quarters.

A floating light, midway between the S.W. extreme of Colaba and the foul ground off Thull, lies in the fairway of the entrance, in seven fathoms at low water spring tides, about two miles from each, with the following bearings and distances of the principal points from her:—

Middle of Thull Shoal.....	E.S.E.	distant 2	miles.
Lighthouse on Colaba .....	N. 22° E.	" 4.5	"
Malabar Point Flagstaff .....	N. 5° E.	" 6.90	"
S.W. Prong, extremity .....	North	" 2	"
Kenery or Kundaree Island ...	S. 14° E.	" 7½	"
Inner Light-vessel .....	N. 38° 50' E.	" 4.68	"

This light-vessel first appeared at her station in 1842, showing a plain bright light, which may be seen from ten to twelve miles distant. She burns a blue light every hour of the night, and a torch every half hour. She carries a red ball at her mast-head, and hoists a red flag when a sail is in the offing. But, strongly as she is moored with her heavy ground-tackle, she too often breaks adrift—even in the last S.W. monsoon she did so twice; an evil more likely to happen in bad weather than at any other time, when her services as a guide to the harbour—the lighthouse on Colaba being too far away—are most wanted. The fairway channel is again marked by a large red spiral buoy about three-quarters of a mile N.E.b.N. of the outer lightship, that has also the habit of breaking adrift in bad weather. And N.E.½ N. four miles and a half from same light-vessel is an inner one, called the Sunken Rock Light.

The inner light-vessel is moored to southward of that rock. She also carries a red ball at her mast-head and a red flag by day. Her light is a fixed bright light from sunset to sunrise. She may be also called a fairway light, and about quarter of a mile to N.N.W. of her is a red buoy, showing the position of the Sunken Rock. Here, again, the same evil of breaking adrift occurs, for it happened to her in the last S.W. monsoon.

We next come to the Oyster Rock, on which stands a beacon in the shape of a white stone pillar, about twenty-four feet high; and the Dolphin Rock is marked by a light showing green to the southward and eastward and a bright light to the northward, while to the westward it is screened. The light-tower was erected about the end of the year 1856; but the light-keepers were thought less of than the light or the duty of keeping the lamps trimmed, for there was no room for them in the building,—a mistake which is now being rectified.

The several shoals are—the Middle Ground, which is distinguished by a chequered black and white buoy on its southern end and a black



buoy on its northern, both of iron. The Flagstaff Shoal bears a large red buoy. Between the last named shoal and Cross Island are the Northern Patches, with their small iron buoy. The reef off Butcher Island is distinguished by small iron buoys on its northern and S.E. ends. A small patch of rocks on the north-eastern edge of the reef off Caranja Island is also marked by a buoy.

But, notwithstanding these lights and buoys *inside* the harbour, what is wanted as much is consideration for ships outside, making the harbour. And the first step that should be taken for their benefit is to alter the position of the Colaba light. A light, it is well known, should—if not on it—be as near as possible to the danger that it is intended to guard against. But look at the Colaba light. There it stands, no less than two miles and three-quarters *inside* of it, when it might and should have been built upon it. Floating light-vessels are mischievous when they cannot keep their stations under all circumstances of wind and weather, and at Bombay this objection is aggravated by these well known facts,—that they repeatedly break adrift when they are most wanted, and that the harbour of Bombay is beset with outlying dangers, which they are *intended* to guard against.

To avoid this evil and, in fact, to light Bombay Harbour properly, the whole plan should be different. Instead of the present arrangement, the following should have been adopted:—

1. The present light at Colaba should have been placed on the very S.W. extreme of the island, that dries at low water of spring tides, and should have been a first-class revolving light, at an elevation of 150 feet above the level of high water, and readily seen from the deck of a ship eighteen to twenty miles distant, the tower being painted white. It would then stand two miles and three-quarters S.W., or further seaward than in its present position.\*

2. For the benefit of ships coming from the northward, the flag-staff on Malabar Point should be considerably higher, so as to be seen well over the trees and buildings.

3. A first-class fixed light should be placed on Kenery or Kundaree Island, which is already about one hundred feet above the level of the sea, and a tower of fifty or sixty feet would render this visible about twenty miles distant. Moreover, the tower of this light should be painted in broad alternate white and red horizontal bands. The Colaba light tower being entirely white, there would be no chance of one being mistaken for the other, either by day or night.

This lighthouse on Kenery Island would be the means of preventing shipwreck by warning ships of their position as they near the coast to the southward of the harbour. A recent wreck, that of an American ship, would have been prevented, as well as many more that have taken place. The construction of this light could be proceeded with at all times, in either monsoon; but that on Colaba, proposed above could only be erected in the N.E. monsoon.

\* It would rather be a mile and a half by the chart.—Ed.

A committee nominated by Sir Henry Leeke recommended a double light on Kenery. Where would be the utility of a double light, attended with double the expense, when a single light would do as well.

4. There is no doubt that the Sunken Rock is very small, and yet it is quite large enough to receive a mortella tower; which would contribute to defend the approach to the harbour, while it should form the tower of a fixed light of the second or third class, one that would be seen five or six miles from a ship's deck. Thus would the lighting of the entrance of this harbour be securely and substantially effected. Then might both inner and outer light-vessels be removed, and the mariner might safely reckon on always making the entrance of it by day or night.

In respect of harbour defences at the entrance:—The intervening space on Colaba, between the proposed new lighthouse and the southern end of the island, should be gradually reclaimed from the sea. This would form a good position for extensive batteries, that would contribute largely to those defences at present constructing. There is an abundance of materials at hand for the erection of these works, which the fine weather of eight months in the year would admit of being carried on rapidly and effectually.

In the event of war all the mercantile shipping should resort to the upper part of the harbour, where they might be protected in the deep water anchorage off the old fort on the east end of Trombay Island by batteries placed on Butcher Island, as well as Elephanta and Trombay, and on the northern end of Caranja.

The island of Trombay has deep water close to it and is well adapted for piers, which might be constructed on piles, so that ships might go alongside of it for loading and unloading.

In the course of that general progress which distinguishes the present period from all that have preceded it, the daily increasing importance of Bombay Harbour in a commercial point of view is well deserving of our attention. The revenue of this port, arising from the shipping frequenting it, calls for the same improvement in lighting and general management that has been bestowed elsewhere, so as to add to the convenience, safety, and shelter of our mercantile fleet. Indeed, had it been applied to the alteration of the Colaba light and the construction of one on Kenery Island, as here proposed, we should not have had to deplore the wrecks that have taken place; for, with the assistance of these lights in their proper places, in any weather ships might run boldly for the port, and even at any season of the year, without any risk whatever.

Should the suggestions of the Director-General of the Post-Office of India be carried out, viz., that Bombay be made the postal port of India, and that weekly communication be established with England, *via* Egypt, it will doubtless add much to the daily increasing commercial prosperity of the port, and render Bombay what it ought long ago to have become—the greatest commercial port and capital of the British empire in the East.

The advantages of the port of Bombay seem never to have been

duly acknowledged in the way of facilitating its access by a good system of leading lights, by making accommodation for loading and unloading vessels, and by providing the means for their repair; and yet, notwithstanding this neglect, the trade of the port has gone on increasing of late years. It is capable of great improvement, and it might not be out of place in the pages of the *Nautical* to point out a few that might be made.

There was a plan proposed in 1814 for connecting Colaba Island with Bombay by a causeway: on which plan a committee reported favourably. But no notice was taken of it till, in 1824, Mr. Curnin, the first Astronomer appointed to the Bombay new observatory, condemned the project, and recommended instead a suspension bridge twenty feet wide. Mr. Curnin's proposal, in its turn, was rejected by another committee, which, instead thereof, desired to have the causeway. Thus the original proposal was re-instated, but it was not till 1834 that any steps were taken to commence the work. The work progressed to its present condition, the result of which is that the harbour has profited considerably by it. A large space of ground has been gained from the sea on the side of Back Bay, with no deposit whatever on the harbour side, for the old road may be distinctly traced from one end of it to the other. The swell thrown in by the S.W. monsoons at high water is considerably lessened, and thus considerable advantage has been gained, which might have been greater still if the causeway had been completed to its proper extent.

The harbour remained without even a permanent light until 1839, when a light-vessel was placed near the Sunken Rock. Previous to that time the vessel was at this station about the middle of May, being removed about the beginning of October in each year. In 1842 an outer light-vessel was placed at her station, and great service is rendered by these two lights. But this is a mere beginning of what should be done. It was once suggested by the Director-General to make Bombay the principal postal port of India. But, whether this view be adopted or not, even as a great trading port, which it is capable of being made, the approach to it should be no longer neglected. We will just repeat the outline of those improvements.

1. A first-class revolving light, at an elevation of 150 feet above the sea, on the S.W. prong of Colaba.

2. On Kenery Island a bright fixed light of the first class, to mark the southern boundary of the entrance to the harbour. The highest part of the island is about one hundred feet above the level of the sea, bearing from the present lighthouse, on the South end of Colaba, South about eleven miles and a quarter. With the light on Colaba and this on Kenery the entrance of the harbour would be well marked. If the light-tower on the prong be white and that on Kenery painted in alternate horizontal bands of red and white, there could be no mistaking one for the other either by night or day.

3. The outer light-vessel would be removed, but the inner light retained. With these three lights the harbour might be approached in any weather, either by day or night, at all seasons of the year,

and captains of ships, even in the S.W. monsoon, would run for the port, instead of lying to off it for days together.

In conclusion, it may be observed that the commercial importance of Bombay has much increased, and that it is still increasing fast there can be no doubt; one result of which is the development of the great resources possessed by the presidency, even to its remotest parts, and thereby augmenting the revenue.

The Chamber of Commerce at Bombay has frequently appealed to Government for this improvement, as well as that of the pilotage and general harbour administration, with no other result than the transferring of the Master-Attendant's department and the pilot establishment from the dockyard to the control of the Commissioners of Customs, Salt, and Opium!

Had this been done in the way it was intended, many benefits that had been anticipated would have followed. But what are the facts? There is the Master-Attendant and his two assistants, along with a portion of the establishment of his office, pilots, &c., sixteen in number, with their nine boats, lightvessels, and lighthouse on the Dolphin Rock transferred, and nothing more; and this *pro forma*, as the Commander-in-Chief of the Indian navy still controls the pilot establishment, leaving the Master-Attendant to serve two masters, and retains on the dockyard establishment the warping-boats and anchor-vessel,—by which, in case of accident to ships entering or leaving the harbour, the Master-Attendant has no means of rendering the assistance expected of him.

It is a great fact which would scarcely be credited that in so important a commercial port as Bombay no doubt is, the Master-Attendant has not a spare anchor, cable, or hawser at his command, no fire-engine, in the event of fire, amongst the shipping or wharves, under his management, and not even a lifeboat\* to send off to a ship in distress. In former times the Master-Attendant could send assistance in such cases, but now he is referred to the Dock-Master, causing delay, at the risk of serious and imminent danger.

#### THE NORTHERN AND SOUTHERN ROUTES TO CANADA.

*Charlottetown, Prince Edward Island,  
10th October, 1861.*

Sir,—I have carefully considered the comparative advantages and disadvantages of the two routes to Canada, North and South of Newfoundland, and my opinion that the Strait of Belleisle is the most dangerous of the two remains unchanged. But, to enable you to judge of the question, I will endeavour briefly to state to you the data on which my opinion is founded.

\* We commend this to the attention of our National Lifeboat Institution.

And, first, as to fogs. On referring to my journals, I find that in the three years 1833-4-5 the average was eleven days of fog for the month of July. And for the four years 1832-3-4-5 the average number of days of fog was twelve for the month of August. The least amount of fog was nine days for the month of August, 1835. The greatest amount was sixteen days in August, 1833,—of which ten days occurred in the first eighteen days of the month, and five of them in succession.

Now I have never known this to be exceeded in the main entrance to the Gulf of St. Lawrence South of Newfoundland, and therefore I infer that the route by the Strait of Belleisle has no advantage in that respect. The fact is that fogs almost always accompany winds from the southward and eastward, and frequently from the southwestward also, on both routes—off Belleisle as well as off Cape Race.

Secondly, as to ice. In 1833 there was field ice in the strait in July, and many icebergs in August. In 1834\* there were many icebergs and large pieces of ice—in all nearly two hundred in number—between Belleisle and the western entrance of the strait. Some very large bergs were aground in deep water, and others drifting and crashing against them with the current. Some of the bergs drifted before a strong N.E. gale nearly a hundred miles, into the gulf, in three days. In July and August, 1835, there were several icebergs off Belleisle, on either side, and also in different parts of the strait.

Hence it appears that we can never expect to find the strait clear of ice at any season of the year (unless it be late in the autumn, when new ice begins to form, of which I cannot speak with any certainty, not having been there later than the beginning of September), for in May and June the strait is often full of field ice.

Let us now consider the comparative disadvantages of the southern route. It is admitted that on approaching Newfoundland icebergs may be met with many miles off Cape Race, as well as off Belleisle, and I have also shown that fogs prevail equally on both routes. But after passing Cape Race, ice will only be met with in the main entrance of the gulf in the months of May and June; but not always in the latter month, and seldom, if ever, in such quantities as to extend quite across from St. Paul Island to Cape Ray, a distance of forty miles; and seldom, also, so closely packed that a steamer could not find a passage through it. During the remainder of the navigable season there is no danger from ice in this entrance whatever.

Now, can it be admitted that a passage forty miles wide, and which is clear of ice during the far greater part of the navigable season, is equally as dangerous as the Strait of Belleisle,—eighty miles long, in one part only nine miles wide, and in which numerous icebergs and large pieces of ice may be met with in every month of the navigable season. Placing the chart of the Gulf of St. Lawrence before us, we have only to imagine a vessel steaming through this long and narrow strait in a dark and foggy night, with icebergs in her way, and the

\* In a former letter I stated 1833 by mistake.

land also within a few miles on either side, and then compare her situation with a similar vessel in the wide main entrance of the gulf, where she has room to move for many miles in any direction she may think advisable, and which is clear of ice during the whole season after the month of June,—and I think it must appear evident that the Strait of Belleisle is by far the most dangerous route of the two. Much finer weather, too, may be expected in the main entrance into the gulf; for the ice seldom, if ever, leaves the sheltered coves and small bays in the Strait of Belleisle before June, and it forms again in similar places in September. Snow remains in abundance in the ravines and hollows until past the middle of July. With N.E. winds the temperature often falls to between 30° and 40° Fahr. at night, and rises only a few degrees above 40° in the warmest part of the day, and in the warmest month of the year. The fishermen whom I met with, and who had been there for years, considered the Strait of Belleisle and the northern shore of the gulf as the especial region of fogs, and also stated to me that the Atlantic entrance of the strait was remarkable for bad weather, especially with easterly winds.

But before we come to a conclusion as to the comparative merits and demerits of the two routes, we must take into account two advantages possessed by the route from Liverpool to Canada by the Strait of Belleisle:—first, the less distance by more than two hundred miles; and second, the far less danger of collision with vessels, in consequence of the comparatively small number that use the northern route.

Whether these two admitted advantages compensate for the disadvantages I have stated, or more than counterbalance the advantages of the main entrance of the gulf—which is between fifty and sixty miles wide from Cape Breton Island to Cape Ray, Newfoundland, and with nothing in the way but the bold St. Paul Island, with its light-houses and fog signals at either end, and clear channels on either side of it, one of them forty miles wide,—is the question to be answered. I do not think they do,—but with all due deference to the opinions of those who may differ from me,

I am, &c.,

HENRY W. BAYFIELD, *Rear-Admiral.*

*To the Editor of the Nautical Magazine.*

#### THE HARBOUR OF NONCOWRY, NICOBAR ISLANDS.

*Maulmain, July 27th, 1861.*

Sir,—Enclosed is a true and attested copy of a letter I sent last year to the Superintendent or Governor (Captain J. C. Haughton) of the penal settlement of Port Blair, Andaman Islands, bay of Bengal, and not having received any acknowledgement of the same up to this period, and as the detailed information contained therein I consider may

be of the utmost importance not only to her Majesty's government, but also to the nautical world at large, I would therefore esteem it a great favour by your giving this a space in your next issue.

I beg to remain, &c.

NEAT MAJOR,

*Agent to Lloyd's, and*

*the Liverpool Underwriters' Association.*

*To the Editor of the Nautical Magazine.*

P.S.—The central position of Noncowry Harbour (in the centre of the Nicobar group of islands) to the Indian and China Seas, and in the immediate track of outward and homeward bound ships in both monsoons, with its natural advantages and capabilities, having a safe eastern and western passage or entrance, render it, in my opinion, far more advantageous to the British government as a naval dock-yard than Trincomalee, and, in fact, the finest harbour in the Indian Ocean.

N. M.

---

*Maulmain, May 17th 1861.*

Sir,—Having now been a resident at this port eleven years, and having had the pleasure of bearing testimony to your goodness of heart and great benevolence while police magistrate here, I assure you, sir, I heard with great pleasure of the salutary improvements made at Port Blair since it has been under your benign and able superintendence: but you must labour under very great disadvantages from the position of the settlement being situated immediately in the track of those periodical terrific cyclones which my old friend Captain Lonsdale informs me have caused great devastation at the port; and the continued hostility of the aborigines must be a source of deep anxiety to you: but there is no doubt that the settlement in course of time will prove a great blessing to humanity, and be the means of rescuing or saving many an unfortunate shipwrecked mariner from a cruel and untimely end by those heartless savages who infest the islands.

My principal object in taking the liberty of addressing you, sir, is respectfully to invite your attention to a brief outline of the most splendid and spacious harbour of Noncowry, in the centre of the Nicobar group of islands formed between the South part of the beautiful island of Carmorta and the North part of the island of Noncowry, being about ten or twelve miles long (perhaps more) from the eastern to the western entrance, and about seven or eight miles wide. It has fine anchorage from 7 to 16 and 18 fathoms water all over it, and no hidden dangers of any kind; and it is almost large enough to contain the whole of the British navy, perfectly land-locked; and in the event of war, with no very great outlay, could be made impregnable.

The western entrance is only about 300 or 400 yards wide, and has 30 to 36 fathoms water from side to side, against a steep coral reef. The narrow part is exceedingly short, and it opens out into a magnificent sheet of water, which strikes the eye with astonishment.

The passage at the eastern entrance is between the reefs at each end of the island, and is quite safe, with 7 to 12 fathoms water; rather narrow, but the discoloured water shows the danger: two or three buoys would make it very easy to navigate.

The outer harbour or roadstead is formed by the picturesque little island of Trincutty, due East from Carmorta. The South part bears about E.S.E. from the eastern entrance to Noncowry Harbour, six or seven miles distance, (perhaps a little less,) and is splendid anchorage in the S.W. monsoon, in 6 to 9 fathoms good holding ground; and in the N.E. monsoon, if bad weather is apprehended, it is very easy to trip and run into the inner harbour. But it is my opinion that these periodical cyclones form to the northward of the latitude of Carmorta, and there is nothing more than an ordinary strong gale to be anticipated there occasionally, which sometimes proves very salutary in a tropical climate.

I was there amongst the islands nearly seven months, and paid great attention to this important matter; and what more firmly confirms my opinion is that you never experience a typhoon in the China Seas to the southward of Pulo Zapata, which is in 10° North latitude, off the coast of Cambia or Cambodia, and only across an isthmus to the gulf of Siam, and another one to these seas, the distance is not very great in the parallel of the eighth degree of North latitude. These three beautiful islands, with their really magnificent harbours, appear to be formed by nature to be made a most valuable British settlement, being immediately in the track of the great bulk of ships from Europe to Calcutta and ports of Burmah in the N.E. monsoon, and homeward bound in the S.W. monsoon; the same also from Calcutta, the ports of Burmah, Madras, and the opposite coasts, to the straits of Malacca, Singapore, and China.

The harbour is also placed in the centre of the whole Nicobar group, and surrounded by most fertile lands, viz., Teressa, Bompoka, Great and Little Nicobar, and small islands of Chowrie and Car Nicobar to the North. The island of Katchall, abounding with cocoanuts, is due West from the western entrance, distance six or seven miles, forming quite a barrier to prevent any sea rolling in. It would prove most valuable as a port of refuge to disabled ships, and in a very short time could be made capable of supplying the penal settlement of Port Blair with every requisite, there being a great quantity of grazing land on all three islands, and the soil rich and fertile, abounding with coconut trees, betelnut trees, and pigs in abundance. These islands are very thinly inhabited and could soon be brought under subjection to our rule and reconciled to us. My experience is from practical observation while commanding the Royal Danish transport *Christina* on an expedition in 1846, accompanied by H.D.M. frigate *Galeatha*, commanded by the Hon. Captain Steenbilla, and the steamer *Ganges*, which was purchased from the Honourable Company for the purpose.

I enclose you a few copies of printed instructions which I had published for the benefit of shipmasters trading to the islands, which give a brief outline of the other islands, and for which I received a letter of



thanks from the President in Council of Bengal, in 1855, through the Secretary of Government, Cecil Beadon, Esq.

The longitude of the central island is not correctly laid down on the charts; the surveying officers of the Danish frigate made it ten to thirteen miles different from Horsburg's *Directory* and charts.

I sincerely hope the Government will have the whole group of these interesting islands practically surveyed and thoroughly explored as soon as practicable, and have charts drawn on a large scale. I would recommend them to be in two sheets, first sheet from the Preparis Island to the Little Andaman; second sheet from thence to Acheen Head, including the Surat and Bengal passages and all channels and dangers to the northward of the head. This would be a very great boon to shipmasters, and what has long been required; they would meet with a ready and most extensive sale accompanied by a small book of instructions as to sets of tides, &c.

The geologists of the Expedition were strongly of opinion that there were coal fields in the islands, as many pieces were found on the surface up the hills far above the level of the sea on the Little Nicobar Island. I took down in my ship a boring machine, for the purpose of penetrating a considerable depth into the earth; it was made expressly to order, in Calcutta, for the Expedition at a large price; but the Commander-in-chief did not even order it to be unpacked, and I took it back from whence it came after being twelve months on board the ship.

I hope, sir, I have not tired nor exhausted your patience. I have written at much greater length than I intended. With best wishes for your health,

I remain, &c.,

NEAT MAJOR,

*Agent to Lloyd's and  
the Liverpool Underwriters' Association.*

*To Captain J. C. Haughton,  
Superintendent, Port Blair, Andamans.*

---

#### *Sailing and General Directions for the Nicobar Islands.*

These islands being so very little known by commanders of European vessels trading from England to the ports of Burmah, now open to all nations and under the British rule, and where so many benefits can be derived from a knowledge of them, the author has taken up his pen to write these brief instructions. Sincerely hoping they may prove of service to his brother shipmasters, beneficial to shipowners, and profitable to the mercantile community at large.

Ships coming from England with a coal cargo bound to Aden or Point de Galle, and thence to this port or Rangoon for timber, might always lay in articles for barter, and touch at these islands for coconuts, and with judicious management make sufficient money to pay

their disturbances up to the time the ship is loaded with her homeward cargo, and cause very little delay.

I will commence at the South part of the Great Nicobars, which is described by Horsburgh as a promontory, but there is a large deep bay, seven miles in breadth, with excellent anchorage, with 5, 6, 7, 8, and 9 fathoms water, clay bottom; and a ship can be sheltered from either monsoon at each side of the bay, being able to bring each extreme point of the bay S.S.E. There is a reef runs out a long way from the West point in an E.S.E. direction, which must be carefully avoided. There is a river at the head of the bay, with a bar at the entrance: it is about a pistol shot wide, and runs up the centre of the island. H.D.M. frigate *Galeathea's* boats went up about thirty-six miles, but did not penetrate further in consequence of a most violent thunder-storm with heavy rain. The interior of the island is most fertile, and the soil very rich; sugar-cane in abundance, growing wild, and also coffee, and numerous tropical fruits. The natives are a different race entirely from those on the sea coast, and are supposed to be savages. We could not get a sight of any of them during the brief time the frigate's boats remained up the river. This is no place in trading for coconuts, and the natives on the sea coast are very shy. Quantities of tortoise-shell can at times be picked up there.

Both on the East and West sides of the Great Nicobar, there are numbers of bays; but the South is the only one I made myself thoroughly acquainted with.

Next comes the St. George Channel, to the north, between this island and the Little Nicobar, which is quite safe navigation, the discoloured water showing all the reefs; but it is very narrow, and no place for trade. To the North of the Little Nicobar there is a beautiful little harbour, only open from N.  $\frac{1}{2}$  W. to N.W.b.N.; the entrance is directly opposite Track Island, in the Sombrieu Channel, and a ship can lay within a hundred fathoms from the shore in 9 fathoms water, on the starboard side of the harbour, under the small island of Pulo Meloe, or commonly called Buseh Island by the Danes. The natives here are very inoffensive and willing to trade, but they are very poor. This harbour is perfectly safe at all seasons of the year, and poon spars in abundance procurable in the jungle for disabled ships, without any expense, only the trouble of cutting them by the ship's crew and bringing them to the ship, which would not be much labour.

The next small islands are Trice and Meroe; the former must not be too closely approached, the latter can, and a great number of coconuts can be got there, but it is not safe in the S.W. monsoon.

The next important islands are Noncowry, Carmorta, and the narrow island of Trincutte, forming the inner and outer harbours of Noncowry, which is too well described by Horsburgh for me to comment on, but I would recommend vessels going there for coconuts, in the S.W. monsoon, to anchor in the outer Noncowry Harbour, to the eastward of the island, half way between it and the South part of

Trincutte. There is only a passage between it and Carmorta for boats.

There are abundance of cocoanuts on these islands, but the natives are very treacherous and not to be trusted. Due caution should be taken not to allow too many natives on board at one time. They bring the cocoanuts off in large canoes, which have outriggers, something similar to Ceylon, but much larger. It is impossible that they could board any moderate size ship by force.

The natives of Katchall are also very treacherous. There are plenty of cocoanuts to be got, and good anchorage, on the East side of the island. The islands of Terecia and Bompoka are awkward places for a stranger to visit, especially in the S.W. monsoon.

The island of Carmorta, on the West side, abounds in bays and beautiful harbours, and there is a good place at the N.E. part for cocoanuts. The village is called Kakana. There is also another on the N.W. end of Trincutte, about seven miles to the S.S.E. of the Kakana anchorage, a famous place for loading cocoanuts, and another on the N.W. side of Carmorta, due East from the island of Bompoka. The whole of the group of the Nicobar Islands abounds with coral reefs; they are mostly off the extreme points, and should not be closely approached; and a good look out is necessary, and due attention to be paid to the lead. The reef off the N.E. point of Trincutte, the extreme point is a mile and a quarter from the shore.

All the channels between the islands from Acheen Head to the Car Nicobar are safe navigation; but at times there are very great ripples and overfalls, which to a stranger appear alarming. The currents generally set East and West through the channels.

The principal and only moderately civilized island, which is most frequently resorted to by country vessels, is the Car Nicobar, northernmost of the group. The natives here are very honest, kind, and hospitable, and most of them speak a little broken English. There are a number of villages round the island you can approach within 10 or 11 fathoms, hoist all your colours and you will soon have the natives off to show you the best place to anchor. Tell them what you have come for, and after you have got your ship comfortably to an anchor, and decks cleared, show them your barter; you will soon get familiar with them. They are very forward in their manners and take many liberties, but do not mean any harm, it is only for the want of knowing better, being only half civilized, therefore on no account get angry with them; they will do any thing for kindness.

Articles best adapted for barter for cocoanuts, and instructions to commanders the most appropriate mode to deal with the natives, paying particular attention as to the characters in the different islands in the group, as described in these instructions.

A vessel leaving England with coals for Aden or Galle, and bound to Burmah for a cargo, and intending to touch at these islands for cocoanuts, should purchase the articles for barter before leaving. The following assortment are the most likely to please the natives, viz. :—

A quantity of gay cotton handkerchiefs, common white and coloured long cloth. Common red and blue Turkey, and blue pumjams. Pig-tail, cavendish, and shag tobacco. A quantity of spirits, rum or arrack, which had better be bottled off. Small hatchets. Straight cutlasses. Some showy common fowling pieces or muskets, with flint and steel locks. Canisters of powder and bags of shot. Some blue and red common flannel shirts. Some Scotch caps. German silver spoons and sauce ladles. German and real silver wire of sizes. Long straight common Birmingham or Sheffield carving knives, pointed, and good length.

This assortment I think sufficient for all purposes, always calculating the size of the ship and the quantity of nuts she will carry, so as to have an equal assortment. But should you have any surplus barter, it will always bring a profit here. In trading with the natives it is necessary always to conciliate them, and endeavour to make them attached to you. On no account allow your crew to interfere with them or to go on shore.

In calculating the value of the different description of articles you have for barter, bear in mind you must pay only four to six annas, or sixpence to ninepence per hundred for cocoanuts. The nuts are larger and cheaper in the centre island than they are at the Car Nicobar. Edible birds' nests, tortoise-shells, ambergrease, and betelnut, are also procurable at these islands, and abundance of beche de mer on all the reefs.

In paying particular attention to these instructions it is impossible to err, and the author again sincerely hopes that they may prove beneficial to the community at large.

NEAT MAJOR,  
*Agent for Lloyd's.*

N.B.—A thorough knowledge of these islands, the bays and splendid harbours, would be of the greatest service to shipmasters, and most beneficial to shipowners and underwriters. Vessels leaving the River Hooghly, Arracan, and other different ports on the Pegu and Tenasserim coasts, in getting disabled, with loss of spars or other incidental accidents, such as springing a leak, short of water, &c., would be spared the painful necessity of bearing up to the ports of Maulmain, Rangoon, or Calcutta for their required repairs, which are well known to entail ruinous expenses, and in the vicinity of these islands with the knowledge of them and their facilities, as these instructions describe, would (the author is convinced) be most advantageous to the whole of the mercantile and shipping interests, and encourage civilization.

[In our last year's volume will be found some interesting papers relating to these islands.—ED.]

## ISLE HAINAN, CHINA.

Hainan is a large island in the China Sea, the name of which translated signifies "South of the Sea." On the north adjacent to it are the provinces of Quang Si and Quang Tung, (Canton,) which may be distinctly seen from it in fine weather, being separated by a channel of about twenty miles, used by junks. To the south and east its shore is washed by the gulf of Tonquin, about 120 miles across which is the Annamite coast. The northern shore of it is fringed by extensive sand banks, and the channel is so rocky as to be only navigable by vessels of small draft of water. It has full often been the scene of wreck to larger ships that have attempted to use it. Hainan from east to west is from 150 to 200 miles across, and from north to south from 75 to 120, and in circuit 400, with an area of 14,000 square miles.

The northern part of the island is formed by a plain commencing at the shore and extending for forty miles into the interior. The southern part, on the contrary, as well as the eastern part, is formed of very high mountains, clothed with most splendid vegetation. It is only between these mountains and those which occupy the middle of the island called *Simon-Chan* or *Tchi-Chan* that the ground is cultivated. There are plains which are yet uncultivated, but full of sandy places. Nevertheless the numerous rivers and the rains which mark the changes of the seasons, fertilize the rice fields, and the harvest which is collected twice in the year suffices for the large population of the island.

The climate of the southern part of the island is said to be not salubrious. According to the Chinese the water there is not good, and they adopt the precaution of boiling in the morning all they will require for use in the day.

The island forms part of the province of Quang-Tong, although the Chinese never have had entire possession of it. Kingtcheou-fou, its capital, is situated in the north part of the island, near a river, on a promontory of the shore, and junks anchor close under its walls. Two classes of mandarins manage the affairs of the island as in other parts of China, the mandarins of learning and those of war. Three principal towns, although these are only of the second class, and ten others of the third, all of them nearly on the coast, are under their jurisdiction. The greater part of the island is under the Chinese dominion, a portion in the middle of it called *Si-mou-chan*, only is independent. It is occupied by a free people, as yet unconquered, and who do not acknowledge the authority of the mandarins. But they have been compelled by the Chinese to abandon their fields and seek shelter in the mountainous country in the middle, where they are secure from the attacks of their persecutors.

Formerly these islanders lived in open communication with the Chinese. Twice in the year they exported to them the gold from their mines and the fine wood so much esteemed by the Orientals. An

agent would inspect the cloth and wares of the Chinese on their frontier, and the principal Chinese merchants would look at the samples of goods prepared in the mountains; the prices would be agreed on and as the Chinese merchants had transported the purchases, they faithfully remitted the articles agreed on in exchange, and thus the Chinese made large profits by this traffic, of which the governors had a good large share.

The Emperor Chang-fi having been informed of the immense quantity of gold which the mandarins derived from this trade, had more than one motive for forbidding his subjects, under pain of death, from having any communication with these people. Nevertheless there were secret emissaries of some of the neighbouring governors who could find the means of penetrating among them: but what was obtained in half a century by this secret trade was nothing in comparison with that which had been obtained previously. The islanders ceased to appear more unless led by caprice or the remembrance of their former liberty to the towns of the neighbouring Chinese. Sometimes they have attempted to surprise them, but they were so badly disciplined and so void of courage that fifty Chinese, bad soldiers as they are, would put a thousand of them to flight. It was only necessary to show themselves to do this. There are some of these islanders who, more docile than others, have made themselves tributary to the Chinese, and to whom they have given up whole villages on the plains on the condition that they would have no communication with those in the mountains.

Many of these serve the Chinese, tend their flocks, till their grounds, and perform the duties required of them by the governors of the different localities: and these are principally in the eastern and southern parts of the island. Generally speaking these are a deformed class, very small of stature, and of a red caste of colour.

Both sexes wear the hair passed through a ring on the forehead. At the back is a little straw hat, or perhaps it is made of cane, which they tie under the chin. Their dress consists of a morsel of cotton cloth, black or blue, which covers them from the waist to the knees. The women wear a kind of chemisette of the same stuff, and are distinguished from the men by blue stripes made with indigo over the face from the eyes downwards. They both wear buckles made of gold or silver, which are very well worked.

Their weapons are the bow and arrow, with which they are not very skillful, and they have a kind of cutlass, which they carry in a small basket as a substitute for a sheath, attached by a girdle behind them. It is the only instrument with which they do all their carpenter's work, and cut their wood in the forests.

Besides the gold mines in the middle of the island, there are others of *lapis lazuli*, which they export to Canton. Their mountains are covered with the richest scented woods, and the most beautiful wood both for shipbuilding as well as carving. One of the emperors had it conveyed even to Peking, at an enormous expense, for the construction of his mausoleum. Next to the eagle wood the most valuable is that

called *koa li*, and in Europe rosewood or violet, in consequence of its fragrance. There is also a yellow wood of which they form large columns: these are above all price, and reserved, like the *koa li*, for the use of the Emperor.

They breed a vast number of small horses on the island, which, besides yielding the fruits of China, produces tobacco, cotton, indigo, and cinnamon. If to these are added the harvest of areca nuts, the cutting of rattans, the fisheries of different kinds along the coasts, the produce of which are dried and salted, one need not be surprised at the trade with Canton from the island in twenty or thirty large junks annually, which also obtained salt and pearls fished up on the coast, and Hainan may take its place, for its rise and riches, among the most considerable of the Asiatic islands.

It is on the north shore of the island that nearly all the vessels come from Canton. The port is formed by a tolerably sized river, the entrance of which is protected by two little forts. Vessels of any other description than Chinese can scarcely get into it, for no vessels drawing above 10 or 12 feet water can enter. The trade here is carried on by all the merchants of the island, who have their agents in all other parts of it. About two leagues from it is the capital of the island, separated by an extensive plain, covered with handsome mausoleums of the Chinese, among which appears the cross of an Italian Jesuit, the first missionary who ever came to the island.

There are several good roadsteads to the southward of it, such as Yue Tcheou and Yu-lin Kan, where water may be obtained. It is in this part of the island where the Company's vessels anchored, where there is a large bay, at the bottom of which is one of the best ports that can be found. Vessels anchor in 20 feet water about a pistol shot from the beach. Six vessels would ride safely there in both monsoons with most complete shelter.

The shores of this island abound with marine plants and corals of all description. It has the tree which produces the gum called dragon's blood, and others which give a white juice by incision, which on hardening assumes a red colour. This matter thrown into a crucible burnt slowly, gives out an odour not so powerful but more agreeable than that of incense. Along the rocky shore small blue fish abound, which resemble the dolphin. This fish is more esteemed by the Chinese than the gold fish of their rivers, and which are preserved with so much care in their ornamental waters.

Some account has appeared of a lake in this island, the water of which has the power of petrifying any substance thrown into it. The islanders do not seem to have any knowledge of it, and the report may have originated from the false petrifications common at Canton, which the Chinese are very clever in producing. But it has been stated that no other part of the world can produce the pearls obtained from the north coast of Hainan. If this has really been the case in former times, it is not so at present. There is a very insignificant pearl fishery on the shores of the Quangsi province, which is highly esteemed;

but it is from India and the Eastern Archipelago that pearls are sent to China.

Among the animals of the island there is a curious large black ape, the physiognomy of which closely resembles that of the human race; but it is rare. The grey monkey is very common there, and very ugly.

There is an abundance of all kinds of game on the island. The partridges, quail, and hares are not so good as those of Europe; but the snipe and all the water birds are very good. There is a woodcock of very fine flavour, an abundance of doves, and two kinds of wood-pigeons. Deer and wild hog, especially the wild boar, are plentiful. There are also several curious birds on the island, such as the raven with his white cravat, and starlings with small lunettes on the beak, blackbirds of dark blue colour, with two high yellow ears, that whistle perfectly, and birds about the size of a linnet of a beautiful scarlet colour, and others again of a beautiful yellow plumage: these two birds, although of different species, are always found together.

There can scarcely be many dangerous reptiles in Hainan, from the habit of the natives constantly travelling bare footed over the island, in full confidence, at all hours of the day or night. And yet there are snakes and adders there of a prodigious size; but they are very timid and disappear instantly from the least noise or disturbance over them.

Ships from the southward visiting Hainan in the month of December are enabled to distinguish the high mountains of Hainan from a considerable distance that form a shelter to Tonquin from the monsoons. They take refuge there sometimes from typhoons and even from the violence of the N.E. monsoon when blown down the coast.

Such is the island of Hainan, at some distance opposite to the capital of Annam, that it might have been possible perhaps to have included in the treaty, after the example of England, at the time of taking Pekin; an acquisition preferable to and less expensive than Madagascar, where it may nevertheless be important to hold a position, but the population of which has no similitude to the white race. How much it is to be regretted that the most beautiful island on the Chinese coast next to Formosa, one which has good harbours and safe anchorages, and which supplies the Celestial Empire with its best woods for building shipping; that this island, the soil of which is so rich in its produce, so interesting in its position, that belongs to the Annamite government, and one that has been so often pointed out by its importance, has not been ceded to France! The iron yoke with which the Chinese mandarins govern the inhabitants of Hainan, would make them look on French troops landing there as their liberators when the expeditionary army occupied the capital of the Annamite kingdom.

*Moniteur de la Flotte.*



## THE MAURITIUS HURRICANES OF FEBRUARY AND MARCH, 1861.

Of this hurricane the *Mauritius Gazette* says:—

One of the severest hurricanes that has been witnessed for many years has passed over our island. The force of the wind might have been stronger in former gales, but the duration in the same direction on this occasion was most unusual, lasting with great violence from the 12th to 16th February. We give a summary description of this perturbation, which will be read with interest by all who follow the attractive science of cyclonomy. The quantity of rain that fell in the few days of bad weather was equal to the average of a whole year, being no less than forty-two inches. The rivers were so swollen as to overflow, inundating valleys and low lands in all directions, and in one instance carrying away in the torrents no less than sixteen Indians and the dwellings of a great many more. In other parts there was loss of life. The deaths of oxen by the cramp were not less than two thousand. Moka, the district in the centre of the island, suffered the most severely. Buildings were seriously injured, Indian camps destroyed, plantations of canes that were advanced were twisted, broken, and uprooted. Out of seventeen sugar-houses in that district ten were seriously damaged. The windward districts suffered less. In town no large buildings were destroyed, but some were much injured. The roads and bridges generally have more or less suffered; but with the number of men now at the disposal of the superintendent of roads the damage will be promptly repaired. The shipping in the harbour escaped with little injury, but several vessels have since arrived with damage.

*Observatory, Port Louis, 5th March, 1861.*

The more the hurricanes of the Southern Indian Ocean are studied the more evident does it become that they owe their origin and continued existence for several days to the vibrating and conflicting action of the equatorial westerly monsoon and the S.E. Trade wind, when the sun has southern declination. Between these two systems of winds there is a belt of maximum heat, and consequently of atmospheric rarefaction, with light and variable winds; and towards this space of diminished pressure the monsoon and Trade-wind flow from opposite directions, bringing with them the vapours which have been generated on either side. This belt of variables is inclined obliquely across the ocean, extending further South on its western side towards the heated land; and it also has, within certain limits, a vibratory motion from North to South, and *vice versâ*, along its whole extent, the Trade and monsoon reigning alternately in the same localities. The monsoon, however, is the aggressor, being backed and pressed upon by a much greater extent of cold and heavy air than its opponent; and it is during its irruptions into the Trade-wind region that hurricanes take place.

It might be expected that as the line of demarcation between the

two winds has a great extent in longitude, so several hurricanes or cyclones might be formed between them at the same time, but at considerable distances apart,—and observation shows that this is the case. Several instances occurred last year, particularly in February. During the last ten days of that month the equatorial borders of the Trade, along its whole extent, were in a state of stormy gyration, and several distinct cyclones raged at the same time. The same thing has again occurred this year.

From the 31st of January to the 3rd of February last the barometer here fell from 30·002 to 29·894, or 0·108, with the wind from E.S.E. to S.S.E. and S.S.W. and fine weather. Though the barometer fell so very little, yet its having done so with southerly winds clearly indicated a disturbance in the Trade to the north-eastward, the existence of which was afterwards confirmed. The American barque *J. H. Duvall* was dismasted in a hurricane on the 29th January, in 15° to 18° S. and 85° 30' E., the wind commencing at S.E. and increasing from that quarter until, at 11h. p.m., it moderated to a calm. At 11h. 30m. p.m. it blew "worse than ever" from N.W.

On the 3rd and 4th February, in about 23° 27' S. and 67° 20' E. (Paris), the French ship *Mascate* was also dismasted. The wind increased from S.E.. Towards 10h. a.m. of the 4th it fell calm; the wind then passed to West, from which it blew violently. Both these vessels experienced the same hurricane.

On the 6th February the standard barometer here began to go down again slowly but steadily, with the wind from S.E.; and continued falling from 30·060, at noon on the 6th, to 29·842, at noon on the 11th, when the state of the weather began to attract general attention. The wind kept at S.E. for three days, the barometer falling rather rapidly on the 12th, but very little on the 13th, 14th, and 15th, as will appear from the following table:—

Day.	3.30 a.m.	9.30 a.m.	Noon.	3.30 p.m.	9.30 p.m.	Midngt.
February 11th	29·844	29·868	29·842	29·760	29·818	29·760
"   12th	29·640	29·598	29·514	29·416	29·418	29·410
"   13th	29·326	29·396	29·354	29·280	29·360	29·340
"   14th	29·306	29·360	29·326	29·228	29·270	29·266
"   15th	29·254	29·304	29·258	29·178	29·208	29·218
"   16th	29·138	29·202	29·200	29·232	29·370	29·420
"   17th	29·450	29·538	29·540	29·540	29·638	29·676
"   18th	29·638	29·732	29·740	29·758	29·886	
"   19th	29·852	29·944	29·922	29·896	30 000	29·976

The barometer stood lowest (29·138) at 5h. p.m. of the 15th and 3h. 30m. a.m. of the 16th. Hourly observations were taken with the greatest care, and the extent of oscillation of the mercury determined. The constant oscillation, which was one of the remarkable features of the storm, was not owing to any tremor or shaking of the barometer

(one of Newman's large standards), but apparently to the alternate compression and expansion of the air in motion.

At St. Denis, in the neighbouring island of Reunion, the readings of the barometer, according to very valuable observations communicated by Mr. Bridet, port-captain there, were as follows:—

<i>Day.</i>	<i>3.30 a.m.</i>	<i>9.30 a.m.</i>	<i>Noon.</i>	<i>3.30 p.m.</i>	<i>9.30 p.m.</i>	<i>Midnigt.</i>
February 12th	756·95	757·70	757·00	754·80	754·85	754·10
„ 13th	752·15	753·00	751·00	751·45	752·30	751·05
„ 14th	751·35	751·70	751·50	750·70	751·30	751·25
„ 15th	749·85	750·25	749·75	748·40	747·95	747·80
„ 16th	745·50	745·15	743·15	741·45		741·25
„ 17th	740·70	741·50	742·45	742·65	748·50	749·40
„ 18th	749·95		753·10	753·55	756·25	757·35
„ 19th		758·80	758·90	757·70		

The lowest pressure at St. Denis was 740·70 (29·160) at 3h. 30m. a.m. of the 17th; when, at Port Louis, the barometer was oscillating from 29·450 to 29·452. When the barometer at Port Louis stood at 29·138 to 29·76, at 5h. p.m. of the 15th, at St. Denis it was at 748·10 (29·450); and again, when, at 3h. 30m. a.m. of the 16th, at Port Louis it was at 29·138 to 29·148, at St. Denis it was at 745·50 (29·346).

Taking, then, the barometer as a guide, it may be inferred that the centre of the storm passed about as close to St. Denis as it did to Port Louis. But St. Denis lies at the northern extremity of Reunion, and has the greater part of the island to the East of its meridian, while Port Louis is situated on the West coast of Mauritius.

At Port Louis the wind kept, on the whole, at E.S.E. to S.S.E. (hauling now and then two or three points either way) till the 15th, when it showed a tendency to veer to eastward. About 6h. a.m. of the 16th it was at East; at 4h. p.m. of the 16th at N.E. to N.N.E.; at 6h. a.m. of the 17th at North; at 10h. p.m. of the 17th at N.W.; and at noon of the 18th at West. It blew hardest from 4h. p.m. to 11h. p.m. of the 14th, from S.S.E. to E.S.E.; and again from 5h. p.m. to midnight of the 15th, from E.S.E. to N.E. The maximum pressure shown by Osler's anemometer, before it gave way on the 12th, was 20lbs. per square foot. An anemometer at the Royal Engineer establishment, about 500 yards West of the observatory, is said to have indicated a maximum pressure of 56lbs. in a violent gust; but if the instrument is correct it must have shown that pressure only for a moment.

The wind during the whole time blew almost in a succession of gusts. At times the weather looked as if it were going to clear up.

From 9h. 30m. a.m. on Monday the 11th to 9h. 30m. a.m. on Sunday the 17th, 44·730 inches of rain fell, which is very nearly equal to the mean annual fall.

Hourly observations made at Mahebourg, by Lieutenant Franklin, of the 24th Regiment, and at Flat Island, by Mr. McIndoe, and forwarded by Dr. Jacques, the Surgeon-Superintendent, show that the veering of the wind at those stations was the same as at Port Louis, and the direction also nearly the same at the same hours.

The amount of rain registered at Flat Island from the 11th to the 17th, both inclusive, was only 16·19 inches; but the observer remarks that the rain, which was thick and dense, was driven nearly horizontally over the spot where the gauge was situated. That the amount of precipitation was much greater than that given by the gauge is evident from the fact that "a sheet of water was collected in the plain with a mean depth of seven to eight feet, and extending three-fourths of a mile from North to South, and 200 to 300 yards across."

At Mahebourg upwards of 25 inches fell, as shown by the gauge; but this also is probably much below the mark.

On the other hand the amount of rain said to have been carefully registered at Vacoa, in the upper part of Plaines Wilhems was 95 inches!

At St. Denis the wind from the morning of the 13th to noon of the 16th remained almost steady at S.S.E., and blew in very strong and violent gusts, with rain, from 4h. a.m. of the 16th to 9h. a.m. of the 16th, when it began to moderate, till at noon it almost ceased. Calms and light variable winds from all parts, with the clouds drifting from all directions (the barometer in the meantime being at its minimum) then continued till 10h. a.m. of the 17th, when the wind increased to a fresh breeze from *West*. It then blew strong from W.¼ S.W., with squalls and rain, till 8h. 30m. a.m. of the 18th, when it began to moderate again, the wind remaining at W.¼ S.W. till midnight, at which hour it was very light from S.W.

M. Bridet, who has paid great attention to cyclonology, and whose opinion is entitled to the highest respect, considers that the calm of twenty-two hours at St. Denis was not the central calm of the cyclone, which he thinks passed to the North and N.W. of Mauritius, at a distance of from ten to fifteen miles, on the 16th, and at a distance of thirty miles to the S.E. of Reunion at midnight of the 17th.

Every possible information is being collected here from log-books; but there has not yet been sufficient time to collate it and arrive at definite conclusions. It is very evident, however, that from the 9th to the 17th there were at least two distinct cyclones at a considerable distance from each other, and that the whole extent of the equatorial side of the Trade-wind was during that time in conflict with the westerly monsoon. A few notes illustrative of this may be interesting.

On the 9th, the *Futta Salam*, Captain Warwick, in 15° 29' S. and 76° 40' E., had strong gales from E.S.E., with heavy rain and a high sea; barometer 29·66. At the same time the *Meteor*, Captain Mills, in 14° 28' S. and 78° 34' E., had a very heavy gale from N.E.; barometer 29·20. This gives us one cyclone.

From 33° S. and 50° to 60° E. to some distance to the northward of Rodriguez, the Trade-wind on the same day was blowing strong

from E.S.E.; and there is little doubt that the centre of a second cyclone was in about  $15^{\circ}$  S. and  $63^{\circ}$  E.

On the 10th, the *Futta Salam*, in  $16^{\circ} 26'$  S. and  $73^{\circ} 58'$  E., had fresh breezes from South,—bar. 29·85; the *Meteor*, in about  $13^{\circ} 10'$  S. and  $78^{\circ} 52'$  E., a hurricane from S.S.W.,—bar. 29·10; and the *George and Juliette*, Captain Fabre, in  $12^{\circ} 34'$  S. and  $88^{\circ} 40'$  E. (Paris), strong winds from West.

The same signs of a second cyclone to the northward of Rodriguez still exist.

On the 11th we have exactly the same evidence of both cyclones; but the Trade-wind to the southward of Rodriguez has much increased in strength.

On the 12th the evidence is most satisfactory. The centres of the two cyclones are about 1,200 miles apart. The following vessels are in the easternmost,—*Meteor*, in about  $13^{\circ} 31'$  S. and  $79^{\circ} 44'$  E., with strong gales from W.S.W.,—bar. 29·50; *Bussorah Merchant*, Captain Delange, in  $9^{\circ} 53'$  S. and  $81^{\circ} 30'$  E., with strong winds and very heavy squalls from West, and a very heavy sea,—bar. 29·88; *George and Juliette*, in  $14^{\circ} 18'$  S. and  $87^{\circ} 36'$  E. (Paris), with fresh winds from N.N.W. and a very heavy sea from W.N.W.

The westernmost cyclone had its centre in about  $18^{\circ} 15'$  S. and  $60^{\circ} 40'$  E., as shown by the logs of many vessels.

On the 13th, 14th, 15th, and 16th the evidence of the existence of both storms is complete; but the second (the Mauritius one) is alone found on the 17th.

The courses of those two storms have not yet been traced with sufficient accuracy; but it is plain that the Mauritius one passed the island to the northward and westward, impinging upon Reunion, the high land of which seems to have for a time affected its form and intensity. From noon of the 12th to noon of the 13th it travelled at the average rate of five to six miles per hour, and for the next two or three days remained nearly stationary, but oscillating backwards and forwards, as if preparing to set off afresh. This accounts for the constancy of the wind and the state of the barometer at Port Louis.

The brig *Wild Wave*, Captain Maughan, at noon of the 12th, in  $18^{\circ} 48'$  S. and  $61^{\circ} 51'$  E. (by account), had a severe gale from S.b.W., with the barometer at 29·52. She was kept right before the wind, her commander, who knew the nature of the storm, being anxious to get to its northern side without delay.

During the next four hours (the vessel running at the rate of seven knots) the wind veered to S.S.W., S.W., and West. At 5h, p.m. she was hove to under bare poles, Captain Maughan expecting that the storm would travel away from him. The barometer, however, kept falling, the wind hauling to northward, and the vessel drifting at the rate of two knots per hour. At 8h. a.m. of the 13th the wind was easterly (bar. 28·60) and at noon from the southward of East (bar. 28·40). The wind then died away nearly all at once (lat., D.R.,  $18^{\circ} 58'$  S., long., D.R.,  $57^{\circ} 22'$  E.), and a calm of fifteen hours' duration succeeded.

At 3h. a.m. of the 14th (bar. 28·40) the breeze suddenly freshened from South and East, and at 8h. it was blowing a hurricane from S.W. At 9h. 30m. the vessel was got before it again (bar. 28·65). At 10h. the wind was West (bar. 28·65). At noon it was W.N.W. (lat., D.R., 18° 30' S., long., D.R., 57° 30' E.) It then hauled to the northward, and at 5h. p.m. the ship was hove to on the port tack, the wind decreasing and hauling to the eastward of North.

The centre of the storm at noon of the 15th was about ninety miles N.E.b.N. of Port Louis; and at noon of the 16th about fifty miles N.W. of it. On the 17th, at noon, it was about seventy miles to the S.S.E. of St. Denis; but on that day it was probably disturbed and flattened by the land. At noon of the 18th it was in 24° 15' S. and 56° 30' E. Its shortest distance from St. Denis was about fifty miles, and from St. Rose about twenty-five miles. But more data are required.

On Tuesday, the 26th of February, the barometer began to go down again, with light S.E. winds, and continued to fall very slowly but sensibly on the 27th and 28th, the weather being fine. There was no doubt that another hurricane was commencing to the eastward and northward of the island, although the statement was received with derision. On the 1st of March the weather was still fine, but the barometer descending, though it stood, at 9h. 30m. a.m., at 29·966. It had previously been announced that bad weather existed to the eastward and northward, and on this day it was added that there were signs of a hurricane in about 15° S. and 60° to 75° E. The barometer continued falling, though it was still high, being, at 9h. 30m. p.m., at 29·986. On Saturday, the 2nd, it began to fall more rapidly, the wind increasing from S.E., with an ugly appearance. The following table is compiled from the hourly observations which were taken:—

<i>Day.</i>	<i>3.30 a.m.</i>	<i>9.30 a.m.</i>	<i>3.30 p.m.</i>	<i>9.30 p.m.</i>
February 27th	30·076	30·102	30·010	30·080
„ 28th	29·996	30·014	29·928	29·984
March 1st	29·936	29·966	29·916	29·986
„ 2nd	29·870	29·852	29·664	29·550
„ 3rd	29·406	29·540	29·688	29·810
„ 4th	29·778	29·872	29·854	29·958

The wind increased from S.S.E. to South, and blew very hard. At 8h. p.m. of the 2nd it was from South, blowing hard, with furious gusts and rain. It then veered gradually to S.W., with furious squalls and rain, and began to moderate at midnight. At 10h. a.m. of the 3rd it was from West in strong steady breezes.

The total fall of rain during this gale was only 1·582 inches.

The anemometer already alluded to (Osler's anemometer here was blown down in the former gale) is said to have indicated a pressure of 30lbs. per square foot, which must be nearly correct.

This year, as well as 1860, has hitherto been remarkable for rain and hurricanes in the Southern Indian Ocean; and it is interesting to know that in the Northern Hemisphere there have been at the same time rigid winters, as if the whole atmosphere were affected by some general cause. Have the rigid winters of the North of Europe and the hurricanes of the Indian Ocean a periodicity?—and if so, what connection has it with the sun?

C. MELDRUM.

ON THE DEFECTIVE EXPLANATION AS GIVEN IN THE NAUTICAL ALMANAC FOR 1864. *By James Gordon, M.A.*

In my first paper, published in the *Nautical Magazine* for July last, I referred to the *Nautical Almanac* for 1861. I now beg to call the attention of nautical men to an important alteration which has been made regarding the *Diff. for 1 hour* of the sun's declination and equation of time. I have before me the *Nautical Almanacs* for 1861 and 1864.

In 1861 these hourly differences were found by dividing the daily difference by 24, but in 1864 they are not.

On looking at the explanation of page I. *N.A.*, precisely the same words are used both for 1861 and 1864 regarding the *diff. for 1 hour* of the declination: consequently nautical men will, to a certainty, calculate the declination as formerly, and thus produce a greater error than by the usual method.

*Example.*

Required the sun's declination for 1864, December 19d. 21h. 54m. Greenwich apparent time.

*1st.—Correctly computed by second differences.*

	Declination.	1st diff.	2nd diff.
Dec. 19	23° 26' 17".8	+ 43".7	— 28".3
„ 20	23 27 1 .5	+ 15 .4	
„ 21	23 27 16 .9		
Time	21h. 54m. = 21.9h. = 0.9d.		

$$n = 0.9, \quad n \frac{n-1}{2} = .9 \times \frac{-.1}{2} = -.045$$

Dec. 19 gives declination.....	23° 26' 17".8
1st. diff. + 43".7 + .9 .....	+ 39 .3
	23 26 57 .1
2nd diff. — 28".3 + — .045 .....	+ 1 .3

Correct declination .. 23 26 58 .4

2nd.—*Computed by hourly diff. for 1864.*

Dec. 19 gives . . . . .	23° 26' 17".8	Diff. 2".41
Corr. for 21.6h. . . . .	+52 .1	21.6
Declination by method of 1864.	23 27 9.9	1448
		241
		482
		52.056

3rd — *Computed by hourly diff. as found in 1861.*

Dec. 19 gives . . . . .	23° 26' 17".8	Diff. 1".82
Corr. for 21.6h. . . . .	+39 .3	21.6
Declination by method of 1861.	23 26 57 .1	1096
		182
		364
		39.316

Consequently by the new method the error is 11".5, by the usual way it is 1".3.

*Remark.*

It is therefore of importance to inquire how the *diff. for 1 hour* is obtained, and how it is to be used.

In 1864 it is obtained for any given day by dividing the change of the declination (page I.) between the day before and the day after the given day by 48. Thus, to find it for 1864, Dec. 19.

Dec. 18 gives . . . . .	23° 35' 5".8
Dec. 20 gives . . . . .	23 27 1 .5

$$\begin{array}{r}
 1\ 55\ .7 \\
 \hline
 60 \\
 \hline
 48 \left\{ \begin{array}{l} 8) 115.7 \\ \hline 6) 14.46 \\ \hline \end{array} \right. \\
 \hline
 2.41 \text{ diff. for 1 hour.}
 \end{array}$$

To use such *hourly differences* instead of using the *diff.* opposite any given day, we must compute the *diff.* for the middle time between noon of the given day and the given time on that day. Thus, for the example above given:—

The given time is Dec. 19.9d: the middle time, therefore, between Dec. 19d. at noon and Dec. 19.9d. is Dec. 19.45d.



Diff. for Dec. 19		2''·41		
,,	Dec. 20	1·23		
Change for a day		1·18		
		·45		
		590		
		472		
Change for mid time....		0''·5310		
Diff. at noon .....		2·41		
Diff. at mid time .....		1·88		
Dec. 19 gives ....	23° 26' 17''·8			
Corr. for 21·6h.....	40·6			
Declination..	23 26 58·4			

This agrees with the result as already obtained by second differences.

#### Conclusion

It is surprising that no intimation has been given in the explanation *N.A.* as to the above. There is not one word said as to how the *differences* were obtained: on the contrary, the explanation given must certainly lead any reader to infer that they are calculated in the usual way. It is true that a hint is given in the rule for the equation of time; but in a matter of such importance, the rules ought to be given explicitly, and not left to the reader to be guessed at.

I would certainly say that nautical men will never trouble themselves by proportioning for *hourly differences*. Astronomers, I should think, would have preferred the old method by the *first differences*; and when great accuracy is required, to correct by *second differences*. If such ambiguity of explanation is continued in the *Nautical Almanac*, it may share the same fate as a treatise on music, which was declared *too mathematical for musicians* and *too musical for mathematicians*.

In conclusion we would recommend nautical men to find the correction of the declination by means of the daily difference and proportional logarithms for 24 hours, as in Norie's table xxxiii.; and we trust that this method will be adopted at the examinations by the Marine Boards.

#### Mathematical Investigation.

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. (This may be proved as follows:—

Taking the same example as before,

	D		$d_1$		$d_2$
Dec. 19 gives ..	23° 26' 17''·8	+	43 <sup>h</sup> ·7	—	28·3
Dec. 20 ,, ..	23 27 1·5	+	15·4		
Dec. 21 ,, ..	23 27 16·9				

Where we call  $D$  the declination for Dec. 19;  $d_1$  the 1st diff. :  $d_2$  the 2nd diff.

Hence, to find the declination for Dec. 19d.  $n^h$ . we proceed as follows:—

*By the method of second differences.*

$$\begin{aligned} \text{Declination for Dec. 19d. } n^h &= D + \frac{n}{24} \cdot d_1 + \frac{n}{24} \cdot \left( \frac{n}{24} - 1 \right) \cdot \frac{d_2}{2} \\ &= D + \frac{nd_1}{24} + \frac{n d_2}{1152} - \frac{nd_2}{48} \end{aligned}$$

*By method in N.A. for 1864.*

Dec. 18 gives....  $D - d_1 + d_2$

Dec. 19 gives....  $D$

Dec. 20 gives....  $D + d_1$

Dec. 21 gives....  $D + 2d_1 + d_2$

$$\text{Hence, hourly diff. for Dec. 19} = \frac{\text{Decl. Dec. 20} - \text{Decl. Dec. 18}}{48} = \frac{2d_1 - d_2}{48}$$

$$\text{hourly diff. for Dec. 20} = \frac{\text{Decl. Dec. 21} - \text{Decl. Dec. 19}}{48} = \frac{2d_1 + d_2}{48}$$

And, by taking a proportional part between these for  $\frac{n}{2}$

$$\text{we have } 24 : \frac{n}{2} :: \frac{2d_1 + d_2}{48} - \frac{2d_1 - d_2}{48} \text{ or } \frac{d_2}{24} : \frac{nd_2}{1152}$$

Hence, by adding this to the hourly diff. for Dec. 19, we obtain the hourly

$$\text{diff. for Dec. 19d. } n^h = \frac{2d_1 - d_2}{48} + \frac{nd_2}{1152} : \text{ which being multiplied by } n,$$

will give the correction for  $n^h$ , and added to the declination for Dec. 19, will give the declination for Dec. 19d.  $n^h$ .

$$= D + \frac{nd_1}{24} - \frac{nd_2}{48} + \frac{n^2 d_2}{1152}$$

which is the same as by the method of second differences.

#### STEAM TRIP FROM HONOLULU TO LAHAINA,—*Sandwich Islands.*

With hardly an hour's time for preparation, we hurried down to the wharf on Tuesday afternoon, the 30th of April, to take passage in the *Kilauea*, and escape for a few days at least from the dust and heat, the invariable concomitants of life in the metropolis, and exchange them for the refreshing sea breezes and mountain air of our sister city Lahaina.

Edging our way through the throng that crowded the wharf, we stepped aboard as the last whistle was coughing up its influenza notes, and found ourselves among a crowd of two hundred persons, of whom fifteen or more were cabin passengers. Those who have seen or voyaged in our steamer, need no description of her; those who have not, will require to be informed that she is a neat strongly built Boston propeller of about 400 tons, of a clipper model, and in every respect adapted to the trade for which she was built and in which she is engaged. She is now owned by a joint stock company, with a capital of 50,000 dollars, and is under the management of Wm. L. Green, Esq., of the firm of Janion, Green, and Co. Though a new enterprise, and in some respects involving much risk, she has thus far succeeded very well, affording great satisfaction to all the ports which she connects with the metropolis. Aside from her original cost, (the sum named above,) her fuel constitutes her chief bill of expense. This, however, has been materially reduced in several ways, which experience, and the ingenuity of her agent, engineer, and captain have suggested. Among these we may notice that the fans of the propeller, formerly rather square at the extremity, have been cut down and made more oval, enabling her to make more revolutions under a smaller pressure of steam. Alterations have also been made in her furnaces, by which they consume wood as well as coal, and produce the same or a greater heat than formerly. Wood being easily obtained at the outer ports at one half the cost of coal, or even less, she can take on board whatever quantity she may have room for. The propeller shaft has also been altered so that the wheel can at any time, and at a moment's notice, be disconnected from the engine, allowing the vessel to run wholly under canvass, whenever she finds it advantageous to do so, which frequently occurs in running before the Trade from windward ports. Her rig, too, has been changed from a brigantine to that of a fore and aft schooner, increasing the amount of canvass surface and enabling her to use her sails more freely, both when going to windward and when returning. These principal changes, with minor ones that need not be specified, have vastly improved her seagoing qualities, while the expense for fuel has been reduced fully one half. On her first trip to Hilo, before the changes were made, she consumed thirty-one tons of coal; on her last trip to the same port, she consumed a little less than fifteen tons of coal or its equivalent in wood, making the trip in the same time. With such an important reduction in her principal bill of expense, it will readily be seen that she promises to be a successful enterprise, notwithstanding the heavy outlays required when she first commenced running.

We have spoken of her prospects as a business enterprise; let us now see whether she offers any advantages for comfort and travel. She is under the command of Captain Wm. Berrill, assisted by Mr. M'Gregor as first officer, and all who know these gentlemen will not require to be assured that passengers find every attention paid to their wants that they could expect. The cabins (for there are two) are as commodious, airy, and convenient as those of a first class clipper, and

the arrangements for the comfort of passengers are all that could be wished for. She has seventeen berths, but can accommodate twenty-five cabin passengers, which she frequently has. The table and fare draw forth encomiums from every one, and certainly are not surpassed by the best arrangements on any passenger vessels. We say this at the risk of a rebuff from our fellow passenger the Sheriff of Maui, who vows by all the herrings and sardines on board the good steamer, that the nine o'clock lunch is decidedly uncomfortable, and produces "feelinks" akin to those which it may be supposed the defenders of Fort Sumter enjoyed when the fort was bombarded and surrendered. As the steamer touches every day at some port, fresh meat, vegetables, and fruit are readily obtained and abundantly supplied. The steamer has none of that peculiar ship smell so often met with, and which is more often a cause of sea sickness than the motion of the vessel. Few persons can voyage on any vessel without paying the customary tribute to Neptune, but a peculiarity with the steamer is that few passengers, ladies not excepted, are troubled in this respect whilst on board of her. Even the natives appear to be in a great degree exempt, and enjoy the change from constant and perpetual nausea to an improved and hearty appetite. Comfort and health in travelling are everything, and in these respects, we cannot but hail the establishment of steam navigation among the islands; by the aid of which travellers can land feeling as vigorous and fresh as when they went on board.

During the night, a light Trade wind blew, just enough to fill the sails and keep the boat steady, which moved along so quietly and motionless that few found their rest disturbed. At a quarter to four in the morning she dropped her anchor abreast the lights at Lahaina, having made the run up in just eleven hours, under easy steaming. The whistle at daybreak called a score of boats around, and all who wished had the option to breakfast on shore. At half past seven o'clock the steamer was again under way, bound for windward ports, where she now arrives and departs as regularly as her set days move round, and the natives are found waiting on the beach to greet their returning friends or to send their *waiwai* to a market. Both in the trips up and down the deck of the steamer was crowded with these erratic voyagers, moving to and fro, for what earthly purpose, unless to see and be seen, no one can divine. One thing is noticeable, however, that the crowd going from Honolulu, are always better clothed and present a more respectable appearance than those bound to Honolulu, for in visiting the metropolis they sell their produce and buy outfits, both for themselves and their friends, and by association with the more polite and refined denizens of the city, work off a little of the dust, dirt, and rags of the country. The steamer is clearly developing an increase of travel among the native population, by affording facilities for rapid locomotion. So long as the natives can afford to travel, and it is for their interest, travelling must prove beneficial; for a stirring moving population cannot become other than an enterprising one, however slowly the change may be in taking place.

The introduction of steam among the islands will also create more

travel among our foreign population, as it certainly will bring us more travellers from abroad when it becomes known. The steamer is a great benefit, especially to Hawaii; which island now has a chance to develop its resources, whatever they may be, and produce to any extent whatever is saleable or exportable. The ports of Hilo and Kona are now within thirty-six hours of Honolulu, and produce of any kind can be delivered here with certainty at a fixed day and hour, while passengers can rely on finding comfortable, speedy, and safe conveyance from port to port. The increase of trade and travel will soon, we hope, call for a second steamer to be engaged in the same service that the *Kilauea* is now employed in, for steam is one of the most powerful levers that can be used to develop the internal resources and wealth of any country, rendering inter-communication rapid and more sure, and binding together the remote districts of the islands for the mutual growth and benefit of each.

The gardenlike appearance of the town, with its luxuriant verdure, attracts the eye of the stranger, and creates a favourable impression. Situated on a low well-watered flat at the base of the mountains, which rise quite abruptly, forming a picturesque background, it possesses an admirable site for a thriving village. The landing for boats, which was formerly a safe though narrow channel, has of late become partially filled up and destroyed by the sand thrown up by the sea,—the effect, as it is said, of a partially constructed sea wall. The surf at times breaks entirely across the channel, rendering boats liable to be capsized. Lahaina still possesses the superior advantages for recruiting whalships which she has ever had, and the evil to which we allude is one which will require no great engineering skill or money to remedy it. Had this obstruction existed in Honolulu Harbour, the sums which have been figuring year after year in the appropriation bills for its removal, would not lain undrawn thirty days; but as it is not Honolulu but Lahaina that is interested, its people must wait till “the spirit moves” our rulers to come to their relief.

Safely through the breakers which chase the boat, causing her to perform various evolutions, we land on the beach, thankful that nothing more than a coat or hat has been soiled in the surf. The beach is every year making out into the sea, and has advanced at least twenty feet further out than in 1855, promising soon to fix its boundary at the “breakwater,” and make that the landing, which will afford our young gymnasts a fine spot to practise their feats from capsizing boats. When it reaches that point his Majesty’s domains will have somewhat increased in extent, and as water lots are always supposed to be valuable, it may be that the real secret why the appropriation has not been expended in improving this place is a desire on the part of the powers that be to extend the area of freedom, in short to let nature do at Lahaina what art and money are doing at Honolulu towards making an esplanade.

Lahaina has probably suffered more than any other port from the decrease of the whaling fleet, which formerly consumed large quantities of potatoes and other vegetables and fruits raised in it, and

which was the life of its trade. Its people, however, are not by any means discouraged, but have set to work in good earnest to remedy the defect, and will this week organize a company to erect a sugar-mill, for which object 9,000 dollars have already been subscribed. The sum required is 12,000, and from the success which has thus far been met, there seems no doubt that the whole amount will be raised. The enterprise is not confined to the foreigners, but entered into with equal zeal by the natives, who engage to plant and cultivate a specified amount of cane. The plan is to organize a joint stock company and erect a mill of sufficient capacity to grind all the cane that may be produced. The management of the business is to be entrusted to a competent agent, subject to the direction of the company. No final plan of operation has yet been fixed on, but it is proposed to buy the cane from any native who may cultivate, or, when the quantity is sufficient, grind it on shares. Those interested are sanguine that some plan can be adopted which will remunerate the natives sufficiently to encourage planting, and at the same time make the mill pay its way, if not afford a profit. Lahaina has soil well adapted to cane culture, but it is all divided into small tracts, the largest of which do not exceed twenty acres, but generally they vary from one to ten acres in size. It is thought that from 200 to 300 tons of cane can be raised without any extra efforts, provided the natives are induced to cooperate in the enterprise.

Some fifteen years ago, about 1845 or 1846, as near as we can learn, David Malo and some associates erected a rude mill in Lahaina, near or on the present site of the Catholic church, where good molasses and very superior syrup were manufactured. So great was the demand for this syrup that it was readily sold as fast as made. The mill produced no sugar, as far as we can learn, partly from the want of proper facilities and partly because the syrup found a good sale. The fact that no sugar was made has, however, created a doubt with some whether the Lahaina cane will yield good sugar. There need be no doubt about this. Erect a good mill and supply it with abundance of cane, and an expert sugar boiler will produce as good sugar in Lahaina as can be made anywhere else on these islands.

Cane is not the only thing that can be raised profitably in this luxuriant spot, for the vine is equally well adapted to it, and no where on these islands are grapes found of larger size or finer flavour than here. The only wonder is that the whole town is not devoted to the cultivation of a fruit which grows so abundantly, and so well repays the labour expended on it. A few vineyards are under way, and each year improves the appearance and yield. Among them, and perhaps the finest one, is that of Mr. Muller, a German, whose vineyard is a treat to look on. It is kept skillfully pruned, and the bowers hang thickly studded with half-grown clusters, some bunches already twelve and fifteen inches in length, while others are just blossoming and setting their fruit. At the other end of the town is Mr. Oudinot's vineyard, looking equally fruitful and well-tended as its rival; indeed, "the Marshal" claims the palm, and certainly both are a credit to

their owners, and show a laudable zeal to take the lead in this pleasant branch of husbandry. Besides these, Judge Jones and Mr. J. Baker have fine graperies; and the latter gentleman informed me that he had succeeded in producing a superior quality of wine from his grapes. There is no reason why a thousand gallons cannot be produced in Lahaina as well as fifty, affording a pure and healthy beverage to supplant the filthy compound known as Lahaina beer. If produced in excess of home consumption, it would find a market abroad.

The vine, however, has its enemies as well as our other productions. The aphid, which attacks the coffee trees, grape vines, and fig trees indiscriminately, is comparatively harmless here, though in some places it works much injury. The latest enemy of the vine is a beetle, known as the *borer*, very much resembling the American bumble-bee, which attacks the trunk of the vine, boring a hole as round and true in its shape as an augur-hole, and about half an inch or five-eighths in diameter. For what object the hole is made is not certain. Were it not that these holes are found in dead timber as well as in growing trees and vines, we might suppose the insect obtained its food in this manner from the sap. This borer has not been observed except during the past two or three years, and where it came from, or how and when, is all conjecture. One thing is certain, it is finding its way over our group, and may become a very destructive antagonist to fruit growers. It has proved the destruction of several large and valuable grape vines in Lahaina, and perhaps its effects can be traced in other places. It should be watched, and some remedy devised to check its increase.

In the well-tended garden of C. S. Bartow, Esq., the worthy collector,—whose residence, by the bye, just back of the town and somewhat elevated above it, is the most delightful spot in Lahaina,—we found growing the real Malaga grape, to which we wish to call the attention of vine growers. The vine is not yet two years old, was imported by Mr. B., and has already begun to bear. It is a white grape, of a good flavour: its chief quality of excellence consisting in its hardness, which allows transportation or enables its being kept for weeks or even months. In shape the fruit very much resembles an olive. This is the grape which is imported so extensively into the United States from Malaga Spain, and from the Western Islands during the winter season. They are packed with sawdust in barrels, and we have known them to keep for four and five months. They are also used for making raisins and wine. We hope to see the cultivation of this variety extended to all our islands, confident that it is superior to most other kinds.

Speaking of Mr. Bartow's garden reminds us of a very beautiful evergreen cypress tree, which every visitor there will notice. It stands directly in front of the house, and is growing rapidly, having already attained a height of fifteen feet or more, though only a few months old. What can be more beautiful than the sight of this majestic representative of the cold and wintry regions of the north becoming acclimated here, shooting up its branches, claiming rivalry with our

tropical breadfruit, cocoanut, and tamarinds, and waving its evergreen boughs among the bananas and figs. Mr. Bartow's cypress is of the spiral variety, and resembles a miniature poplar tree. This specimen, as well as several we noticed at Lahainaluna, all of which were doing remarkably well, would indicate that foreign evergreens are adapted to our soil and climate, and we cannot help recommending a trial being made on each of our islands, confident that success will attend it. It will grow anywhere, but will thrive best in the leeward districts, where the Trade-winds are broken. There are ten or fifteen varieties to be had at the Agricultural Gardens in Honolulu, including eight kinds of the cypress, and several of arborvitæ, American cedar, California pines, &c.

The Lahainaluna Seminary is of a collegiate character, supported by the government, and affords the highest education obtainable by the natives in the kingdom. The number of students is limited to the accommodations provided, which are sufficient for about one hundred. The last year opened with that number of students and closed with ninety-two, vacancies having occurred from death and other causes. The graduating class consisted this year of seven. Students entering the seminary do so with the understanding that they remain during the four years required to complete their course of education. As in eastern colleges, there are four classes,—freshman, sophomore, junior, and senior. All the students are required to provide themselves with books, clothing, and food. Land for cultivation of their food is furnished for their use, so that the expenses incurred by each student are generally light.

The annual examination took place on the 1st and 2nd May, and was held in the chapel of the seminary, to which the public were invited. Besides a number of foreigners, among whom we chanced to be, the room was crowded with natives, friends of the students. Among the studies in which classes were examined, besides the elementary branches, were Hawaiian history, ancient and modern history, geometry, surveying, navigation, English composition, book-keeping (in English), astronomy, rhetoric, political economy, &c. Most of the studies are pursued in Hawaiian, as the students entering the school generally know only their native tongue. English, however, now forms a leading branch of study, and great pains are taken to teach a correct knowledge of it. It is amusing to notice the difference made in the acquisition of the English language by students who have been one, two, or three years under instruction. Some of the compositions produced were faultless, while others showed a total incapacity to acquire our language. The same difference is noticeable in the pronunciation. With the increasing attention paid to teaching the English in our primary schools, it is not improbable that before long it will be advisable to teach a portion of the students in this seminary wholly in English, which will enable them not only to progress more rapidly, but will open to them a far wider field of study than the few books now issued in Hawaiian afford.

On Friday, May 3rd, the rhetorical exercises were held in Dr.



Baldwin's church, in the village; on which occasion the building was crowded to its utmost capacity. The exercises consisted of four declamations in Hawaiian, three declamations in English, and two discussions in Hawaiian, closing with a dialogue, half in English and half in Hawaiian, the whole interspersed with several English songs. The debates were on the questions:—"Would it benefit this people to substitute English for Hawaiian district schools throughout the group?" "Is it beneficial or injurious for Hawaiians to intermarry with foreigners?"

Both these questions, especially the latter, afforded fine topics for oratorical display, and most admirably were they discussed. The first speaker on the marriage question advocated intermarriage with foreigners very warmly, arguing that it was a *necessity*, on account of the rapid decrease of the native race, and pointing to history to show that a mixed race was generally superior to the supplanted one, and that it never resulted in deterioration. The young man handled his subject with great tact, and brought out several convincing arguments, and so strongly fortified his side of the question that had a vote been taken when he retired, probably nine-tenths of the audience would have sided with him. His remarks were repeatedly met with warm applause.

His opponent followed on the stage, remarking that though the speaker who had preceded him had made a good case, he did not despair of his cause, and hoped they would suspend their verdict till he had concluded. Then, commencing with a narration of the happy state of this people before their discovery, and of the evils which foreigners had brought with them, he argued that the decline of the once numerous Hawaiian people was solely owing to them, and how could any benefits arise from intermarriage with those from whom so much evil had sprung? What was wanting in force in his argument he made up in repartee. The pure foreigner, he said, was worthy of our respect so long as he remained such; and a pure Hawaiian also, so long as he remained such; but when they mingle together, we see a race of Pakés and Spaniolas, of no settled habits, but of a roving, half-wild character, compared with whom the native Hawaiian, cultivating his taro and bananas, was far happier and superior. In his humorous way, the speaker brought down the house in roars of laughter. In illustrating the inconveniences of intermarriage, he said that the friends of the native wife were too often met with the cold shoulder. If they go to visit her at her home, the foreigner growls out "What do you want here?" On the stranger timidly answering that he only wants to see his sister (the foreigner's wife), he is met with the stern rebuff "Get out of my house." The debate being in Hawaiian and the foreigner's replies uttered by the speaker in English, set off his argument with considerable humour. He was constantly interrupted with applause, and at the close of the debate probably the whole assembly would have voted with this speaker, so completely did he carry his audience with him.

In rhetorical display the Hawaiians certainly show great abilities,

and it was clearly evident at this exhibition that the speakers had been under thorough and systematic training. Those who had been present at previous exhibitions said that the improvement, particularly in the pronunciation of the English, was most marked. It is a difficult thing for a person to obtain a correct pronunciation of a foreign tongue in two or three years' training; but those who spoke English pieces on this occasion were remarkably distinct and correct in this respect. To Mr. H. P. Parker, who had charge of the English classes, great credit is due for the improvement noticeable, which could only have been attained by the most thorough drilling.

The value of this institution should not be underrated. It is open to all meritorious natives. That its advantages are appreciated is attested by the fact that the applications for admission each year are beyond the ability of the seminary to grant. Were the accommodations sufficient for two hundred students, it is probable that that number would always be found ready to secure the benefits which it affords. Oahu College is open to natives who have been educated wholly in English, but as yet there are few such who are fitted to enter it. At Lahainaluna young men are received versed only in Hawaiian; who graduate after four years with, in some cases, a fair knowledge of English, which must prove of value to them or not according to the positions they occupy in life, and the opportunities afforded them to develop and improve their English. If they return to and locate in some remote district, where there are no foreigners and no use for English, they must soon lose what little they have acquired. Some think, and we have heard it said, that the students of Lahainaluna graduate with worse characters than they had when they entered,—in short, that they become refined only for roguery. That some turn out rogues we have no doubt, but that a larger proportion do here than in other countries we have yet to learn. It is proverbial that many university students enjoy the character of being "hard cases," and no where more than at Yale or Oxford. But because college life tends to create in some a certain inbred pride and feeling of superiority over the rest of their fellow-men, which not unfrequently influences them through life, causing their ruin, no argument should be drawn from that fact that all graduates are alike. The benefits of colleges and universities more than outweigh these evils. None but those who have never completed their full course, or who have never merited the diploma which they received, will ever be found boasting of a university education, or of any supposed superiority derived therefrom.

A good female seminary of the class and character of that at Lahainaluna has long been wanted, but never more urgently than now. Interesting groups of little girls are already gathered in various parts of the islands, who are being brought up and taught under the watchful and kind supervision of benevolent ladies. Two such schools are on Maui, one of which is under the care of Mrs. Bishop, at Lahaina, and the other in the family of the Rev. C. B. Andrews, at Makawao. It is pleasant to look in upon these little groups, and notice the im-

provements which proper care and training will effect in developing their naturally pleasant manners and appearance. They are all taught English, and as they grow up, separated from their more rude and uncultivated kinsfolk, become in a measure refined and civilized. Now, what is needed is a seminary, located in some retired and healthy district, where these girls can be educated and trained to become more worthy wives of the graduating students, and better mothers of the next Hawaiian generation. If education is the spring from which flows our national peace and prosperity, let our lawmakers endeavour to make that enduring. If we would improve the people we must improve the *mothers* first; for if the mother's mind is uncultured and her breast impure, her children will be impure also. *Her* impress will be stamped on her offspring, whatever may be the father's character. It has been said that, "women govern us," let us then aim to improve them. The more enlightened *they* become, the more enlightened will their sons and daughters be.

But we are digressing from our subject, and perhaps had better drop our pen and close this sketch, hoping that our Honolulu readers will more often visit their neighbours on the other islands, and enjoy their rambles as much as did we our visit to Lahaina.

*Pacific Commercial Advertiser.*

---

#### A VISIT TO THE GEYSIRS OF ICELAND.

We had been twelve or thirteen hours on horseback, not to mention occasional half hours of pretty severe walking after the ptarmigan and plover. Many were the questions we addressed to Sigurdr on the distance yet remaining, and many the conjectures we hazarded as to whether the cook would have arrived in time to get dinner ready for us. At last, after another two hours' weary jogging, we descried, straight in front, a low steep brown rugged hill, standing entirely detached from the range at the foot of which we had been riding; and in a few minutes more, wheeling round its outer end, we found ourselves in the presence of the steaming Geysirs.

I do not know that I can give you a better notion of the appearance of the place than by saying that it looked as if for about a quarter of a mile the ground had been honeycombed by disease into numerous sores and orifices; not a blade of grass grew on its hot, inflamed surface, which consisted of unwholesome looking red livid clay, or crumpled shreds and shards of sloughlike incrustations. Naturally enough, our first impulse on dismounting was to scamper off to the great Gey-sir. As it lay at the furthest end of the congeries of hot springs, in order to reach it we had to run the gauntlet of all the pools of boiling water and scalding quagmires of soft clay that intervened, and conse-

quently arrived on the spot with our ankles nicely poulticed. But the occasion justified our eagerness.

A smooth silicious basin, seventy-two feet in diameter and four feet deep, wide at the bottom as in washing-basins on board a steamer, stood before us brimful of water just upon the simmer; while up into the air above our heads rose a great column of vapour, looking as if it was going to turn into the Fisherman's Genie. The ground above the brim was composed of layers of incrustated silica, like the outside of an oyster-shell, sloping gently down on all sides from the edge of the basin.

Having satisfied our curiosity with this cursory inspection of what we had come far to see, hunger compelled us to look about with great anxiety for the cook; and you may fancy our delight at seeing that functionary in the very act of dishing up dinner on a neighbouring hillock. Sent forward at an early hour under the chaperonage of a guide, he had arrived about two hours before us, and seizing with a general's eye the key of the position, at once turned an idle babbling little Geyser into a camp kettle, dug a bakehouse in the hot soft clay, and improvising a kitchen range at a neighbouring vent, had made himself completely master of the situation. It was about one o'clock in the morning when we sat down to dinner, and as light as day.

As the baggage train with our tents and beds had not yet arrived, we fully appreciated our luck in being treated to so dry a night; and having eaten everything we could lay hands on, were set quietly down to chess, and coffee brewed in Geysir water; when suddenly it seemed as if beneath our very feet, a quantity of subterranean cannon were going off; the whole earth shook, and Sigurdr, starting to his feet, upset the chess-board, (I was just beginning to get the best of the game,) and fleeing off at full speed towards the great basin. By the time we reached its brim, however, the noise had ceased, and all we could see was a slight movement in the centre, as if an angel had passed by and troubled the water. Irritated at this false alarm, we determined to revenge ourselves by going and tormenting the Strokr. Strokr—or *the churn*—you must know is an unfortunate Geyser, with so little command over his temper and his stomach that you can get a *risc* out of him whenever you like. All that is necessary is to collect a quantity of sods, and throw them down his funnel. As he has no basin to protect him from these liberties, you can approach to the very edge of the pipe, about five feet in diameter, and look down at the boiling water, which is perpetually scething at the bottom. In a few minutes the dose of turf you have just administered begins to disagree with him; he works himself up into an awful passion—tormented by the qualms of incipient sickness; he groans and hisses and boils up and spits at you with malicious vehemence, until at last with a roar of mingled pain and rage, he throws up into the air a column of water forty feet high, which carries with it all the sods that have been chucked in, and scatters them scalded and half digested at your feet. So irritated has the poor thing's stomach become by the discipline it has undergone, that even long after all foreign matter has been thrown

off, it goes on retching and spluttering until at last nature is exhausted, when sobbing and sighing to itself, it sinks back into the bottom of its den.

Put into the highest spirits by the success of this performance, we turned away to examine the remaining springs. I do not know, however, that any of the rest are worthy of particular mention. They all resemble in character the two I have described, the only difference being that they are infinitely smaller, and of much less power and importance.

One other remarkable formation in the neighbourhood must not be passed unnoticed. Imagine a large irregular opening in the surface of the soft white clay, filled to the very brim with scalding water, perfectly still, and of as bright a blue as that of the Grotto Azzuro at Capre, through whose transparent depths you can see down into the mouth of a vast subaqueous cavern, which runs Heaven knows how far in a horizontal direction beneath your feet. Its walls and varied cavities really look as if they were built of the purest lapis lazuli—and so thin seemed the crust that roofed it in, we almost fancied it might break through, and tumble us all into the fearful beautiful bath.

Having by this time taken a pretty good look at the principal features of our new domain, I wrapped myself up in a cloak and went to sleep; leaving orders that I should not be called until after the tent had arrived and our beds were ready. Sigurd followed my example, but the doctor went out shooting.

As our principal object in coming so far was to see an eruption of the great Geysir, it was of course necessary we should wait his pleasure; in fact, our movements entirely depended upon his. For the next two or three days, therefore, like pilgrims round some ancient shrine, we patiently kept watch; but he scarcely deigned to vouchsafe us the slightest manifestation of his latent energies. Two or three times the cannonading we had heard immediately after our arrival recommenced,—and once an eruption to the height of about ten feet occurred; but so brief was its duration, that by the time we were on the spot, although the tent was not eighty yards distant, all was over. As after every effort of the fountain, the water in the basin mysteriously ebbs back into the funnel. This performance though unsatisfactory in itself, gave us an opportunity of approaching the mouth of the pipe, and looking down into its scalded gullet. In an hour afterwards the basin was brimful as ever.

Tethered down by our curiosity to a particular spot for an indefinite period, we had to while away the hours as best we could. We played chess, collected specimens, photographed the encampment, the guides, the ponies, and one or two astonished natives. Every now and then we went out shooting over the neighbouring flats, and once I ventured on a longer expedition among the mountains to our left. The views I got were beautiful—ridge rising beyond ridge in eternal silence, like gigantic ocean waves, whose tumult has been suddenly frozen into stone;—but the dread of the Geysir going off during my absence, made me almost too fidgetty to enjoy them. The weather luckily remained

beautiful, with the exception of one little spell of rain, which came to make us all the more grateful for the sunshine,—and we fed like princes. Independently of the game, duck, plover, ptarmigan and bittern, with which our own guns supplied us, a young lamb was always in the larder,—not to mention reindeer tongues, skier,—a kind of sour curds, excellent when well made,—milk, cheese whose taste and nature baffle description, biscuit and bread, sent us as a free gift by the lady of a neighbouring farm. In fact, so noble is Icelandic hospitality that I really believe there was nothing within fifty miles round, we might not have obtained for the asking had we desired it.

As for Fitz, he became quite the *enfant gâté* of a neighbouring family.

Having unluckily caught cold, instead of sleeping in the tent, he determined to seek shelter under a solid roof-tree, and conducted by our guide Olaf, set off on his pony at bed-time in search of an habitation. The next morning he reappeared so unusually radiant, that I could not help inquiring what good fortune had in the meantime befallen him; upon which he gave me such an account of his last night's reception at the farm, that I was almost tempted to bundle tent and beds down the throat of our irritable friend Strokr, and throw myself for the future upon the hospitality of the inhabitants. It is true I had read in Van Troil of something of the kind, but, until now, I never fully believed it. The Doctor shall tell his own history.

“No sooner,” said he, “had I presented myself at the door, and made known my errand, than I was immediately welcomed by the whole family, and triumphantly inducted into the guest quarters: everything the house could produce was set before me, and the whole society stood by to see that I enjoyed myself. As I had but just dined, an additional repast was no longer essential to my happiness; but all explanation was useless, and I did my best to give them satisfaction. Immediately on rising from the table, the young lady of the house—(old Van Troil says it is either the mother or the daughter of the house if she be grown up, who performs this office)—proposed by signs to conduct me to my apartment; taking in one hand a large plate of skier, and in the other a bottle of brandy, she led the way through a passage built of turf and stones to the place where I was to sleep. Having watched her deposit—not without misgivings, for I knew it was expected both should be disposed of before morning—the skier by my bedside, and the brandy bottle under the pillow, I was preparing to make her a polite bow, and to wish her a very good night, when she advanced towards me and with a winning grace difficult to resist, insisted on helping me off with my coat and then—proceeding to extremities,—with my shoes and stockings. At this most critical part of the proceedings, I naturally imagined her share of the performance would conclude, and that I should at last be restored to that privacy which at such seasons is generally considered appropriate. Not a bit of it. Before I knew where I was I found myself sitting on a chair in my shirt, trouserless, while my fair tirewoman was engaged in neatly folding up the ravished garments on a neighbouring

chair. She then, in the most simple manner in the world, helped me into bed, tucked me up, and having said a quantity of pretty things in Icelandic, gave me a hearty kiss and departed. If," he added, "you see anything remarkable in my appearance, it is probably because,—

‘ This very morn I’ve felt the sweet surprise  
Of unexpected lips on sealed eyes; ’”

by which he poetically intimated the pleasing ceremony which had awaked him to the duties of the day. I think it needless to subjoin that the Doctor’s cold did not get better as long as we remained in the neighbourhood, and that had it not been for the daily increasing fire of his looks, I should have begun to be alarmed at so protracted an indisposition.

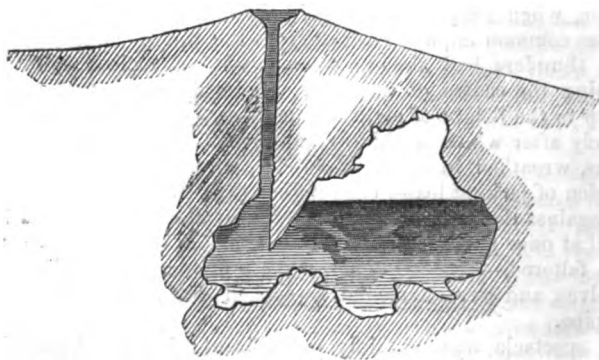
We had now been keeping watch for three days over the Geysir in languid expectation of the eruption which was to set us free. All the morning of the fourth day I had been playing chess with Sigurdr. Fitzgerald was photographing. Wilson was in the act of announcing luncheon, when a cry from the guides made us start to our feet, and with one common impulse rush towards the basin. The usual subterranean thunders had already commenced. A violent agitation was disturbing the centre of the pool. Suddenly a dome of water lifted itself up to the height of eight or ten feet,—then burst and fell; immediately after which a shining liquid column or rather a sheaf of columns, wreathed in robes of vapour, sprung into the air, and in a succession of jerking leaps, each higher than the last, flung their silver crests against the sky. For a few minutes the fountain held its own, then all at once appeared to lose its ascending energy. The unstable waters faltered,—drooped,—fell, “like a broken purpose,” back upon themselves, and were immediately sucked down into the recesses of their pipe.

The spectacle was certainly magnificent; but no description can give any idea of its most striking features. The enormous wealth of water, its vitality, its hidden power, the illimitable breadth of sunlit vapour, rolling out in exhaustless profusion,—all combined to make one feel the stupendous energy of nature’s slightest movements.

And yet I do not believe the exhibition was so fine as some that have been seen: from the first burst upwards to the moment the last jet retreated into the pipe, was no more than a space of seven or eight minutes, and at no moment did the crown of the column reach higher than sixty or seventy feet above the surface of the basin. Now, early travellers talk of 300 feet, which must of course be fabulous; but many trustworthy persons have judged the eruptions at 200 feet, while well authenticated accounts—when the elevation of the jet has been actually measured—make it to have attained a height of upwards of 100 feet.

With regard to the internal machinery by which these waterworks are set in motion, I will only say that the most received theory seems to be that which supposes the existence of a chamber in the heated

earth, almost but not quite filled with water, and communicating with the upper air by means of a pipe, whose lower orifice, instead of being in the roof, is at the side of the cavern and *below* the surface of the subterranean pond. The water kept by the surrounding furnaces at boiling point, generates of course a continuous supply of steam, for which some vent must be obtained; as it cannot escape by the funnel,—the lower mouth of which is under water,—it squeezes itself up within the arching roof—until at last, compressed beyond all endurance, it strains against the rock, and pushing down the intervening waters with its broad strong back, forces them below the level of the funnel, and dispersing part, and driving part before it, rushes forth in triumph to the upper air. The fountains, therefore, that we see mounting to the sky during an eruption, are nothing but the superincumbent mass of water in the pipe driven up in confusion before the steam at the moment it obtains its liberation.



The accompanying sketch may perhaps help you to understand my meaning.—*Letters from High Latitudes.*

---

#### IRON-CASED SHIPS OF THE BRITISH NAVY.—By *E. J. Reed, Esq.*

The following remarks on the important subject of Iron-cased Ships of war in our navy, read at the meeting of the British Association last summer at Manchester, are on a subject of so much interest that they will be acceptable to our readers, especially since one of the vessels alluded to has proved so successful as the *Warrior*.

With the view of best fulfilling the intention with which the gen-



members of the Mechanical Section made this the chief topic of to-day's deliberations, I propose—

1st, To glance briefly at the circumstances under which the British Admiralty resorted to the construction of iron-cased sea-going ships of war.

2nd. To state as compactly as possible the principal feature of the ships which the Admiralty are building and propose to build.

And 3rdly. To bring to the notice of the Association the great increase of dock accommodation which iron-cased ships have rendered necessary.

Early in 1859 the Secretary to this Admiralty, the Accountant-General of the Navy, and the Secretary and Chief-Clerk to the Treasury, together reported to the Government of the day (Lord Derby) that France was building "four iron-sided ships, of which two were more than half completed," and that these ships were to take the place of line-of-battle ships for the future. "So convinced do naval men seem to be in France of the irresistible qualities of these ships," said these gentlemen, "that they are of opinion that no more ships of the line will be laid down." In another part of their Report they said, "The present seems a state of transition, as regards naval architecture, inducing the French Government to suspend the laying down of new ships of the line altogether." At the instance of Sir John Pakington, then First Lord of the Admiralty, this Report was immediately presented to Parliament, and thus obtained universal publicity.

From that time forward, then, we have all known perfectly well what the plans of the French Government in this matter were, and have known equally well that the only mode of keeping pace even with France in the production of iron-cased ships was to lay down four of them to match the four which she at that time possessed, and to build as many more annually as she saw fit to add to her navy. In pursuance of this very simple policy, Sir John Pakington at once had designs of a formidable class of iron-cased ships prepared, and ordered the construction of one of these vessels, the *Warrior*.

The present Board of Admiralty shortly afterwards succeeded to power, and ordered a second of these vessels, the *Black Prince*, and after some delay also issued contracts for the *Defence* and *Resistance*. No other vessel of the kind was actually commenced until the present year; so that in the beginning of 1861 we had only just attained the position which France held in the beginning of 1859, having "four iron-sided ships, of which two were more than half completed." Meantime France had been devoting the bulk of her naval expenditure for two whole years to the production of similar vessels, and is consequently now in possession of an iron-cased fleet far more considerable and more forward than ours.

At length, however, our sluggishness has been overcome, and we have set ourselves earnestly to work to repair our past deficiencies. The *Hector* and *Valiant* have been laid down, and are being urged rapidly forward; the *Achilles*, after a year's preparation, has been fairly com-

menced; the *Royal Alfred*, the *Royal Oak*, the *Caledonia* the *Ocean*; and the *Triumph* are in progress; and contracts have just been issued for the construction of three out of six other iron-cased ships, the building of which has for some time been decided upon. The peculiar features and proportions of these vessels I shall presently describe; but I will first state some of the causes which have led to delay in this matter, and set forth the circumstances under which we have at last been compelled to advance.

We have heard much in various quarters about the *invention* of iron-cased ships, the credit of which is usually accorded to his Imperial Majesty Napoleon III., although there are scores of persons, both here and in America, who claim it for themselves. But the truth is, very little invention has been displayed in the French iron-cased ships. Their designers have almost exclusively confined themselves to the very simple process of reducing a wooden line-of-battle ship to the height of a frigate, and replacing the weight thus removed by an iron casing of  $4\frac{1}{2}$  inches thick placed upon the dwarfed vessel. It was not possible to produce a very efficient ship by these means; so they contented themselves, in most cases, with vessels like *La Gloire*, which carry their ports very near to the water when fully equipped for sea, and are characterised by other imperfections that it would be easy to point out. The reports of her efficiency which have appeared in the French newspapers prove nothing in opposition to what I here state. The writers in those papers have systematically exaggerated the qualities of the French ships for years past, representing that they could steam at impossible speeds, and carry as much fuel as any two of our ships. But these are statements which can be disposed of by scientific calculations of the most elementary kind, and the untruth of the French accounts has been so demonstrated over and over again. With the drawings and other particulars of *La Gloire* before us we could tell with the greatest precision what fuel she can stow, how fast she can steam, and at what height her ports are above the water. We have not, it is true, all the details of the ship before us; but we have enough to demonstrate her real qualities with sufficient accuracy for my present purpose and I confidently assert that she is seriously defective as a war-ship in many respects.

Now, from the very first our Admiralty has been averse to the construction of such vessels as *La Gloire*. and to the rough and ready solution of the iron-cased ship problem which she embodies. Whether their aversion was wise or not under the peculiar circumstances of the case, I shall not presume to say; but that they could speedily have produced a fleet of ships in every way equal to *La Gloire*, had they pleased, there is not the slightest doubt. Instead of doing this, however, they have asked "How do we know whether a plated wooden ship or a plated iron ship is the better? How do we know whether the plating should extend from stem to stern or not? How do we know whether the side should be upright or inclined? or whether the plating should be backed with wood or not? or whether it should

form part of the hull or not? or whether it should be made of rolled iron or of hammered? or what its thickness should be? or how it should be fastened?" and so forth. And while these questions have been asked, we have pretty nearly stood still.

It is only fair to Sir John Pakington's Board of Admiralty to say, however, that without waiting for answers to them, he ordered, as we have seen, the *Warrior*, which is now afloat on the Thames. Those of you who, like myself, proceeded to Greenhithe in this vessel on the 8th of August, or who have visited her there since, will doubtless concur in the praise almost universally accorded to her. In all the yacht squadrons of the country there is not a handsomer vessel than the *Warrior*; yet there are few iron-cased ships in the French Navy that will bear comparison with her as a vessel of war. She has been so often described in the public journals, and particularly in the *Cornhill Magazine* for February last, that I need not stay to describe her here.

It is also to the credit of the present Board of Admiralty, that on their accession to office, they hastened to order the *Warrior's* sister ship the *Black Prince*, which I doubt not is in every respect her equal. But why they soon afterwards built the *Defence* and *Resistance*, ships of 280 feet in length, 54 feet broad, and 3,700 tons burthen, of only 600 horse-power, and plated over less than half their length, I cannot conceive. I am aware that these vessels are primarily designed for coast defence, and that their draught of water is more favourable than *La Gloire's* for this purpose—theirs being 25 feet and hers 27 feet 6 inches. But with engines of only 600 horse-power their speed must necessarily be low, and with so small a portion of their sides coated with thick plates they will be unfitted to stand that continued "pounding" to which a low speed coast-defence vessel would be more exposed than a fast sea-going ship. The same objections hold to a certain extent against the *Hector* and *Valiant* class, which are of the same length and very nearly the same draught of water as the *Defence* and *Resistance*: but their increased engine-power of 800 horses (which has led to an increased breadth of 2 feet 3 inches, and an increased tonnage of 360 tons) will secure for them a higher speed, and their thick plating has been continued entirely round the main deck, so as to protect the gunners throughout the length of the ship; and these therefore, though defective, are certainly better vessels than the others.

It is important to observe that, notwithstanding the long delay of the Admiralty, and despite all we have heard respecting experimental targets, the irresistible determination of Parliament to have a large iron-cased fleet has overtaken the Admiralty before they have obtained answers to any one even of the questions which we have before mentioned, and upon which they have been so long deliberating. The cause of this is undoubtedly to be found in the indisposition of the Admiralty to perform experiments upon a sufficiently large scale. Small targets, a few feet square, have been constructed and tested in abundance; but the results thus obtained correspond to nothing that would take place in practice against a full-size ship afloat. Not a single target of sufficient size, and of good manufacture, has yet been

tested. The Admiralty are at length, however, having suitable structures prepared; and before long some of our principal doubts upon this subject will be resolved. Perhaps the slackness of the Board in undertaking these colossal experiments will be understood when I say that a committee of eminent private shipbuilders, including Mr. Scott Russell, Mr. Laird, Mr. Samuda, and Mr. Napier, have estimated that a target large enough to try half-a-dozen modes of construction would cost no less a sum than £45,000, and that another £45,000 would have to be expended upon an iron hull capable of floating this target, if the use of such a hull were considered indispensable.

But, however unprepared the Admiralty may still be, they have been compelled by the public sentiment, and by the power of Parliament, to make large additions to our iron-cased fleet during the last few months. When the House of Commons devotes immense sums of money to a national object with acclamations, and the single opponent of the measure acknowledges himself in error, the time for questioning and parleying on points of detail is passed. And this is what has happened in this iron-cased ship business. The Government has declared a number of new ships necessary; Parliament has voted the requisite funds with unanimity and cheers; Mr. Lindsay has confessed himself in error; and the Board of Admiralty have been instructed to build the ships with all possible dispatch. Let us now see what kind of ships they are to be.

The first of them, the *Achilles*, which has recently been begun in Chatham Dockyard, so nearly resembles the *Warrior* and *Black Prince* that a very few words will suffice for her. The chief difference between her and those vessels lies, I believe, in the fact that her beam is slightly broader, and her floor somewhat flatter than her predecessors, whereby her tonnage is increased from 6,039 to 6,089 tons and her displacement from 8,625 to 9,030 tons. All her other dimensions, and all her essential features of construction, are exactly like those of the *Warrior*,—from which it may be inferred that the method of plating the central part only of the ship, which was introduced by your distinguished Vice-President, Mr. Scott Russell, is still viewed with favour by the Admiralty designers. Mr. Scott Russell did not patent this invention, I believe; perhaps he will kindly tell us whether he has found his rejection of the Patent Law to pay him well in this instance.

In the class of ships which come next, however, the Admiralty have consented to forego the plan of plating amidships only, and purpose plating the ship from end to end with thick iron. But in order to do this it has been necessary to resort to larger dimensions than the *Warrior's*; and hence these six new ships, three of which have just been contracted for, are to be 20 feet longer than her, 15 inches broader, of 582 tons additional burden, and 1,245 tons additional displacement. As the displacement is the true measure of the ship's actual size below the water, or of her weight, it is evident that the new ships are to be considerably more than 1,000 tons larger than the *Warrior* class. As their engines are to be only of the same

power, their speed will probably be less.\* This diminished speed is one of the penalties which have to be paid for protecting the extremities of the ship with thick plates. Another will probably be a great tendency to plunge and chop in a sea-way. The construction of such vessels is a series of compromises, and no one can fairly blame the Admiralty for building vessels on various plans, so that their relative merits may be practically tested.

The cost of this new class of ships will exceed that of the *Warrior* class by many thousands of pounds, owing to the increased size. But it will certainly be a noble specimen of a war-ship. A vessel built throughout of iron, 400 feet long and nearly sixty broad, invulnerable from end to end to all shell and to nearly all shot, armed with an abundance of the most powerful ordnance, with ports 9 feet 6 inches above the water, and steaming at a speed of, say 13 knots per hour, will indeed be a formidable engine of war. And, if the present intentions of the Admiralty are carried out, we shall add six such vessels to our navy during the next year or two. We must be prepared, however, to dispense with all beautifying devices in these ships. Their stems are to be upright, or very nearly so, and without the forward-reaching "knee of the head" which adds so much to the beauty of our present vessels. Their sterns will also be upright, and left as devoid of adornment as the bows. It should also be stated, as a characteristic feature of these six new ships, that their thick plating will not extend quite to the bow at the upper part, but will stop at its junction with a transverse plated bulkhead some little distance from the stem, and this bulkhead will rise to a sufficient height to protect the spar deck from being raked by shot.

It has not yet been decided whether these new iron ships are to have their plating backed up with teak timber, as in the previous ships; or whether plating  $6\frac{1}{2}$  inches in thickness, without a wood backing, is to be applied to them. The determination of this point is to be dependent, I believe, upon the results of the forthcoming experiments with the large targets to which I have previously adverted, and partly upon the recommendations of the Iron Plate Committee, to which our President belongs, and which is presided over by the distinguished officer now present, Captain Sir John Dalrymple Hay, R.N. All that has been decided is, that whether the armour be of iron alone or of iron and wood combined, its weight is to be equivalent to that of iron  $6\frac{1}{2}$  inches thick. The designs of the ship have been prepared subject to this arrangement, and provision has been made in the contracts for the adoption of whichever form of armour may be deemed best when the time comes for applying it.

All the iron-cased ships which I have thus far described are built, or to be built, of iron throughout, except in so far as the timber backing of the plates, the planking of the decks, and certain internal fit-

\* Since this paper was read at Manchester, I have learnt that the Controller of the Navy always intended these vessels to have a speed of fourteen knots, and will give them sufficiently powerful engines to secure that, if possible.

tings may be concerned. I now come to notice a very different class of vessel, in which the hull is to be formed mainly of timber, the armour plating being brought upon the ordinary outside planking. The *Royal Alfred*, *Royal Oak*, *Caledonia*, *Ocean*, and *Triumph* are to be of this class. Their dimensions are to be—length 273 feet, breadth 58 feet 5 inches, depth in hold 19 feet 10 inches, mean draught of water 25 feet 9 inches, and height of port 7 feet. They are to be of 4,045 tons burthen, and to have a displacement of 6,839 tons. They are to be fitted with engines of 1,000 horse-power. They are being framed with timbers originally designed for wooden line-of-battle ships, but are to be 18 feet longer than those ships were to be. They will form a class of vessels intermediate between the *Hector* and the *Warrior* classes, but, unlike both of them will be plated with armour from end to end. They will be without knees of the head, and with upright sterns; and will therefore look very nearly as ugly as *La Gloire*, although in other respects much superior vessels, being 21 feet 6 inches longer, 3 feet 5 inches broader, and of less draught of water. They will also be quite equal to her in speed.

It will occur to some now present, that in adopting this class of ship we have, after three years' delay, approximated somewhat to the *Gloire* model at last. And undoubtedly we have done so in the present emergency, in order to compete with the movements which France is now making. At the same time we have not gone to work quite so clumsily as our neighbours. Instead of retaining the old line-of-battle ship proportions, we have gone somewhat beyond them; and have lifted all the decks, in order to raise our guns higher above the water. We have consequently secured a height of port or battery nearly 18 inches greater than *La Gloire's*—an advantage which will prove valuable under all ordinary circumstance, and incalculably beneficial in rough weather.

The whole of the new iron-cased ships, including the five plated timber ships and the six 400-foot iron ships, will, there is every reason to believe, match *La Gloire* in speed, supposing the engines put in them to be of the respective powers already mentioned—a condition which it is necessary to state, since there is, I regret to say, a probability of smaller engines being placed in some of them. But not one of all these new ships, the *Achilles* only excepted, will have a speed equal to the *Warrior's*. Perhaps we ought not to complain if our fleets are as fast as the French; but I, for one, certainly do regret that there should be any falling off in this prime quality of our iron-cased vessels. Iron and coal will give us fast vessels; and we have these in abundance. The truly admirable engines which Messrs. Penn have placed in the *Warrior* show that we can command any amount of engine-power that we require, without incurring risk of any kind; and it would indeed be a blind policy to deprive ourselves of that speed which is pronounced invaluable by every naval officer and man of science who writes or speaks upon this subject.

I have thus far said nothing concerning the armaments of the new classes of vessels which I have been describing, because nothing has

yet been finally decided respecting them. Nor would it be wise to decide this matter in the present state of our artillery, until to do so becomes absolutely necessary. We are, it is said, producing 100-pounder, and even larger, Armstrong guns with great success now, and may therefore hope for supplies of ordnance of at least that class for these vessels; but the modifications and improvements which even Sir William Armstrong himself has introduced since he became our engineer-in-chief for rifled ordnance have been so great that we have lost all confidence in the continuance of existing systems, and hold ourselves prepared daily for further changes. Before these new ships are fit to receive their armaments, or even before they have so far progressed as to make it necessary to fix the positions and dimensions of their ports, we may be put in possession of a far more effective naval gun than we can yet manufacture; and the best gun, wherever it may come from, must unquestionably be adopted for them. Whoever may produce it, we shall have, let us hope, the great benefit of Sir William Armstrong's splendid mechanical genius, and large experience, in manufacturing it in quantity at Woolwich. This is an advantage which should not be thought light'y of; for, whatever other views some may entertain, either through jealousy, or rivalry, or conscientious conviction, we must all agree in believing it a great piece of good fortune to have one of our very ablest mechanics placed at the head of this great mechanical department.

I am able, however, to afford some information respecting the number of guns which the various classes of our new ships will be able to carry, and probably will carry. Of the *Defence*, *Resistance*, *Hector*, and *Valiant* I shall say nothing, because they cannot be considered fit for the line-of-battle, or suitable for any other service than coast defence. Nor need I say more of the *Achilles* than that she will, in all probability, be armed with such ordnance as may be found to answer best in the *Warrior* and *Black Prince*. We come, then, to the plated timber ships; and these I may usefully compare with the model French vessel. We know that *La Gloire*, which is 252 feet 6 inches long, has an armament of 34 guns upon her main deck, and two heavy shell-guns besides—36 guns in all. Now our ships are to be more than 20 feet longer than her, and will therefore take two additional guns on either side; so that they will carry not less than 40 guns, if the ports are placed as close together as in *La Gloire*. I need claim no greater advantage for them in respect of their armaments; but they are manifestly entitled to this. As a matter of fact, however, they will probably have a much more powerful armament. It is proposed, I believe, to arm them with about as many guns as *La Gloire* on the main deck, all 100-pounder Armstrong's, and 16 or 18 other guns, principally Armstrong's, on the upper deck, making about 50 guns in all. If this intention be carried out, they will manifestly be much more powerful vessels than the original French ship. The newest and largest vessels, those of 400 feet in length, will each carry at least 40 Armstrong 100-pounders on the main deck, which will be cased with

armour, as I before stated, from end to end. In addition to these they will doubtless have powerful ordnance on their upper decks, for use under favourable circumstances. But all these arrangements are, I repeat, liable to change.\*

Unfortunately, I am unable to compare the power of these vessels with that of the largest of the French iron-cased ships, owing to the absence of all detailed information concerning them. I trust, however, that the Admiralty are in possession of the necessary particulars, so that the delay which has taken place may be turned to the best possible account by securing superiority for our fleet. If this be so, then we shall, after all, profit by the apparent sluggishness of our naval authorities. In fact, if England had France only to consider, and if the Government of England were embodied in a single sagacious ruler as absolutely as is that of France, so that we could ensure prompt action in an emergency, the very best course for us to pursue in this great naval competition would be to leave the lead in the hands of the French Emperor, taking care to add a ship to our navy for every one added to his, and to make ours much more powerful than his. In the event of a war, our manufacturing resources would be abundantly sufficient to secure for us a further and almost instant preponderance. The game which we should thus play would be both politic and economical. But with other naval nations to compete with, and with the inertia which inevitably, and often happily, attends a constitutional and parliamentary system of government, we cannot afford to play games of skill with omnipotent emperors, but are bound to be ever ready to assert our pre-eminence.

I have a little information concerning the *Solferino* and her sister French ships which it may be useful to give you. Her length is 282 feet, breadth 54 feet, mean draught of water 26 feet, displacement 6,820 tons, thickness of armour plating  $4\frac{3}{4}$  inches, nominal horse-power of engines 1,000. Her plating extends from stem to stern over the lower gun-deck, and rises up amidships sufficiently high to cover two decks. She is furnished with an angular projection or prow below the water, for forcing in the side of an enemy when employed as a ram. I regret my inability to add materially to these details of the largest French ships.

Let me now consider briefly the pecuniary phase of this iron-cased ship question. We may fairly assume that the average cost of such vessels will not be less than £50 per ton, and that their engines will cost at least £60 per horse-power. Supposing these figures to be correct, then the hulls of the eighteen ships which we have been considering will cost us £4,681,600, and their engines £1,143,000—together nearly *six millions* pounds sterling. When masted, rigged, armed, and fully equipped for sea, they will of course represent a much larger sum—probably nearly *eight millions*. These estimates

\* Since this paper was read, the issue of 100-pounder Armstrong's has been suspended.



will afford some faint conception of the nature of that "reconstruction" of the navy upon which we may now be said to have fairly entered, in so far as the ships themselves are considered.

But I must not conceal the fact that the introduction of these enormous iron-cased ships has entailed upon us the construction of other colossal and most costly works. We have now to provide immense docks for their reception; for we at present possess none suitable to receive them. Nor must these docks be of large proportions only; for in order to sustain ships burdened with thousands of tons of armour, they must be furnished with more substantial foundations and walls than any hitherto constructed, and be built of the best materials and with the soundest and firmest workmanship.

Many considerations combine to exalt the importance of this part of my subject. In the first place, the tendency which iron ships have to get foul below water will render it necessary to dock our new ships frequently, under ordinary circumstances, and whether we go to war or not. In the second place, for aught we yet know, these ships may be found to give signs of local weakness as soon as they are taken on an ocean cruise, and to require such repairs and strengthenings as can only be performed in dock. Again, being steamships, they will be continually liable to accidents in connection with the engines or the propelling apparatus; and with many such accidents docking will become indispensable. And so I might proceed to multiply examples of this kind. But there is one consideration which is paramount, and which may therefore be stated at once: we dare not send these ships against a French fleet unless we have docks for them to run to in the event of a disaster. We know not what may happen to these altogether novel structures until they have been exposed to successive broadsides from a heavy naval battery; and it would be madness to send them out to encounter a powerful fleet of vessels as strong as themselves unless we are prepared to open docks to receive them in case of necessity.

I have said that we are at present without dock accommodation for these ships; and it may be desirable to illustrate the correctness of this statement in detail. What we require for them in each case is, first, deep water up to the entrance of the dock; secondly, a depth of not less than 27 or 28 feet of water over the sill of the dock; and thirdly, a length on the floor of the dock of 400 feet. Now, these three conditions are not combined, I believe, in any dock in Great Britain—certainly not in any of her Majesty's dockyards. At Portsmouth we have just completed a pair of docks which can be thrown into one, 612 feet long. But over the bar of Portsmouth Harbour there is a depth of 17 feet only at low water, 27 feet at high water *neaps*, and 30 at high water *springs*. Consequently, these large iron-cased ships, if they went to Portsmouth in a dangerous state, or in hot haste to get to sea again, would nevertheless have to wait for the very top of the tide before they could get either in or out. But even if there were no bar, the Portsmouth dock would still be unavailable in such an emergency; for the depth of water over the sill of one portion

of it is but 25 feet at high water springs. It is into this dock that the *Warrior* is shortly to be taken for the purpose of having her launching cleats removed, and her bottom cleaned. As she can at present afford to wait upon the tide without inconvenience, there will be no difficulty in this case. But in war time it would never do to keep such an important member of your squadron fretting for the tide at Spithead, or to have to lighten her before she could cross the dock's sill. At Devonport, again, the longest dock is only 299 feet long over all; but I am happy to state that one is in progress of construction 437 feet long, 73 broad, and 32 deep at the sill. At Keyham, the longest dock (the South), which is 356 feet in length, has but 23 feet depth at the sill; while the North, which has 27 feet, is but 308 feet long. At Pembroke, there is a dock of 404 feet, but it has a sill of 24 feet 6 inches only. The longest dock at Sheerness is 280 feet; at Woolwich, 290; and at Chatham, 387, but the last has but 23 feet 6 inches at the sill. At Deptford there are but two docks, opening into one, and they are very shallow. There are a few large private docks in the country which come very near to our requirements. There is the Canada Dock at Liverpool, for example, 501 feet long, 100 broad, and with 25 feet 9 inches over the sill. There are also No. 1 Dock at Southampton, and the Mill Bay Dock near Plymouth, of which the former is 400 feet long with 25 feet over the sill, and the latter 367 with 27 feet 6 inches over sill. But none of these answer all our requirements nor could we avail ourselves of more than one or two of them in time of war of they did.

If we turn to the French coast, we shall find that in this matter also we are far behind our neighbours. At Cherbourg there are two docks 490 feet long and 80 broad; two 380 feet by 70; two 350 feet by 65; and two smaller ones besides. At Brest, again, there is building a double dock 720 feet by 90; and there are also two 492 feet by 60, and two smaller. At L'Orient there is one 350 feet long, and another (building) 500 feet. At Toulon there are two in progress, one 406 feet long, and the other 588, besides several smaller docks which have existed for some time. I cannot give the depth of the sills of any of these French docks, for I have been unable to obtain that element in any single case even; and I am assured that no account of it is anywhere recorded in this country. But there is no good reason to doubt that a proper depth has been given in most instances.

You will now be able to comprehend the advantage which France has secured in this matter of dock accommodation for her iron-cased fleets, and will readily discern the danger to which we should be exposed in the event of an early war with that country. A single action might so seriously cripple both fleets as to render large repairs necessary; but France alone would be capable of renewing her strength. It would be our lot to lie crippled in our harbours, while she captured our commercial vessels and menaced our coasts.

I am perfectly well aware that a larger increase of dock accommodation is to be supplied at Chatham forthwith. But our Channel and Mediterranean fleets must not depend upon docks at Chatham, which

cannot be reached from the south until a long passage has been made, the Nore Sands threaded, and an intricate and shallow river navigated. We must give to our ships the advantage which Cherbourg secures for the French, and which they propose to augment by establishing at Lezardrieux\* an immense steam arsenal, protected by an impregnable series of defences.

It will now be seen that, in order to place ourselves upon an equality with the French navy, no less than to meet the certain emergencies which must arise with our reconstructed fleets, we ought without delay to found a colossal dock establishment on some favourable point of our southern shores, furnished with the means of carrying on extensive repairs in time of war. The most suitable of all positions is probably that of the Southampton Water, the shore of which, at the entrance to the River Hamble, presents conditions and circumstances which finely qualify it for the purpose. If we are wise enough to build a set of suitable docks there before the time of war arrives, we shall have the satisfaction of knowing that the largest iron-cased ships now in contemplation will be able to run in and be docked with all their stores on board, and everything standing. And nothing less than this should satisfy us.

---

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XXV.—  
*The National Life-boat Institution and its Proceedings.—Saxby's Weather Prophecies—Sir George Grey and the New Zealanders—Allied Expedition to Mexico—Federals and Confederates off the Channel: Belligerent Rights—Italian Remonstrance with the Pope—The Belle Isle Route: Loss of the "North Briton" Burning of the French War Steamer "l'Infernal"—The Lime Light—Dutch Expedition to Spitzbergen.*

In opening their proceedings, the Chairman informed the Club that he had a proposal to make,—one that he considered due to the position they held as nautical men who had toiled at sea, and therefore knew as well as either statesmen or philanthropists the value of seamen's lives,—that class with which they had weathered many a gale, and were now reaping the benefit of their past labours,—he thought it was due to the character of their Club to assign the first place among their future records to those proceedings of that truly National Life-boat Institution with which they were all familiar, and indeed, he might almost say, the whole country. It was a lamentable fact, but one over which they had no control, that ships must go to sea unequal to withstand the fury of the gale; that their owners were insured

\* See *Nautical Magazine* for July last.

mostly against loss in the event of their wreck a *casualty* (the expression by which it was coolly designated) which too often followed, with its consequent loss of life.

But happily the praiseworthy efforts of the National Life-boat Institution were mitigating the evil, establishing by the gallant conduct of their boats their claim to the title of "NATIONAL," for such was really the fact. He was not for depreciating the value of our volunteers. They would be forthcoming when they were wanted. But he maintained that the lives of our seamen were not regarded as they should be by their country. The great blot which stained the fair fame of England was the neglect of her merchant seamen. The man of capital—the merchant was safe from any loss through insurance. But it was too often the sailor's lot to be sent to sea in a leaky, ill-found ship, starved in her tackle, and much of this, when trusted to at an extremity, found to be rotten,—one that had been pronounced to be seaworthy instead of being broken up, and when overtaken by storm either foundering after a wearisome contention with the gale, or, if on a lee shore, being shattered to pieces on the rocks. Refuge for them was not yet provided, nor was it likely to be for many a long day; but the National Life-boat Institution had happily risen from the hearts of our countrymen to face this evil as much as lay in its power, and right well was it working, as might be expected from the high station and experience of its managers.

Again, he would remark, as a further claim to their notice, the example set by this institution to other countries; and not only the example, but the service it was rendering to the great cause of humanity throughout the world, by giving foreign countries the benefit of its experience. He was happy to say that the seaman was looked after in this manner on other shores besides our own; and if it be in the most effectual manner in which boats can be applied to such a purpose, it is through the efforts of our invaluable Life-boat Institution. He would, therefore, on these grounds propose that the important doings of this valuable institution be preserved foremost among the Club papers, and that every means in their power be adopted to promote its success, for by so doing will our country be served in the preservation of the lives of her hardy seamen.

The Chairman's proposal was cordially received by the Club, and some appropriate remarks were made on the subject by Albert, who stated in the course of his observations,—We are to suppose that we shall have a sufficiency of harbours of refuge at some future period; but, alas! are we not also to have the Greek kalends, and the week of the three Thursdays? Pending the termination of these visionary harbours, which mock us with long deferred hope, our countrymen have wisely endeavoured to give every possible development to our most admirable and valuable system of life-boats. The flag that has braved a thousand years the battle and the breeze finds its most useful ally in the clumsy-looking canoe, that will not capsize. To man these life-boats there has sprung up a race of heroes,—iron men,

whom no danger daunts, whom no storm deters from a vocation deemed scarcely less sacred than that of the church,—the task of saving human life as that does human souls. The Royal National Life-boat Institution is one of the glories of Britain. Looking at it, we can say to every foreign potentate, “Go thou and do likewise.” The charity which is shown in the bestowal of even one of their boats is a charity that is visible and is felt. It is a substantial investment in the Bank of Mercy, of which the dividends are sure. It goes to swell no secretary’s salary,—to fatten no collector with fees. The good Samaritan left two pence at the inn for the man who had fallen among thieves, and knew that he would have substantial relief. The British Samaritan who gives two hundred pounds can watch the vessel built by his munificence launched amidst cheers of hardy mariners,—can watch her battling unconquered with the waves,—can watch her as she reaches the sinking ship,—can watch her gallant crew rescuing despairing mariners who are clinging with deadened hands, and with a watery grave beneath them, to spars and wreckage. And shall we not encourage them?

He was glad to see that the value of this excellent institution was acknowledged as it should be, and he would now observe that the fearful effects of the storms of the 2nd and 14th November had, as usual, been most disastrous to life and property. Still it was some consolation to know that through the instrumentality of the life-boats of the National Life-boat Institution, the lives of seventy poor fellows had been saved from the following wrecks:—From the barque *Undaunted*, of Aberdeen, 11; the smack *Adventure*, of Harwich, 10; the schooner *Skylark*, of Folkestone, 6; the lugger *Saucy Lass*, 11; the cutter *Whim*, 7; the brig *Lively*, of Clay, Norfolk, 5; the barque *Robert Watson*, of Sunderland, 5; the schooner *Aunchincruine*, of Grangemouth, 6; the schooner *Friends*, of Lynn, 4; the schooner *Fly*, of Whitby, 4; and 1 man from a wrecked boat near the Black-water Bank, on the Irish coast. Here was good encouragement, he thought, for their determination.

The Chairman then said he would consider the proceedings of the Life-boat Institution as an introductory paper in future to the records of their meetings, and by general desire the Secretary produced the following:—

At the meeting of the Royal National Life-boat Institution on the 7th of November, much commiseration was expressed for the families of the two poor men who lost their lives by the wrecking or breaking up of the Scarborough lifeboat against the sea-wall. The cause of the disaster may be thus briefly stated:—It appeared that on the 2nd November the schooner *Copeland*, of Shields, was observed, during a terrific gale of wind, to come on shore opposite the Spa Promenade. The new lifeboat of the National Institution immediately put off to the rescue of the crew. Her route was along a line of coast where the sea was breaking furiously. Her gallant crew pulled through the tremendous surf, in which the lifeboat appeared to behave nobly,

until they arrived within a few yards of the stranded vessel. Here the rebound of the surf from the sea-wall lifted the craft about in a fearful manner. Two of the crew were thus washed out and drowned, and the boat, being now short-handed, became a perfect prey to the sea, which flung her repeatedly with terrific violence against the sea-wall. Lord C. Beauclerk, W. Tindall, Esq., and several other gallant men rushed to the rescue of the boat's crew; but unfortunately his lordship and Mr. Tindall perished in their noble exertions.

The institution made a liberal gratuity to the families of the two men drowned, and also a reward to the lifeboat crew. The benevolent donor of the wrecked boat has also given a very liberal contribution to the two poor men's families. The meeting expressed deep sympathy for the relatives of Lord C. Beauclerk, W. Tindall, Esq., and Mr. Hiles, who so nobly perished while attempting to save the lives of their fellow-creatures on the occasion.

James Woodall, Esq., of Scarborough, states that "It was not possible for anything to be more triumphant than the result of the fearful ordeal on the 2nd of November. The coxswain and crew cannot find words to express their satisfaction and confidence in the great qualities of the lifeboat. She did not upset, and the crew believe she cannot be upset, except by mechanical power. She emptied herself after every sea, and in all other respects she exceeded their most sanguine hopes."

The institution decided on presenting a memorial silver medal to the families of the late Lord C. Beauclerk, Mr. Tindall, and Mr. Hiles, as a permanent mark of its sympathy for them. Considering that the National Institution has now about 120 lifeboats under its charge, disasters will occasionally happen under the best management in such a fleet. The society has accordingly two or three lifeboats always ready to meet any emergency, and it was reported at the meeting that it had already replaced the wrecked Scarborough boat by a powerful one. Mrs. Cockroft, of Scarborough, had generously promised to pay the cost of the new boat. The silver medal of the institution was also ordered to be presented to Mr. O. Sarony, Mr. M. Hicks, and Mr. J. Rutter, who so nobly exerted themselves in endeavouring to save the lives of Lord C. Beauclerk, Mr. Tindall, and others, on the lamentable occasion.

A reward of £6 10s. was voted to the crew of the Seaton Carew lifeboat, which belongs to the institution, for rescuing five of the crew of the barque *Robert Watson*, of Sunderland, which was stranded about three-quarters of a mile to the southward of Seaton, during a heavy gale of wind, on the 2nd November. This valuable lifeboat, which was the gift of Wm. M'Kerrell, Esq., to the institution, has already saved twenty-eight persons from different wrecks.

A reward of £12 was also granted to the crew of the Yarmouth surf lifeboat, belonging to the institution, for putting off and rescuing ten persons from the smack *Adventure*, of Harwich, which, during a terrific gale of wind, had been wrecked on the North Sand on the 3rd October. Her perilous position having been observed, the lifeboat

immediately proceeded to her rescue, and, amidst the greatest danger, succeeded in snatching ten poor fellows from an inevitable death. It was stated that this was one of the most gallant services ever performed by this lifeboat. Inspecting-Commander Warren, R.N., and Mr. Pitts, chief-officer of the coast-guard, went off in the lifeboat on the occasion.

A reward of £6 10s. was likewise voted to the crew of the institution's lifeboat, stationed at Bacton, Norfolk, for putting off to the assistance of the schooner *Skylark*, of Folkestone, which was seen on the 28th October, during stormy weather and a heavy swell, in Bacton offing, with her foremast gone, and in a perfectly disabled state. The coxswain of the lifeboat, who had been on the look-out, immediately mustered his crew. The boat was quickly launched, and was steadily rowed through the surf to the vessel, which she soon reached, and found to be rapidly drifting on a lee shore. Fortunately the assistance of a steam-tug was also made available on the occasion, and the tug, in conjunction with the lifeboat, was the means of ultimately bringing in safety the schooner and her crew to Yarmouth. The men had during the night fully intended to abandon their vessel, but the sea was too heavy to permit them to take to their boat.

The Lowestoft lifeboat, which is also in connection with the society, was instrumental, on the 2nd November, during a heavy gale of wind, in bringing safely into harbour the disabled schooner *Fly*, of Whitby, and her crew of four hands. About ten o'clock the vessel's signals of distress were seen in the direction of the East Point, when the lifeboat, manned by Captain Joachim, R.N., and her gallant crew, was immediately got out and launched through a tremendous surf. Standing to the northward, they discovered the vessel by her repeating her signals of distress, and, having hailed her, found the crew were not able to keep her afloat. They then closed with her, and threw nine or ten hands on board, which enabled them to slip her cable and run for the harbour. Captain Joachim had received the silver medal and second service clasp of the Lifeboat Institution for his previous gallant services in the lifeboat.

A reward of £6 10s. was also voted to the crew of the lifeboat of the society stationed at Bridlington, for putting off and rescuing the crew of four men of the schooner *Friends*, of Lynn; which, during a terrific gale of wind, was stranded off Bridlington on the 2nd November. This valuable lifeboat has been the means of rescuing a large number of shipwrecked persons from a watery grave.

A reward of £4 was likewise given to the crew of the institution's lifeboat stationed at Banff, for putting off and rescuing the crew of six men from the schooner *Auchincruive*, of Grangemouth, which was observed to become unmanageable during a violent gale of wind on the 1st November. The schooner soon afterwards became a total wreck, and without the assistance of the lifeboat her crew must have perished. This valuable lifeboat was the gift to the institution of

Messrs. Macfie and Sons, of Liverpool, and verily their munificence has already had its reward.

A reward of £6 10s. was likewise voted to the crew of the *Cahore* lifeboat of the society, for rescuing a poor man who had been cast adrift in a boat from the ship *A. Z.*, of New York, which had stranded on the Blackwater Bank on the 25th October. The lifeboat was proceeding towards the disabled ship, when the crew fortunately observed something like a boat a great distance off on the ocean. They immediately bore down towards it, and happily reached the poor fellow just previous to his craft entering the broken water, where he must inevitably have been swamped. The gratitude of the poor man for his providential rescue nearly overwhelmed him; and the joy of the lifeboat's gallant crew was indeed great that they had been, under God, the means of saving him from the fearful doom that was threatening to engulf him.

The lifeboats of the institution have providentially been the means of rescuing 270 shipwrecked persons during the present year alone. Several other rewards were voted to the crews of the *Porthcawl*, *Brighton*, *Fleetwood*, and *Arklow* lifeboats of the institution, for going off with the view of saving life; and also to shore boats, for their laudable exertions in rescuing life from different wrecks. It was stated that Miss Burdett Coutts had again munificently promised to pay the cost of the lifeboat which the institution is about sending to Plymouth. The institution decided on placing a new lifeboat and transporting-carriage at Blakeney, on the Norfolk coast. Lifeboats on the plan of those of the society had been sent during the past month to the order of the respective governments of the Cape of Good Hope, Spain, and Jersey. It was reported that the town of Ipswich was about setting a noble example to other towns on behalf of the lifeboat cause. On the following Sunday a collection on its behalf was to be made in all the churches and chapels in Ipswich; and on Monday a public meeting, to be attended by the Mayor and some of the nobility of the county, is to be held in the Town Hall, when it is expected the cost of at least one lifeboat will be announced as the result.

Some interesting reports were read from Captain Washington, R.N., on the means for saving life employed at Havre, on the French coast, and also on the lifeboats at Boulmer and Alnmouth, and the barometers and barometer indicators at those stations, and at Amble, on the Northumberland coast, Captain Washington having recently visited Havre and those places.

Payments amounting to £850 having been made on various lifeboat establishments, the proceedings terminated.

This long string of wrecks, resumed the Chairman, is to be attributed to the severe changes of weather that have marked the month of November this year. And this gave him the opportunity of inquiring whether there was really any faith to be placed in weather



prophesying? It was a subject to which much attention had been given of late, and he observed from day to day in the public prints that this new feature had appeared, which, if reliable, was certainly most desirable.

Rodmond would take on himself to reply to the Chairman's question, and certainly he might not be so different from other people as to be without prejudice; but he had seen Mr. Saxby's weather prophecies in their *Nautical* for a considerable length of time, and had found reason to be satisfied with them. He knew also that they were in favour with Loyds, and had recently been informed of an instance in which insurance had been refused on the faith of them. The late gales had been foretold by Mr. Saxby, and he had now before him one of this gentleman's notices, which, if compared with what had recently taken place, would confirm what he had said. And notwithstanding what had been said about astro-meteorology, which did not concern Mr. Saxby's calculations, or the impossibility of predicting the weather three days beforehand, Mr. Saxby's system (of which he had made no secret, for it was described in their *Nautical*) was such as to anticipate it by months, and here is one of his notices to which he had alluded. It says, applying to this and next month:—

List of Days on which the weather may reasonably be suspected as liable to change, most probably towards high winds or lower temperature, being especially periods of atmospheric disturbance.

November 5th or 6th, 11th, 19th, 26th,  
December 2nd, 9th, 16th, 23rd, 30th.

Nov. 2nd to 6th and 14th } Are likely to  
Dec. 1st to 3rd and 11th } be periods of  
unusual disturbance.

N.B.—If the day marked prove calm and still, distrust the day after, and especially the second day after.

The changes vary in intensity, but even at quiet periods they may be plainly traced in the scud flying with a velocity totally at variance with the state of the air at the earth's surface.

S. M. SAXBY, R.N.

Now any one might compare this for himself with his own observations. But such comparisons had given rise to the following remarks on Mr. Saxby's system, that he had met with in the *Daily Telegraph* of the 21st November, under the title of "Weather Signs and Predictions:"—

"We have already alluded to the weather prognostications of Mr. S. M. Saxby, Principal Instructor of Officers of Naval Engineers, H.M. Steam Reserve, the truth of which has been on various occasions so singularly verified, and particularly so as regards the hurricane of the 14th inst., the day specially indicated for a "coming storm." We therefore deem it right to call attention to the further prediction of Mr. Saxby that bad weather may also be expected on the 1st to the 3rd of December, and especially the 11th of December; and as we know that in some quarters considerable faith is attached to the prophetic judgment of Mr. Saxby in these matters, it is only just to that gentleman that his warnings for the future should be specially referred to."

He quite agreed with these remarks, and although Mr. Saxby had adopted the peculiar name of "Lunar Equinoctials," it was founded on reasons which he had given at large. The subject was one that came home to all, and he was glad to see so much attention devoted to it of late.

The Chairman would now turn to matters abroad. We had all heard, he said, of the discovery of gold in New Zealand, and that Sir George Grey had left his government at the Cape on the 15th of August for that part of the world, to put an end to that unrighteous war which had been got up by some mismanagement between the natives and our countrymen. But the peculiar fitness of Sir George for the mission is not so generally known, and is a happy confirmation of the good judgment of the home authorities in selecting their man. Sir George takes his secretary with him *pro tem*, and it was his intention to take a long walk among the hostile tribes! Yes, and alone! Sir George is not the man to be deterred by their hostile appearance. He is not one who takes the bull by the horns, to use a home phrase. He is master of their language, having already written a grammar of it, and speaks the language fluently. It will be a bold walk perhaps, but he entertains no fear for his safety. Master of their language, aided by his powerful persuasive eloquence and systematic reasoning, he will effect more thus than a thousand formal treaties could secure. He is the man of all others for the New Zealanders, who will be delighted with their new chief from the Queen, and for the first time will listen with astonishment to their own words from lips that to them could speak nothing but unintelligible things. Yes, added the Chairman, happily for New Zealand, the right man is in the right place, and the gold fields, not war, will be in the ascendant, while the new governor will gain the affections of the natives and will leave them some day hereafter to their sorrow. It is to be regretted, observed the Chairman, that such officers are not more numerous in that part of the world.

The Chairman, continuing, stated that he had alluded to the meditated operations against Mexico, and it might be useful to place among their papers a brief glance of the subject, from the Convention to which this country with France and Spain were parties. The immediate object of the Convention was the dispatch of a force to "seize and occupy the several fortresses and military positions on the Mexican coast." There was no intention of acquiring territory, or of interfering with the internal government of Mexico. A commission of three is to be appointed to decide upon all questions relative to the distribution of the money to be obtained from Mexico, and it is arranged that the co-operation of the United States in the enterprise shall be invited.

The expeditionary force is now on its way to the Gulf of Mexico. The British contingent amounts already to 850 guns, and 10,600 seamen and marines. The Spanish Admiral commands 12 steamers, mounting 300 guns, and the French Admiral, Jurien de Gravière, probably a squadron of 10 sail and 310 guns. Of course the reduction of Vera Cruz would be the first object, and it would not be long before we should hear of operations being commenced.

While this expedition is going forward, in which the United States may find enough to do in their present war without engaging in this, an incident occurs at Southampton in the arrival of a Confederate war steamer with the crew of a Federal States vessel which she had destroyed some three days' sail from the British Channel. The name of the steamer is, or rather was, the *Nashville*, but is known by another name under the Confederate flag. The name of the merchantman which unhappily crossed her track was the *Harvey Birch*, a full-rigged American ship of 1,500 tons, valued at 150,000 dollars, bound from Havre for New York. The great interest of this intelligence arises from the fact that the *Nashville* had on board the crew and some of the stores of the destroyed vessel, which it has been thought by some bring her within the terms of the interdict directed by our government against vessels of either belligerent bringing prizes into a British port. The question is one which will probably engage the attention of the law officers of the crown.

The circumstance involves a question of belligerent rights, on which it will be necessary for our government to lay down the rule to be observed as to the circumstances under which armed vessels of either belligerent are henceforth to be allowed to enter British harbours, and as to the rights which they are to enjoy whilst they remain in harbour. It is, no doubt, a serious question, whether the cruisers of either belligerent ought to be allowed to enter at all. But at all events, it is clear that, following the example of Norway and Denmark, privateers should not be tolerated in any British roadstead, under any pretence, and that no sort of warlike equipment ought to be furnished in a British port to any armed vessel of either party. It was understood that the *Nashville* was not to be allowed to refit at Southampton as a ship of war.

Some discussion passed on this subject, when the Chairman observed

that although he was not for taking a view of European politics, still the extraordinary state of affairs concerning Italy had already brought about a remonstrance of that Government with the Pope, which was at once so novel and remarkable that it should be recorded among their papers. He did not mean the whole document, but simply the principal points of it, and this he would take as he found it given in *Mitchell's Maritime Register*—an excellent weekly periodical well known at the Club:—

In the Chamber of Deputies, Baron Ricasoli, President of the Council, explained the present state of the Roman question. He said that he had drawn up a plan of reconciliation between religion and liberty, and between the State and the Church. He had requested the Emperor Napoleon to become mediator; but, owing to the little disposition to conciliation on the part of the Roman Court, the mediation had not been attended with any result.

Baron Ricasoli then laid on the table of the House the documents relating to this project of arrangement. The project contains eleven Articles, of which the following is a summary:—

The Pope and the Cardinals are to preserve their dignity and inviolability. Full liberty is guaranteed to the Sovereign Pontiff for his acts of divine rights as chief of the Church. The Pope is empowered to send Nuncios to communicate with the Bishops and the faithful, and to convene Synods and Councils without the intervention of the government. The King of Italy renounces his right in respect of ecclesiastical benefices. The Italian government also relinquishes all right of interference in the nomination of Bishops. The King of Italy will guarantee to the Pope a certain revenue."

The eleven Articles are preceded by an address to the Pope, accompanied by a letter to Cardinal Antonelli requesting him to give the plan a favourable consideration.

A note addressed by Baron Ricasoli to the Chevalier di Nigra was also laid on the table of the House. It instructs the Sardinian Minister at Paris to request the good offices of France in order to bring this project before the Pope, and says that should the proposals it contains be rejected, the Italian government could not, without difficulty, restrain the impatience of the people, who claim Rome as their capital.

After the speech of Baron Ricasoli an animated discussion took place on the state of things in the Neapolitan provinces. The Chamber resolved on discussing the state of things in Naples at the same time as the Roman question.

The conversation then turning on the *North Briton*, the missing Canadian steamer, Albert observed that the Canadian Company's ships seemed doomed to misfortune. Serious fears had for some days been entertained concerning their ship the *North Briton*, which was known to have left Quebec, and had been seen on her way. Anxious expectation remained in suspense for several days that she was overdue, when another of their vessels, also overdue, arrives home with

the news of her wreck on the Mingan Islands, on the Labrador coast, in fog. The telegram received runs thus:—

“The Canadian screw steamer *Anglo-Saxon*, from Quebec, has arrived at Londonderry. She reports that the *North Briton*, which left Quebec on the 2nd November, and was due at Londonderry on the 12th, was wrecked on the 5th, on Paroquet Island, one of the Mingan Group. All her crew and passengers are on board the *Anglo-Saxon*, except seventeen of the former and two or three of the latter, who got adrift in two boats. However, there is reason to believe that these were afterwards picked up by a schooner which was seen by the *Anglo-Saxon* off Metis. The captain and the second, third, and fourth officers of the *North Briton* remained behind.”

Now the Peroquets were really a reef of low islets at the very western end of the Mingan Islands, and it is remarkable that the course which the *North Briton* was steering, and stated to be East, from off Point de Monts was directly *for them*, instead of the West point of Anticosti, and would not have brought her to her supposed position off that point  $7\frac{1}{2}$  miles N.b.W.  $\frac{1}{2}$  W. from it. She seems indeed to have been drifted to the North shore by the easterly and S.E. gale she had against her; for it must not be forgotten that between Point de Monts and the Mingan Islands the westerly variation is increased by fully half a point. All this operated against the unfortunate vessel, tending to throw her to the North shore, to which she must have been tolerably close when she made Thunder Point, and the Peroquets even are not more than three miles from it.

The dangers of the St. Lawrence navigation, especially at this time of the year, are well known, and also that gales and fogs make matters ten times worse. But there seems to be an unhappy predilection in the company's vessels for the *northern shore*, notwithstanding the absence of all lights,—and unhappily the breadth of the channel between the Mingan Islands and Anticosti is much contracted by those islands. Still, it is over fifteen miles wide even then in its narrowest part, and the lead, the first and last resource in fog, would find deep water enough even in that channel to enable a vessel by standing from one side of it to the other to feel her way to either shore and thence to know her position and how she might go slowly ahead in safety. Of the particulars of this unhappy event we as yet are but half informed. He was, however, glad to find that her commander was reputed to be as experienced and competent a seaman as ever crossed the Atlantic, and he hoped that the measures which he no doubt adopted would show that he was so.

Still, continued Albert, there is an assertion advanced to quiet the public mind in this case that is not borne out by the experience of the *North Briton*. It says that “at this season of the year the track followed by the Canadian steamers is entirely free of ice and there is little or no fog,”—and yet the loss of the *North Briton* is entirely to be attributed to fog; giving a flat denial to the assertion. And this reminded him of a discussion which they had at the Club when he

took the opportunity of condemning *in toto* the northern route adopted at the discretion of the commanders of these vessels. Since that discussion Admiral Bayfield had said, in the *Nautical Magazine*, that he had advised the company against the Belle Isle Route, and he has said in his *St. Lawrence Pilot*\* distinctly that “*the channel to the northward of Anticosti cannot be recommended in the voyage down the St. Lawrence, because there is not only less room but less current in favour; neither the route by the strait of Belle Isle, on account of the straggling icebergs, which are in general to be met with there through all the navigable season.*” And yet these vessels persist in taking the Belle Isle Route to save a distance of something over two hundred miles, to get the northerly winds, and also to avoid *running against other vessels*, which take the southern route by Cape Ray and Cape Race, implying thereby that the *look out* kept on board the company’s vessels is not sufficient to do so!

It had been shown, continued Albert, that ice had been seen in the entrance of the strait in the month of August by Lieutenant Ashe, since which he had met with an account of there being abundance of it in the strait during that month, which would be worth preserving, from the columns of the *Shipping and Mercantile Gazette*. The account runs thus. It was dated Quebec August 24th, and said:—

Captain Grundell, of the ship *Magnet*, of St. John’s (N.B.), from Greenock, July 8th, being in lat.  $51^{\circ} 10' N.$ , long.  $47^{\circ} 42' W.$ , sighted and passed an iceberg, from which time until the morning of Sunday, the 11th, being then in the strait of Belle Isle, constantly surrounded by them, and passed upwards of 500 large ones, many of which were a quarter of a mile in length, and from 80 to 100 feet in height. About 6h. 40m. a.m., July 10th, Cape Norman, bearing S.b.E., saw the masts apparently of a brig about four miles S.S.W. of Cape Norman, with topsail and main lower yards crossed, and topgallant mast struck. At the same time a flag was flying on a pole on the adjacent hill, supposed to be the English ensign. The current was setting very strong at the time, and the *Magnet* was going about 10 knots over the ground. During the night passed about forty icebergs, most of which from their position appeared to be aground.

Now he considered there was abundant confirmation here of Admiral Bayfield’s assertion as to August, and even September, for when these grounded bergs would be removed, must be like all that concerns ice, most uncertain. And the English ensign mentioned flying on the hill, says enough from which any one may infer the fate of the vessel to which it belonged. But doubtless, as Mr. Ballantine says in the September number of the *Nautical*, “we have no account of the many narrow escapes that must have been made this season,” nor of those, may be added, that, like the *Canadian*, have not escaped. But we may infer, as he says, they must be numerous from the causes which he had pointed out.

\* Page 50, vol. I. 4th edition.

Mr. Ballantyne's paper was a temperate discussion of the subject, and yet one sided, in favour of the Belle Isle route. For instance, he had seen the strait clear, he says, on the 9th of April, on the 10th of June, and on the 12th of May. But he did not say how long it had been so or had remained so in those months,—and what safe inference therefore could be drawn from those assertions. Again, he said that icebergs would be met with on both routes—the Belle Isle and the southern one by Cape Race,—but he did not add that there was more room to avoid them in the southern route than in the other: but brought forward the numerous shipping on that route to run against, although these very shipping must have adopted it as being the safest. Therefore he did not look on that paper as conclusive. Again, Mr. Ballantyne had likened the dangers of the Newfoundland coast to that of the strait of Belle Isle, but he had not said that there was plenty of room for ships to avoid ice upon it by keeping to the southward, for which there is no room in the latter nor when you are north of Anticosti. Mr. Ballantyne had also stated that the Canada Government intended building a lighthouse on Cape Whittle: Was this meant to encourage the use of the Belle Isle route? Although it would be on an elbow of the Labrador coast, it would add nothing to the safety of the strait navigation, for it was many miles from it.

They had, however, these facts before them. There were two ways to Europe from Quebec out of the St. Lawrence, one was the northern route by the Belle Isle Strait and the other the southern one by Cape Ray. Neither of them was free from danger of ice, but the northern was more dangerous than the southern one, and the navigation of it was therefore less frequented—it was more certain of having ice in it—it had less room for avoiding it if met with—the Labrador coast was more dangerous to navigate off the whole way—and those dangers of course were increased by fog, nor was it lighted like the southern one, and yet, in spite of this and the recommendations of Admiral Bayfield, it was adopted by the Canadian steamers. Here is the second lost in consequence.

He thanked the Club for the attention given to him on this subject, and would express his satisfaction before sitting down with the opinion he had already expressed upon it, for the loss of the *North Briton*, had again confirmed his views, that the south was the proper channel to navigate. It was more free from danger than the North, and he repeated his opinion, founded on the authority of Admiral Bayfield, which was abundantly quoted in the *Nautical*, that the public seeing these losses occurring on the northern route, would, he hoped, eventually patronise those vessels only which do not use the strait of Belle Isle.

There was also a statement by Mr. Ballantyne that the Admiralty were surveying Belle Isle Strait. He really did not believe that the Admiralty were resurveying a strait of such a very questionable character in regard to navigation as the strait of Belle Isle. But as he had met with some notice of the Admiralty surveyors' proceedings in that part of the world, he would quote it from the *Eastern Chronicle*, in which it had appeared.

The surveying parties under Captains Orlebar and Hancock have returned to Charlottetown Harbour, and the two surveying vessels will soon be laid up for the winter. Commander Hancock, in the *Gulnare*, has been employed surveying Codroy, La Polle, Burin, Great and Little St. Lawrence, and the Lawn Harbour; Captain Orlebar, in the steamer, has been employed principally in sounding off the coast of Nova Scotia and Cape Breton from Halifax to Scutari and Cape St. Mary, and Trepassy Bay (Newfoundland). The growing importance of Tangier having determined the Admiralty to publish the plan of the harbour from the survey of Captain Bayfield, 1855, Captain Orlebar was employed during the last week in resounding it, and inserting on the plan the site and topography of the gold diggings.

He could find nothing here of the examination of the Belle Isle Strait, nor did he believe it, as Admiral Bayfield's chart was sufficient for that very unfrequented channel.

The Chairman remarked that it was well for navigation that the dangerous shores of North America in the Atlantic had received the consideration they had met with from the Admiralty; but it was certainly to be regretted that the commanders of steamers held the advice of our officers so cheaply as they did. Notwithstanding the critical survey of the dangerous Nova Scotia coast, the commander of the *Indian*, lost on that coast, appeared to be quite unacquainted with it; and certainly had the opinion of Admiral Bayfield, given in his sailing directions, been followed, both the *North Briton* and the *Canadian* would now have been as sound as ever they were. But the only sufferers he believed by this system of hugging, he would call it, the shortest route, were the public, whose lives were forfeited by it,—the vessels, of course being insured, reappeared in the shape of new ones. He agreed with his friend Albert entirely and trusted that his advice would not be lost. And as completely confirming the justness of his views, he would read a passage from a letter he had just seen in the *Daily News*, from a person who had been wrecked in the *North Briton*. He says,—“Conversing, on board the schooner which brought me to land, with its master (an old sailor of forty years' experience on that coast) he told me that the northern passage between Anticosti and the main, *always taken by the steamers of the Montreal Ocean Steamship Company*, was dangerous in the extreme, even to those well acquainted with the place; that the shores, strongly impregnated with iron ore, deranged compasses to an inconceivable extent; that the continually-changing currents diverted ships from their course in a manner that the soundings failed to indicate; and that in foggy weather to attempt to navigate the passage was little short of insanity.

Now this is the opinion, he would observe, of an old sailor of “*forty years' experience on that coast*,” and unprejudiced, too, by the consideration of distance. But, with reference to the compass, he believed that the rapidly changing variation, that amounted to about a point and a third along that coast, was the fact which had been con-



verted into the rocks affecting it,—but yet this danger, with all the others, remained. However, the letter is concluded with some pithy observations which should not be lost. The writer says—“I should not have troubled you with so detailed an account of the sufferings of myself and my fellow-travellers had I not wished to point a moral, which may be of service to the public. The Montreal Ocean Steam-ship Company receives from the Canadian government an annual subsidy of £104,000 for the conveyance of a weekly mail between Liverpool and Québec. For this munificent sum, the provincial government naturally requires that the service shall be performed with punctuality and despatch.”—And then is added that the shorter distance is adopted instead of *more powerful vessels being employed for the southern route*; thus risking the lives of passengers and the safety of the mails by the more dangerous northern one. Complaint is also made of an excess of freight being taken, to the discomfort of passengers; and a crew that are not particularly careful of luggage. He thought, however, that Albert's opinion was so much strengthened by these statements that the public would require Admiral Bayfield's advice to be adopted.

He had observed, as a set off to our loss of the *Driver*, on Mari-guana, that their French neighbours had suffered a loss in the Pacific. He had seen it stated that in the Pacific,—on October 1st the French war ship *l'Infernal* was totally destroyed by fire in the harbour of Valparaiso, where she had arrived only two days before. The flames burst forth from between decks in the middle of the day, and got such a head that the fire-engines could do no good. Upwards of a hundred cannon-shot were fired at the vessel in the hope of sinking her; but after six hours of useless efforts of all sorts to extinguish the conflagration, it was decided to set fire to the powder magazine, and then *l'Infernal* was blown to atoms in a moment. The explosion shattered a great many windows in the town. The loss is estimated at £100,000.

Rodmond, in allusion to the watchful care of the Trinity House over our coast navigation, stated that the virtues of the electric light and also the lime light had been looked to by them in reference to their requirements. The lime light had been on trial in Dungeness Light-house for three months, and it would seem that all difficulties as to management had been overcome. It was certainly seen at a greater distance than their oil lamps and reflectors; but now came the question of economy, a test which had set the electric light entirely aside. And it was doubted whether the lime light could be adopted, although it would be allowed to remain at Dungeness. They had just placed one of their excellent and important light-vessels so as to show the outer Dowsing, for which seamen would be grateful.

As a novelty, observed Rodmond, in the annals of Arctic navigation, our friends the Dutch have renewed their acquaintance, in the course of the last summer with Spitzbergen, some account of which he had just received. It was thus noticed:—

It may perhaps be remembered that two vessels, the *Æolus* and *Magdalena*, left Tromsø, in Finmarken, on May 9th, on a scientific excursion to Spitzbergen, having on board many eminent and learned gentlemen. The intention of the expedition was to take observations, correct the old charts, collect geological, zoological, and other specimens, and take meteorological and other observations which could be of interest to the scientific world. Owing to a prevailing north wind and the quantities of drift ice the vessels encountered, it was not till the 21st that they sighted Spitzbergen, and on the following day cast anchor in Cobb Bay, Danes Island, lat.  $79^{\circ} 40'$ , and long.  $10^{\circ} 45' E$ . On the 30th the expedition proceeded to Treurenborg Bay, where they anchored June 7th, in lat.  $79^{\circ} 56' 6''$  and long.  $0^{\circ} 16' 38'' E$ . It had been arranged to make sledge excursions,—dogs, &c., having been provided for that purpose at Tromsø; but it was found that the state of the ice would not admit of this project being carried out. In the sun the thermometer stood at  $14^{\circ}$  warmth, and  $7^{\circ}$  in the shade. This was unfortunate, as it precluded the possibility of many observations, &c., being taken.

The ships now parted company, the *Æolus* remaining on the northern coast, while the *Magdalena* explored the western parts. During their stay in these northern latitudes they were able to ascertain many points astronomically: the old charts were corrected, and new harbours discovered. They met with some Norwegian sealing vessels which had been blocked up by the ice. From the discovery of a West Indian plant (*Mimosa scandens*), and from finding several bottles, and also drift timber, it is placed beyond a doubt that the Gulf Stream impinges on the coast of Spitzbergen. Moreover, they kept a journal of meteorological and magnetic observations, which will be of great interest, and which doubtless in time will be laid before the world. Numerous drawings and photographs of the coast were taken. Also with reference to the diffusion of animal and vegetable life at the depths of the ocean, many interesting experiments were made, molluscs, shell-fish, and zoophytes being found at depths of 1,300 fathoms.

The geological and botanical specimens that have been collected are said to be extremely curious. During their stay they succeeded in killing several polar bears and walruses. Owing to the quantities of pack ice they were unfortunately unable to extend their researches and explorations so far South as they had intended; still, altogether, the expedition has been eminently successful, and the results cannot fail to prove of great interest to the scientific world.

The ships arrived at Tromsø safely on the 25th September; all were in perfect health and excellent spirits, having escaped any attacks of scurvy. They encountered many storms and met with much thick weather, and had moreover one or two narrow escapes from the ice. Petersen, the Dane, who accompanied Captain McClintock, and who has made so many voyages to the northern waters, accompanied the expedition.

Rodmond added that the following account of the Republic of Li-

beria, which he had met with in the *Boston Journal*, would interest the Club:—

Perhaps the general ignorance respecting the African Republic of Liberia accounts for the indifference felt for its welfare and prosperity. But that should not be suffered to blind us to the advantages which we might derive from a closer commercial connection with a little state which promises more than everything else to become the means of opening up the great resources of Africa. Owing undoubtedly to home prejudices, our government never has encouraged trade with Liberia, nor even taken pains to form a commercial treaty with it. Liberian vessels, of which there are now a number engaged in trade, mostly with England and France, are obliged to pay tonnage dues in our ports. So much dissatisfaction has been thus occasioned, that we understand the question of imposing differential duties on American vessels forms one of the issues of Liberian politics. We understand that this subject will be duly attended to and righted under Lincoln's administration, and that trade with Liberia and Hayti will be put on an advantageous footing.

Still, it becomes our public-spirited merchants to look into this matter of Liberian commerce, independently of governmental action. Liberia is going ahead in trade, is rich in commercial capacities, and somebody must reap the benefit of it. It requires no great research to see that others are awake to these facts whether we are or not. A reliable statement puts the average annual exports of Western Central Africa (mainly Liberia) to the European States at 15,000,000 dollars. Great Britain is the principal customer. Her trade with Liberia for the last twelve years has been greater than ours with all Africa, and it is rapidly increasing. There is no solid reason why this should be so. There are many articles that we can supply better than any European nation, while we want nearly everything that Liberia produces. Her dye-woods and ornamental woods, her ivory, palm oil, and unsurpassed coffee are welcomed in every market. But the extent to which the production of these could be increased by a judicious outlay of capital, is almost incalculable at present.

The colony of Liberia, it will be remembered, extends back from the coast only from fifty to eighty miles. But while the country increases in richness towards the interior, the vastness of which is but partially explored, there are no roads beyond forty or fifty miles from the coast. Camwood is brought down on the shoulders of the natives. But immense quantities of palm nut are suffered to decay for want of means of transport, and the mahogany, *lignum vitæ*, and rosewood trees, which are said to be as plenty as hemlock and spruce in Maine, stand untouched. And this where the rates of wages are low, and the climate exceedingly adapted for labour the year round. We have been assured by an intelligent and reliable Liberian, that the present entire trade of the State with the European countries is not so great as it could be made with the United States alone in eighteen months, if our merchants would only take hold of the matter as it deserves. He es-

timates, for instance, that nearly two thirds of the oil and ivory that could be obtained within a hundred miles of the coast, is not now brought down, for the reasons we have stated.

But we should not forget that Liberia deserves our attention on other grounds than the money which can be made from her commerce. She is demonstrating the power of the coloured man to *carry on a government and build up a prosperous state*. She numbers some 250,000 inhabitants, of whom 10,000 are free blacks from the United States. But these men are the traders and factors of 2,000,000 of natives in the interior. They have virtually stopped the slave trade on a large part of the western coast of Africa, and they have done much towards elevating the condition of the interior tribes. Their commercial and social progress justifies the assertion of Hon. Edward Everett, in his colonization speech, that they will compare favourably with the founders of any other state.

As a singular indication of what they have done, we may mention that while the British export trade with different parts of the world has only increased in the last twenty years 50 per cent., the export trade of Western Africa has more than doubled. But like all new colonists, they suffer for want of capital. If that could be supplied, every element of prosperity would be quickened, the means of communication would be improved, new resources would be developed, skilled labour introduced, and immigration increased. We have confidence that this subject will yet commend itself to our far sighted men of business, as well as to genuine philanthropists, and that the Republic of Liberia will soon receive new impulse in the career which has thus far been so honourable to her.

## Nautical Notices.

### PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 612.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	(Remarks, &c. Bearings Magnetic.)
40. Cape Wickham	Bass Strait	39° 35' S., 143° 57' E.	F.	280	24	Est. 1st Nov., '61. (a.)
41. Cape Pera	Majorca Iald.	39° 43' N., 3° 30' E.	Ffl.	241	18	Est. 30th Nov., '61. East end of island.
42. Cape Sable	Nova Scotia, S.W. point	42° 23' 3" N., 65° 37' 2" W.	F.	53	12	Est. 1st Nov., '61. Red.
Cape Ferro	Sardinia, N.E. coast	41° 8' 7" N., 9° 31' 3" E.	R.	220	17	Est. 1st Nov., '61. Revolves twice in a minute.
43. Eupatoria Pt	Black Sea	.....	Ffl.	52	10	Est. 13th Aug., '61. Flash every minute.

F. Fixed. Ffl. Fixed and Flashing. R. Revolving. I. Intermittent. Est. Established.

(a.) 40. The light will be visible when bearing from N.N.E.½ E., round by the East, to W.N.W. The tower is circular, 145 feet high, and painted white.

*Caution.*—The attention of mariners is called to the following extract from the Report of the Lighthouse Commissioners appointed by the Governments of New South Wales, Victoria, South Australia, and Tasmania:—

In advising the erection of a lighthouse on King Island, the Commissioners wish to guard themselves from affording the public any reasonable supposition that this light can be at all considered in the position of a great highway light for the navigation of Bass Strait. The south coast of New Holland, at the western entrance of the strait, being free from danger, affords in their opinion the safest shore for the prudent mariner to approach, and they conceive that the light on King Island is only to be regarded as a beacon for warning navigators of danger, rather than as a leading light to a great thoroughfare.

Variation 8° 20' East in 1861.

---

*CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of November, 1861, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.*

Ireland, West coast, Dingle and Ventry Harbours, with views, G. F. MacDougall, Master, R.N., 1856, (3s.)

Ireland, West coast, Basket Sound and Islands, with Smerwick Harbour, and views, Commander Edye, R.N., 1858, (3s.)

Gulf of Finland, Dvina River, from the Road to Riga City, Russian survey, corrected to 1860, (2s.)

Black Sea, Delta of the Danube and Entrance to Razene Lake, Captain T. Spratt, R.N., C.B., (3s.)

Africa West coast, River Kwara or Niger, Lieutenant J. H. Glover, R.N., 1858, (2s. 6d.)

Africa, West coast, Cape Coast Castle to Badagry, Captain H. M. Denham, R.N., and others, 1857, (2s. 6d.)

River St. Lawrence, Quebec to Point du Lac, Commander J. Orlebar, R.N., 1859, (1s. 6d.)

River St. Lawrence, Point du Lac to Lachine Rapids, Commander J. Orlebar, R.N., 1859, (1s. 6d.)

West Indies, Grenada Island, with three plans and views, Mr. J. Parsons, Master, R.N., (3s. 6d.)

Gulf of Mexico, Texas, Rio Grande Entrance, U.S. survey, 1854, (6d.)

China, Yang-tse-Kiang, Hankau to Yoh-chau-fu, Commander J. Ward, R.N., 1861, (1s. 6d.)

China, Yellow Sea, N.W. coast, Hai-yun Island including Thornton Haven, Lieutenant Bullock, R.N., 1860, (1s.)

China, Yellow Sea, N.W. coast, Wei-hai-wei Harbour and view, Commander J. Ward, R.N., 1860, (1s. 6d.)

China, Yellow Sea, Ta-lien-whan Bay and view, Commander J. Ward, R.N., 1860, (1s. 6d.)

Pacific Ocean, New Caledonia, Loyalty Islands, and part of the New Hebrides, various authorities, 1856, (2s.)

Ex-Meridian Tables, 8th edition, 1861, J. T. Towson, F.R.G.S., (1s.)

Hydrographic Notice, New Zealand, No. 1, Discovery of Shoals.

*Hydrographic Office, 20th November, 1861.*

---

### New Books.

**LETTERS FROM HIGH LATITUDES: being some Account of a Voyage in the schooner yacht "Foam," 85 tons o.m., &c., &c. By Lord Dufferin. Murray.**

Assuredly the history of a *yacht* voyage to Iceland and Spitzbergen well deserves to live in print. When our nobility forsake the charms of pleasure which station and means can command, for the roughs and smooths of a sailor's life, and this, too, to find pleasures of another kind in the cold boisterous regions of the North,—in fact, to contend with thick ribbed ice in troubled seas, with fogs and an atmosphere charged with banks of haze and vapour that assume the appearance of black night defying the light of day, and drenching the invader with fresh water as much as the sea does with salt, when one of these our fair weather craft, (which of all others that swim a yacht has the most right to be so considered,) when these, we say, take to such pastimes as that above-mentioned, she presents a rare phenomenon, which, while it does honour to the British aristocracy is a credit to the country to which she belongs.

The further north the harder it blows, said a veteran Salt to us one day just after reaching the harbour of Stromness from the North Cape. And yet he had not been at Spitzbergen, where Lord Dufferin might smile at his assurance, nor in Bellot Strait where Sir Leopold M'Clintock thinks that old Æolus has his strong locker. But to the book before us:—one of the most readable that we have read for a long time. Who can wonder that it has reached its fourth edition. When we look back on our narratives of arctic enterprise, saving always Sir Leopold's book to whom we have just alluded, what noble opportunities do we find utterly lost; occasions in the midst of dearly bought experience for the display of sentiment, of tact, talent, learning, knowledge acquired from education that might have been shown by our different naval authors,—all thrown into the shade by the author of "Letters from High Latitudes." This is a book that should never be out of print, and we say it in downright sober earnest, for it is worth all the rest put together, all the arctic voyages that have ever been written, and we hope that its worthy publisher and talented author will take care that it never shall be.

We shall not say more as to the places visited by Lord Dufferin, but refer our readers to his book. They will find an extract from it in this number, and we can promise them another or two hereafter, for we have been much tempted to take further liberties than we have done in preserving for ourselves his clear and straightforward description of the Geysirs. But for the present we will say, for lucid description of nature's wonders, one of the first sources of our astonishment and gratification at the Creator's works, and for that familiar but refined style that belongs to a gentleman fortified with the resources of education and a master mind to direct them,—for interesting information on such subjects commend us to one who can write like Lord Dufferin.

END OF VOL. XXX.

# INDEX TO VOLUME FOR 1861.

## ENLARGED SERIES.

- Absence, Lines on, 186  
 Admiralty and Department de la Marine, 398  
 ..... Charts, New, 56, 110, 167, 280, 398, 456, 512, 568, 695  
 Adra, Coast about Described, 612  
 ..... Vessels Bound for, 617  
 ..... Wrecks on Coast of, 613  
 Airy, Mr., on Magnetic Variation, 344  
 Albert Gallatin, Bottle from, 565  
 Alderney, French Opinion of, 286  
 ..... .. on Completing, 424  
 Alert, H.M.S., at Fanning Island, 434  
 Allowance in Merchant Ships, 229  
 Almeria Bay, Described, 613  
 Amazone Bank, China Sea, 568  
 Amasons, Waters of the, 231  
 Ambleteuse Island, 21  
 American Civil War, 332  
 ..... Representative's Speech, 450  
 ..... War, 450  
 Anatolia Coast, Character of, 517  
 Anchorages in Magellan Strait, 313  
 Andes, Journey Across, 409  
 Angus Rock, Not Lighted, 158  
 Apprentices in Merchant Ships, 226  
 Ararat Observatory, 268  
 Arctic Expedition, American, 277  
 Arica, a Trip from, to Jacna, 410  
 Arkwright, Inventions of, 536  
 Armstrong Gun, Expenses of, 154  
 ..... Report, 200  
 ..... 100-pounders, Suspension of Issue, 674  
 Arran Islands, Bird-Catching in, 236  
 Ascension or Bonabi Island, 106  
 Aahe, Lieut., Journey across Andes, 409  
 ..... on Eclipse of 1860, 1  
 Aston's Disc Paddle-Wheel, 99  
 Astronomy, Discoveries in, 526  
 Atacama Bay, 250  
 Atlantic Cable, French, 101  
 Atlantic Cable, Remarks on, 100  
 ..... Equatorial Volcano, 458  
 Avarice, a Turkish Tale, 65  
 Baffa, Cyprus, Account of, 516  
 Baily's Beads Observed, 10  
 Ballantine, Capt., on Belleisle Route, 475  
 Balls at Reunion, 179  
 Banca Strait Described, 80  
 Barachois of Isle Reunion, 118  
 Barfleur Harbour, 22  
 Barnaby, Mr., on Naval Architecture, 543, 582  
 Barrow, Mr., Cook's Voyages, 223  
 Batteries, Fixed and Floating, 307  
 Bayfield, Adm., on Belleisle Route, 511, 630  
 ..... on Routes to Quebec, 630  
 Bayley, Mr., on Sun's Altitude, 386  
 Beauclerk, Lord C., Death of, 680  
 Belleisle Route, 475, 511  
 ..... at Discretion of Commanders, 443  
 ..... Bayfield on, 688  
 ..... Considered, 630  
 ..... Proposed Route, 443  
 ..... Strait, Character of, 477  
 ..... on Navigating, 396  
 Belligerent Rights at Sea, 150  
 Bethune, Adm., on Lunars, 205  
 Bibb, Voyage of, on Eclipse, 5  
 Bird-Catching in Arran Islands, 236  
 Bishop Rock Lighthouse, 323  
 ..... and Skerryvore Lights, 324  
 Blainville Harbour, 25  
 Blair Port, as a Refuge Harbour, 510  
 Boat-Building, Thomson's Mode, 445  
 Bombay Harbour, 625  
 ..... Plans for Improving, 629  
 ..... Wants for Making, 626

- Bottle Papers, 161, 564  
     ..... Albion, 162  
     ..... Argo, 164  
     ..... Curacoa, 162  
     ..... Fidelia, 162  
     ..... Horatia, 163  
     ..... Leopard, 162  
     ..... Perseverance, 161  
 Bottles, Another Batch of, 509  
 Boulogne Harbour, 21  
 Bowditch Island, 470  
 Boyd, Capt., Loss of, 157  
 Boys for Sea-Service, 227  
 Brazil, Reefs on Coast of, 346  
 Breechings First Used, 547  
 Bridges, Improvements in, 538  
 Bright, Mr., on Commercial Treaty, 439  
 Britannia Island, Loyalty Group, 402  
 British Association, Proceedings, 524  
     ..... Navy, on Manning, 519  
 Brooks' Deep Sea Lead, 79  
 Brown, Mr., on Cancao River, 52  
 Bulldog, Sounding Voyage of, 74  
 Buoy of Rouaudiere, Jersey, 342  
 Burning of French Steamer l'Infernal,  
     691  
 Burr, Mr., on Spanish Coast, 612  
  
 Cabins First Used in Ships, 546  
 Calais, Port of, 20  
 Camilla, H M.S., Loss of, 99, 101  
     ..... Missed, 159  
 Campbell Reef, 108  
 Canadas, Population of, 140  
 Canadian, Report on Loss of, 441  
 Cancao River, Anchorage for, 52  
 Canche River, 21  
 Cannon First Employed, 545  
 Captains, Foreign, in British Ships, 152  
     ..... of Different Stamp, 460  
 Carentain, Port of, 21  
 Carteret, Port of, 25  
 Caulking First Employed, 546  
 Cedars of Lebanon, Visited, 493  
 Chain-Pumps First Employed, 547  
 Chair, Vibrating, 587  
 Champion, Piracy, 170  
 Channel Fleet, Advantage of, 601  
     ..... Islands and Defences, 423  
     ..... Ports, 19  
 Charleston Lights, 160  
     ..... Extinguished, 102,  
     110  
 Charts, New Admiralty, 56, 110, 167,  
     280, 398, 456, 512, 568  
 Chatham Docks, Defects of, 378  
 Chemistry, Discoveries in, 528  
 Cherbourg, Port of, 22  
 Chevalier, M., Speech on Commercial  
     Treaty, 435  
  
 China, Cotton Cultivation in, 577  
     ..... and Japan Steam Navigation  
     Company, 340  
     ..... to Japan, 57  
     ..... Trade, Lord Elgin on, 335  
     ..... Notification on, 336  
 Chinese, Captivity among, 39  
 Chinkiang, Trade of, 350  
 Cialdini, General, Feted, 600  
 Claymore, Our Cruise in the, 498, 515  
 Coals to Aden, 229  
     ..... at Nicobar Islands, 635  
 Coast Changes, Saxby on, 426  
 Colaba Light, Bombay, 627  
 Colliers, Why Lost, 215  
 Colton, Mr., on Lunars, 50  
 Commerce, Articles of, for China, 353  
 Commercial Treaty, 435  
 Commissaire de la Marine, 299  
 Commissariat, French Naval, 299  
 Compass Deviation at Cronstat, 619  
 Conway, Liverpool School Ship, 154  
 Cook's Voyages, Notice of, 223  
 Coral Reefs, Formation of, 347  
     ..... Sea, Charts of, 104  
 Cotton Culture in China, 577  
 Coutts, Miss, Generosity of, 271  
 Cowie, Capt., on Rocks near Equator,  
     454  
 Cracroft, Capt., Testimonial to, 549  
 Crossing the Line, 513  
 Cruelty to Seamen, Case of, 500  
 Cuba, Revolution in, 269  
     ..... Spanish Chart of, 269  
 Currency on Yangtse-Kiang, 353  
 Current, Easterly, off Adra, 616  
     ..... Pacific, 107  
     ..... among Nicobars, 637  
     ..... off Japan, 61, 64  
 Cyclones, Mr. Saxby on, 622  
     ..... of Nicobar Islands, 634  
 Cypress Tree at Lahaina, 658  
 Cyprus, Climate of, 516  
     ..... and Karamania Coasts, 515  
  
 Dangers of Belle Isle Route, 630  
 Davis Strait, Depth in, 76  
 Death, Chinese Views on, 175  
 Declination, on Correcting, 371  
     ..... Sun's Difference, 649  
 Denham, Capt., Herald's Work, 221  
 Devil's Own, a Frenchman on, 282  
 Dielette, Port of, 23  
 Disbursements, Ships', 228  
 Discussion at Lahaina, 659  
 Disobedience, a Case of, 467  
 Dock at Birkenhead, 161  
     ..... at St. Helena, 161  
     ..... Defects of, for Iron Ships, 375  
     ..... for Iron Ships, 276, 676



- Döring, Mr., on Charts and Coast Views, 454
- Double Altitudes, Mr. Hebden on, 36
- Dover Harbour, 19
- Duke of York Island, 470.
- Dunkerque, Port of, 20
- Dutch Expedition to Spitzbergen, 692
- Dreadnought, Hospital Ship, 216
- Driver, H.M.S., Loss of, 561
- Earth, Heat of, 529
- Earthquake at Malta, 146  
 ..... at Mendoza, 340  
 ..... in the East, 553
- Eclipse of Sun, 1860, 1
- Electric Cable, Bagdad to Constantinople, 505  
 ..... Mr. Piggott on, 621  
 ..... Notice of, 217  
 ..... Light, Expensive, 248  
 ..... Telegraph, Invention of, 540
- Elgin, Lord, on Summer Palace, 91
- Ella, Bottle Paper from, 509
- England, Maritime Efforts of, 287
- Equal Altitude Problem, 386  
 ..... Tables, 388
- Equator, Volcanic Action, 453
- Esquimaux Refusing Spirits, 7
- Examination of Foreigners, 152
- Fairbairn, Mr., on British Association, 524
- Fall of Peking, 17
- Fanning Island, Pacific, 432
- Feejee Islands and Islanders, 257  
 ..... Commerce of, 262  
 ..... More About, 478  
 ..... Produce of, 480, 486
- Fenn's Lifebuoy, 153
- Fire at London Bridge, 390
- Fishery, French, Resources of, 309  
 ..... Labrador, 6
- Flashing Light, Definition of Tern, 247
- Fleet of England, Number of, 290
- Floating Piers, 450
- Flinders Reef, Pacific, 221
- Fogs in Belleisle Strait, 475  
 ..... of St. Lawrence, 629
- Forecastle, Origin of Name, 543
- Foster, Capt., Confirms Zealandia Shoal, 567
- France, Lights on Coast of, 241
- Free Trade, Battle of, 439
- French Language, on Cultivating, 440  
 ..... Naval Service, 447  
 ..... Navy, 272  
 ..... Difficulties of, 290  
 ..... Officers, 288, 292  
 ..... Report on, 281  
 ..... Wants of, 311
- French War, Cause of, 440
- Fresh Water at Sea, 269
- Gale of 9th February, 146  
 ..... at Hakodadi, 61  
 ..... at Japan, 58
- Galleons First Mentioned, 545
- Galleys, Ancient, 544
- Gateshead, Barque, Piracy, 170
- Geography, Discoveries in, 531
- Geology, Discoveries in, 529
- Geysirs, Iceland, a Visit to, 661  
 ..... Theory of, 666
- Glendining Shoal, 109, 167
- Gobbo Shoal, Adriatic, 453
- Gold, Purchasing, 421
- Goodhaab, Voyage to, 74
- Good Hope, Piratical Attack on, 327
- Gordon, Mr., on Nautical Almanack, 368, 649
- Goury, Port, 23
- Grantham, Mr., on Iron Ships, 141, 202, 359
- Granville Harbour, 26
- Grape Vines at Lahaina, 657
- Gravelines, Town of, 20
- Great Barrier Reef, 221
- Great Eastern, Discussion on, 602  
 ..... at Quebec, 450  
 ..... her Disaster, 561  
 ..... Opinion on, 586  
 ..... Passage 450
- Gunnery in its Infancy, 275
- Guns, Naval, First Used, 544
- Hainan, Harbour of, 641  
 ... .. Island, China, 639  
 ..... Produce, 641
- Hamilton Inlet, Bank off, 77
- Hammond Island, Pacific, 221
- Hankow, Port, Trade of, 353
- Harbours and Sailors, 621  
 ..... of Huinan Island, 641
- Haughton, Capt., Letter to, 632
- Hayes, Dr., Expedition, 277
- Hebden, Mr., on Double Altitudes, 36
- Heights by Thermometer, 422
- Henri Grace de Dieu, Account of, 547
- Herald's Work on Australian Coast, 221
- Hermon, Mount, Height, 494
- Hero, Voyage of, to Quebec, 131
- High Rope of Edinburgh, 267
- Himalaya at Eclipse of Sun, 1
- Hongkong to Japan, 60
- Hurricanes at Loyalty Islands, 405  
 ..... at Reunion, 186  
 ..... how Produced, 643  
 ..... of Mauritius, 385, 643
- Hutchinson, Lieut., Reward, 331

- Ianthe Shoal, Caroline Islands, 166  
 Icebergs, Danger from, 476  
     ..... in July, Story of, 6  
     ..... Ships Lost by, 476  
 Ice, Loss of Ships from, 396  
     ..... in Bellisle Strait, 688  
     ..... in St Lawrence, 631  
     ..... on Greenland Coast, 76  
 Iceland, Geysirs of, 659  
 Icelandic Treatment of Visitors, 664  
 Incident on Loss of Canadian, 415  
 Indemnity, Chinese, 48  
 Indians, North American, 27  
     ..... Superstitions, 27  
 Inscription, Maritime, of France, 295  
 Insubordination of Merchant Seamen,  
     229  
 Invalides Administration, 296  
 Iron-Cased Ships of the Navy, 666  
     ..... Expence of, 674  
 Iron, Improvements in, 537  
     ..... Shipbuilding, 537  
     ..... Ships and their Docks, 373  
     ..... Defects of, 275, 359  
     ..... Length, 364  
     ..... Strength of, 141, 202, 359  
 Irrigation of India, 450  
 Italian Navy, 272  
 Italy and the Pope, 686
- Japanese, Do not Drink, 62  
     ..... Gleanings, 123  
     ..... Remarks on, 379  
     ..... United States Embassy, 128  
 Japan, Foreigners in, 159  
     ..... Ports Opened by Treaty, 63  
     ..... the Amoor, and Pacific, 379  
     ..... to Hongkong, 60  
     ..... Trade of, 124  
     ..... Treaty with America, 63  
     ..... Winds and Currents of, 57  
 Jinman, Mr., on Winds and their  
     Courses, 343
- Karamania, Shoal on Coast of, 518  
 Kenery Island, Bombay, 625  
 Kent, Duchess of, Death, 210  
 King of the Sea, Edward III, 544  
 Kinnaird, Port, Feejee Islands, 486  
 Kiu-kiang, Port, Trade of, 350
- Labrador Coast, Character, 8  
 La Gloire, Doings of, 273  
     ..... Dimensions of, 673  
 Lahaina, Steam Trip to, 652  
     ..... Town, Appearance, 655  
 Lamartine, Lines by, 186  
 Lancaster, Bottle Paper from, 510  
 Langstone Bar, 276  
 Larnica, Cyprus, Described, 515
- Laws, Mr., on Moessel Bay, 569  
 Legation at Yedo, Attack on, 605  
 Legiep Island, Position, 107  
 Levi, Cape, Port, 22  
 Lezardrieux, Port, 377  
     ..... Advantages of, 307  
 Liberian Republic, 693  
 Life-boat Institution, 96, 214, 371, 330,  
     507, 678  
     ..... Mr. Walter's Drawing, 46  
     ..... Services, 46, 563, 589  
     ..... Wanted at Bombay, 630  
 Life-buoy, Fenn's, 153  
 Life, Loss of, on British Isles, 271  
 Lifu Island, Loyalty Group, 402  
 Lighthouses, Report on, 238, 242, 319  
     ..... Replied to, 242  
     ..... Expence of, 322, 327  
     ..... of Great Britain, 239  
 Light Reflectors and Refractors, 245  
     ..... Dues, Reduction of, 446  
     ..... Source of, Considered, 244  
 Lights, &c., Commission on, 211  
     ..... Report on, 224  
     ..... Distinction of, 320  
     ..... English and Foreign, 321  
     ..... Fixed and Flashing, 247  
     ..... French, Alterations, 166  
     ..... in Channel, 26  
     ..... of Bombay Harbour, 626  
     ..... Position on Coasts, 242  
 Lime Light, 691  
 Lloyd's Requirements Ill-Founded, 362  
 Loch, Mr., his Captivity in China, 39  
 Lord Mayor's Banquet on Commercial  
     Treaty, 435  
 Loyalty Islands, Become French, 402  
     ..... Discovery, 401  
     ..... Population, 405  
     ..... Seasons, 405  
 Lucipara Channel, Banca Strait, 88  
 Lunars for Chronometers, 50  
     ..... on Reducing, 205  
 Lunar Equinoctials, 69, 164, 190, 263,  
     342, 384, 492
- M'Clintock, Capt., Plate Presented, 157  
 M'Donald, Capt., on Japan Weather, 57  
 Madagascar, to be Opened, 601  
 Magellan Strait, Navigation, 313  
     ..... on Using, 318  
 Magnetic Variation, 344  
 Magnetism, Discoveries in, 527  
 Major, Mr., on Port Blair, 632  
 Manners in Japan, 126  
 Man Overboard, 5  
 March, Capt., on Banca Strait, 80  
 Marine, Department de la, and Admi-  
     ralty, 298  
 Marquis of Bute, Bottle from, 510

- Mary Rose, Alluded to, 547  
 Masters, French Opinion of, 291  
 ..... in Merchant Service, 226, 458  
 Mates, Deficiency in the Navy, 366  
 ..... of Merchant Service, 228  
 Mathew Island (Mariki), 105  
 Mauritius Weather, 385  
 ..... Hurricanes of 1861, 643  
 Maury's Work on the Sea, 111  
 Mends, Capt., on British Seamen, 154  
 Mercantile Marine Officers for Navy, 360  
 Merchant Seamen Ill Fed, 230  
 ..... Service Afloat, 457  
 ..... Wrongs of, 225  
 ..... Shipping Act, 466  
 ..... Ships of France, 285  
 Metropolis, Steamer, 3  
 Mexican Expedition, 685  
 Mikado, Meaning of Term, 125  
 Missing Ships, 396  
 Missionaries, Good Effect of, 406  
 Morality in Merchant Ships, 469  
 Morning Star, Trip, 105  
 Mosel Bay, Directions for, 572  
 ..... Harbour, 569  
 Mosquitoes at the Feejees, 483  
 Mules, Hard Life of, 410
- Nachendall Island, Indian Ocean, 620  
 Nagasaki, Remarks on, 379  
 Narrows of Magellan Strait, 315  
 Nashville Affair, 685  
 National Lifeboat Institution, 447  
 Nautical Almanack, Defective Explanations, 368, 649  
 ..... Club Papers, 38, 95, 146, 210, 267, 330, 390, 435, 499, 561, 599, 677  
 ..... Notices, 52, 102, 165, 218, 342, 397, 453, 510, 566, 612, 694  
 Naval Architecture, Progress of, 543, 582  
 ..... Architects, Institute of, Transactions, 111  
 ..... Officers from Mercantile Marine, 366  
 ..... Reserve, French, 621  
 ..... Enrolled, 446  
 Navies of England and France, 437  
 ..... of Europe, 272  
 Navigation Laws, on Repeal of, 458  
 Navy, Ancient, of England, 543  
 ..... of France, Intended, 303  
 ..... Remarks on, by Secretary to the Admiralty, 272  
 ..... Royal, on Manning, 519  
 New Books:—  
 Cook's Voyages, 224  
 Letters from High Latitudes, 696  
 Our Cruise in the Claymore, 515  
 Tasman's Journal, 244  
 Winds and their Courses, 343
- Newton, Mr., on Equal Altitude Problem, 386  
 Nicobar Islands, 632  
 ..... Directions for, 635  
 ..... Natives Treacherous, 637  
 ..... Survey Required, 638  
 Nile Overflowing, Damage, 601  
 Nolloth, Capt., on Quillimane Bar, 34  
 Noncowry Harbour, Advantages, 634  
 ..... Longitude of, 635  
 ..... Mr. Major on, 633  
 North Briton, Loss of, 686  
 North Sea Chart by Norie, 455
- Oar, its Importance, 556  
 Observations, of Mauritius Hurricanes, 643  
 Observatory at Labrador, 9  
 ..... on Mount Ararat, 268  
 Officering of the Royal Navy, 595  
 Oil Casks, Drift of, 565  
 Orlebar, Capt., on Visit of Prince of Wales, 131  
 Otafu, Visit to, 473  
 Outfitting in Peru, 412
- Pacific, Dangers in, 219  
 ..... Steamer, Bottle from, 509  
 ..... Telegraphic Cable, 101  
 ..... Weather, 105  
 Painted Lighthouses, 325  
 Parkes, Mr., on Yangtze Trade, 337  
 Parsons, Lieut., Reward, 331  
 Patents, Mr. Fairbairn on, 541  
 ..... Nautical Character, 587  
 Paumbun Pass, 222  
 Pearls of China, 641  
 Pearse, Capt., and Fanning Island, 434  
 Peking, a Peep at, 13  
 ..... Fall of, 38  
 Pernambuco, Reefs of, 346  
 Perseverance, H.M.S., Loss of, 99  
 ..... Loss in Ice, 396  
 Phillippine Islands, Free Trade at, 161  
 Piggott, Mr., on Electric Cables, 560, 621  
 Piraoy, Chinese, Suppressed, 173  
 ..... in the East, 169  
 Pirates, Chinese, Treatment, 174  
 ..... in China Seas, 55  
 Platinum, on Melting, 529  
 Plymouth Time Signal, 597  
 Political Glance, 599  
 Politics of Reunion, 181  
 Portland on Sunday, 2  
 Porto Novo, Destruction of, 502  
 Portrall, Port of, 25  
 Portsmouth Breakers, 60  
 Post-Office at Isle Reunion, 120  
 Price on Longitude, 49

- Prices on Yang-tze-kiang, 357**  
**Prince of Wales's Visit to America, 131**  
**Prism, Rays of, Discoveries in, 528**  
**Proclamation, American, 279**  
**Pumps in Ships, First Used, 546**  
**Puno, a Visit to, 412**
- Quebec, Routes to, 630**  
**Queensland, Missing Ship, 396**
- Railways, Advantages of, 532**  
**Ralick Chain of Islands, 106**  
**Reed, Mr. J., on Iron-Cased Ships, 666**  
**Refuge Harbours, Commission, 213**  
 ..... Measures, 160  
**Regneville Harbour, 26**  
**Regulations of Merchant Officers in Naval Reserve, 399**  
**Reid, Mr., on Strait of Magellan, 313**  
**Reserve, Naval, Merchant Officers in, 399**  
**Reunion, Account of, 113, 176**  
 ..... Height of, 114  
 ..... Society at, 113  
**Rewards of the Lifeboat Institution, 448**  
**Ronokitte Harbour, 106**  
**Routine of Merchant Ships, 226**  
**Royal Charter, Remarks on, 359**  
 ..... Navy in 1810, 582  
 ..... Sovereign, First Three-Decker, 547  
**Rudder, Discussion on, 604**  
**Russian Navy, 272**  
 ..... Treaty with China, 217
- Sacred Groves in the Feejee Islands, 484**  
 ..... Stones in Feejee Islands, 484  
**Sailors' Home at Cape, 46**  
 ..... Sir H. Stracey on, 332  
 ..... Support of, 149  
 ..... Lives and Agricultural Interest, 215  
**St. Denis, Reunion, 115**  
**St. Vaast, Port of, 22**  
**Sandwich Islands, Progress, 652**  
**Sandy Point Anchorage, 314**  
**Saxby, Mr., on Coast Changes, 426**  
 ..... on Lunar Equinoxials, 69, 342  
 ..... Weather System, 487, 622  
 ..... Prophecies, 683  
**Schools at Lahaina, 659**  
**Science, Germs of, in Uncivilized Lands, 525**  
**Screw Ships, Cost of, 234**  
 ..... French, 305  
**Seamen, French, in Fishery Vessels, 309**  
 ..... of Pacific Islands, 408  
 ..... Past and Present, 155  
**Sea Terms Traced in Antiquity, 544**
- Seeman, Dr., on Feejees, 478**  
**Selwyn, Capt., on Connecting the Mercantile Marine and Royal Navy, 595**  
 ..... on Manning the Navy, 519  
**Senator, Ship, Bottle from, 509, 564**  
**Senatorial Oratory, 451**  
**Sheringham, Capt., on Alderney, 425**  
 ..... on French Naval Reserve, 621  
**Ship-building, Iron, 141**  
**Shipmasters and Owners, 462**  
 ..... Duties of, 465  
**Ships, Missing, 395**  
**Ship-Owners of Other Days, 459**  
**Siam, Vegetable Produce of, 505**  
**Signal, Noon, by Gun-Fire, 267**  
**Simo Island, Half Drowned, 553**  
**Sir George Grey and New Zealand, 684**  
**Slip, Patent, at Lisbon, 161**  
**Sluys, Victory of, Related, 545**  
**Somme, River, 21**  
**Sousaki Bay, 59**  
**Southampton and Chatham Compared, 375**  
**Spanish Charts of Cuba, 269**  
 ..... Navy, 272  
 ..... Emoluments, 289  
**Sperm Whales, Where, 253**  
**Spur Prow of Ancient Galleys, 544**  
**Stanton Channel, Banca Strait, 87**  
 ..... Mr., on Banca Strait, 80  
 ..... Survey of Banca Strait, 159  
**Steam Navigation, Effects of, 533**  
 .. the Powers of, 534  
**Steamer American, 3**  
 ..... at Sandwich Islands, 652  
**Stern Ports, 583**  
**Strong Island, 106**  
**Submarine Telegraphy, Mr. Piggott on, 560**  
 ..... Volcanic Action, 453  
**Sulina Mouth of Danube, 342, 600**  
**Summer Palace, Chinese, 91**  
**Sun, Spots on and Discoveries, 527**  
**Superstition in Feejee Islands, 261**  
**Surinam Light-Vessel, 398**
- Taboo in Feejee Islands, 258**  
**Tasman's Voyages, 224**  
**Thames on Fire, 390**  
**Thermometer, Heights by, 422**  
**Thompson's Mode of Boat-Building, 445**  
**Tides of the Amazons, 231**  
**Tientsin, Treaty of, Signed, 48**  
**Tilley, Mr., Voyage of, 379**  
**Time Definitions of, 368**  
 ..... from Sun's Altitude, 386  
 ..... Signal, Plymouth, 397

- Tindall, Mr., Death of, 680  
 Titicaca, Lake, 420  
 Tokaulau Group, Pacific, 470  
 Tooley Street Fire, 390  
 Tour, M. de la, on French Navy, 281  
 Toynbee, Capt., on Crossing the Line, 513  
 Trade on the Yangtse River, 350  
 ..... of Nicobars, Best Articles, 638  
 Triton Bank, Magellan Strait, 316  
 Turkish Lights and Dues, 600  
 Tycoon, Meaning of Term, 125
- United States, Civil War of, 504  
 Uvea Island, Loyalty Group, 402
- Vancouver, Ship, Wreck of, 270  
 Variation, Magnetic, 344  
 Vermilyea, Lieut., Notes of, 248  
 Vigias of Pacific, 219  
 Viper Shoal, 220  
 Voice from the Sea, 509  
 Volcano at Japan, 58
- Wages in Merchant Shipping, 229  
 Warrior, Qualities Foretold, 586  
 ..... Size of, 274  
 ..... and other Iron Ships, 666
- Wars of England and France, Origin of, 437  
 Water at Loyalty Islands, 402  
 ..... Consumption in Towns, 539  
 Weather Foretold, 73, 624  
 Whale Fishery, Changes in, 555  
 Whaler's Accidents, 249, 254  
 Whaling Adventures in Pacific, 248  
 ..... Fleet, Decrease of, 655  
 Wilson, William, Trial of, 500  
 Winds and their Courses, 343  
 Wood Sheathing, First Used, 547  
 Woo, Commodore, on Piracy, 173  
 Woosung to Japan, 57  
 Wreck Register and Chart, 589  
 Wrecks of British Ships, 214  
 ..... of 1860, 101  
 ..... on English Coast, 147  
 Wrongs of the Merchant Service, 225
- Yalabale Isthmus, 481  
 Yangtse River, Navigation, 349  
 ..... Trade to, 337  
 Yedo, Assault at, 605  
 Yokuhama to Hakodadi, 61
- Zealandia Shoal, Account of, 567  
 Zoology, Discoverers in, 530

## LIGHTS.

- Abrolhos, 566  
 Adour River, 102  
 Antonia Cape, San, 566  
 Archipelago, 566  
 Biarritz, 218  
 Brindisi, 165  
 Bosphorus, 566  
 Buffalo River, 102  
 Canala Island, 218  
 Cape George, 612  
 Cape Sable, 612, 694  
 Cartaya, 218  
 Cette, 218  
 Charleston Harbour, 103  
 Civita Vecchia, 102  
 Corunna, 397  
 Corron Point, 102  
 Cristina Island, 218  
 Dardanelles, 566  
 Dowsing Shoal, 612
- Elizabeth Port, 397  
 Eupatoria Point, 694  
 Favignana Island, 112  
 Formentera, 612  
 Ferro, 694  
 Glenelg, 218  
 Harwich, 397  
 Hogland, 566  
 Hualoa, 218  
 Katakolo, 218  
 Kronstat, 165  
 Kustenjeh Cape, 102  
 Lungo Island, 612  
 Marmora, 566  
 McArthur Head, 566  
 Naupagodos, 566  
 Patras, 566  
 Pelorus Reef, 612  
 Pera Cape, 694  
 Perim Island, 218
- Phudda Island, 102  
 Plymouth, 397  
 Pubnico, 612  
 Race Rocks, 218  
 Riga Gulf, 165  
 Riadisella, 566  
 Roman Rocks, 566  
 Said Port, 102, 165  
 St. Elias Cape, 102  
 St. George Cape, 102  
 Senequet Rock, 218  
 Skerries, 397  
 Slanes Estuary, 219  
 Smalls Rock, 397  
 Thatchers Island, 566  
 Torre de Penne, 165  
 Tortosa Cape, 218  
 Whidby Island, 218  
 Wickham Cape, 694

**LONDON :**

**WALTER SPIERS, PRINTER, GREAT PRESCOT STREET.**

NOTICE.—These Steamers call at CORK HARBOUR, on both Outward and Homeward Passages, to receive and land Mails.

## British and North American Royal Mail STEAM SHIPS,

*Appointed by the Admiralty to sail between*

### LIVERPOOL and NEW YORK, Direct,

AND BETWEEN

### LIVERPOOL and BOSTON,

The Boston ships only calling at HALIFAX to land and receive Passengers and Her Majesty's Mails.

SCOTIA, (New Ship, Building.) PERSIA, Captain C. H. E. Judkins ARABIA, " James Stone ASIA, " Edw. G. Lott CANADA, " James Anderson		AFRICA, Captain Neil Shannon AMERICA, " E. R. Moodie NIAGARA, " Alex. Ryrie EUROPA, " John Leitch AUSTRALASIAN, E. M. Hockly.
--	--	---

*The undermentioned, or other Vessels, are appointed to sail from Liverpool every Saturday as follows:—*

AUSTRALASIAN for NEW YORK.....	Saturday, 7th December.
NIAGARA ..... for HALIFAX and BOSTON. "	14th —
* ASIA ..... for NEW YORK.....	" 21st —
CANADA ..... for HALIFAX and BOSTON. "	28th —

\* Taking passengers and goods for Nassau and Havana, to be transferred at New York on board the R.M.S.S. KARNAK.

PASSAGE, including Provisions, and Stewards' fee, but without Wines or Liquors, which can be obtained on board:—

#### TO HALIFAX AND BOSTON.

CHIEF CABIN .... 22 Pounds. | SECOND CABIN .... 16 Pounds.

#### TO NEW YORK DIRECT

CHIEF CABIN..... 26 Pounds. | SECOND CABIN .. 18 Pounds.

Freight to HALIFAX, BOSTON, and NEW YORK £3 per ton measurement and 5 per cent primage. Small parcels 5s. each, and upwards, according to size.

These steam ships have accommodation for a limited number of Second Cabin Passengers. Passengers are allowed Twenty Cubic Feet of Personal Luggage, and they will be charged Freight on their Luggage when it exceeds Half-a-Ton Measurement. Parcels will be received at the Office of the Agents in Liverpool until *Six o'Clock* on the FRIDAY EVENINGS previous to Sailing.

For Passage, apply to Sir S. CUNARD, Halifax; E.C. & J. G. BATES, Boston; E. CUNARD New York; D. CURRIE, Quai d'Orleans, Havre, and 12, Place de la Bourse, Paris; G & J. Burns, Buchanan-street, Glasgow; D. & C. MAC IVER, Queenstown, and Water-street, Liverpool; or J. B. FOORD, 52, OLD BROAD STREET, London.

**THE BAHAMAS.**—The British and North American Royal Mail Steamship  
KARNAK

Is intended to sail (with Mails, Passengers, and Goods) MONTHLY from NEW YORK to NASSAU, in connection with the Mail Steamers sailing from LIVERPOOL to NEW YORK on the 21st December and 18th January.

Goods will be carried from Liverpool to Nassau (*via* New York) at a through rate of £5 per ton, with 5 per cent. primage.

For farther particulars apply to

D. & C. MAC IVER, 8, Water-street, Liverpool.

# ADMIRALTY CHARTS

*Recently Published and Corrected, and sold by the Sole Agent,*

J. D. POTTER,

31, POULTRY, & 11, KING STREET, TOWER HILL.

	s.	d.
North Atlantic Ocean - - - - -	3	6
Do. Do. 2 sheets - - - - -	5	0
South Do. - - - - -	3	6
Madeiras, Cape de Verds - - - - - each	4	0
South part of Africa - - - - -	8	6
Mozambique Channel - - - - -	4	0
Indian Ocean, 3 sheets - - - - -	8	0
Mauritius - - - - -	2	6
Malabar Coast, 3 sheets (New) - - - - -	10	6
Bay of Bengal, Sand Heads - - - - -	4	0
Akyab Harbour and Arracan River - - - - -	3	6
Coast of Arracan and Moulmein, 2 sheets - - - - -	5	0
Rangoon and Bassein River (New) - - - - -	3	0
Moulmein River and Harbour - - - - -	3	0
Andaman Islands - - - - -	2	6
Malacca Straits, 2 sheets (New) - - - - -	7	0
Penang - - - - -	2	6
Singapore Straits, large scale - - - - -	7	6
Sunda Straits and Coast Sumatra - - - - -	6	0
Java Sea and Timor - - - - -	7	0
Banca and Gaspar Straits - - - - -	3	6
Banca Strait and Stanton Channel - - - - -	3	0
Carrimatta Passage - - - - -	3	6
China Sea, 4 sheets (New) - - - - -	12	0
Hong Kong to Pechili (New) - - - - -	5	0
Philippine Islands, 3 sheets - - - - -	12	0
Canton River, 5 sheets - - - - -	17	6
Hong Kong and River Min - - - - - each	4	0
Do. to Shanghai, 9 sheets, large scale - - - - -	26	6
Yangtse Kiang River - - - - -	3	6
Australia, general Chart - - - - -	3	6
Torres Straits, 3 sheets - - - - -	12	0
Port Jackson and Sydney - - - - -	4	0
English Channel Pilot, vols. 1 & 2 - - - - -	9	0
Lights for the World - - - - -		
Tide Tables for the current Years - - - - - each	1	6
<i>Likewise the following Works.</i>		
Practice of Navigation and Nautical Astronomy (seventh edition) by Lieut. Raper, R.N., F.R.S., and F.R.G.S. - - - - -	16	0
Deviation of the Compass, by the late Capt. Johnson, R.N., F.R.S. - - - - -	8	0
Practical Rules for ascertaining the Deviation of the Compass - - - - -	0	6
Remarks on Revolving Storms - - - - -	0	6
Binnacle Compass corrected for Deviation, by A. B. Becher, Captain, R.N., F.R.G.S. - - - - -	1	0
Storm Compass: or, Seaman's Hurricane Companion - - - - -	1	6
Mast Head Angles - - - - -	2	0



Rules of the Road: or, Laws of Passing Vessels	-	-	1	0
Sailing Directions for the Atlantic Oceans	-	-	3	6
"    Indian Ocean	-	-	5	0
Landfall of Columbus	-	-	10	6
Piddington's Law of Storms	-	-	10	6
Lee's Letters to a Master Mariner	-	-	6	0
Lee's Laws of Shipping and Insurance	-	-	10	6
Merchant Shipping Act	-	-	2	6
Gordon's Lunar and Time Tables	-	-	8	0
Text Book to the Marine Board Examinations	-	-	2	6
Ainslie's Local Marine Board Examination	-	-	5	0
Art of Rigging	-	-	9	0
Art of Sail Making	-	-	7	0
Kedge Anchor: or, Young Sailor's Assistant	-	-	16	0
Naval Routine	-	-	18	0
Seaman's Friend, by Dana	-	-	5	0
Anchor Watch: Art of Tending Ship in a Tideway	-	-	1	0
Sedgwick's Law of Storms	-	-	3	6
Ditto Golden Hints to Young Mariners	-	-	3	0
Track Chart of the World, on cloth	-	-	12	0
Captain Shadwell's, R.N., C.B., Occultation Tables	-	-	4	6
Ditto.    Star Tables	-	-	2	6
Ditto    Notes on Chronometers	-	-	4	6
Ditto    Formulae of Nautical Astronomy	-	-	2	6
Ditto    Lunar Tables	-	-	4	6
Marryatt's Signals	-	-	12	0
Board of Trade Signals	-	-	7	0
Mercantile Navy List	-	-	10	6
Board of Trade Wind Charts, in case	-	-	28	0
Directions Pacific Ocean, by Capt. Becher, R.N.	-	-	3	6
"    "    by Cheyne	-	-	8	6
"    "    by Findlay	-	-	60	0
Memoirs of the North and South Atlantic	-	-	each 14	0
Sole Manufacturer of Toynebee's Rule	-	-	25	0
Field's Parallel Rule	-	-	8	0

Barometers, Sextants, Compasses, and all kinds of Nautical Instruments Manufactured and Repaired.

The above Admiralty Charts can be had of the Sub-Agents at the Principal Ports and Custom-houses in the United Kingdom.

*Sub-Agents for the Sale of the Admiralty Charts.*

Buss and Adkins, Upper East Smithfield	R. C. Appleby, Custom House, Hull
H. Hughes, 59, Fenchurch Street	Reed & Co., High St., Sunderland
Stanford, Charing Cross	Hill & Price, Broad Quay, Bristol
J. C. Johnstone, Custom House, Liverpool	Williams, Butte Docks, Cardiff
Jewitt & Co., South John Street, Liverpool	Stebbing, Canute Road, Southampton
Walker & Co., South Castle Street, Liverpool	Reid & Son, 36, Shore, Leith
Philip & Son, South Castle Street, Liverpool	M <sup>c</sup> Gregor & Co., 38, Clyde Place, Glasgow
R. Thompson, 40, Quayside, Newcastle-on-Tyne	M <sup>c</sup> Gregor & Co., 8, William Street, Greenock
	Hodges & Smith, 104, Grafton Street, Dublin
	Hugh Cole, Queenstown

Second Edition, small 8vo. Price 1s. 6d.

THE  
STORM COMPASS,  
OR,  
SEAMAN'S HURRICANE COMPANION;  
BEING  
A FAMILIAR EXPLANATION  
OF THE  
GREAT PRINCIPLES OF THE HURRICANE.  
ILLUSTRATED WITH DIAGRAMS AND EXAMPLES SHOWING  
HOW IT IS TO BE AVOIDED.

By A. B. BECHER, CAPTAIN, R.N. F.R.A.S.

J. D. POTTER, 31, POULTRY, & 11, KING STREET, TOWER HILL,  
*Sole Agent for the Sale of Charts and Works Published by  
the Admiralty.*

N.B. This favourite little treatise, which has met with general approval, has just been published abroad, translated into Spanish.

---

*Just Published.*  
LIGHTS IN LYRICS

A Glance at the Channel Lights as Piloting Marks on a Run from  
Scilly to the Nore.

With Notes Explanatory and Descriptive, Chart, Plate, and  
Woodcuts.

J. D. POTTER, 31, POULTRY, & 11, KING STREET, TOWER HILL,  
*Sole Agent for the Sale of Charts and Works published by the Admiralty.*

---

*Deptford Green Dockyard, 30th March, 1861.*

Messrs. Peacock & Buchan, Southampton,

Dear Sirs,

I have much pleasure in sending you an extract from a letter received from Captain Roulle Carey, of my iron ship *The Pride of the Thames*, just arrived at Queenstown from the West Indies. She has previously been engaged in voyages between this and the West Coast of South America.

"Although we have been afloat fourteen months with PEACOCK & BUCHAN'S COMPOSITION on the bottom, and never renewed during that time (except between wind and water), I do not find the vessel's progress impeded in the least by any fouling, and you well know the West Indies, particularly Guadaloupe, is a very bad place for fouling, and likewise Callao and the Chinchas. The longer I use this Composition the better I like it, and think the constant use of it, say two coats once a year, is quite sufficient to prevent all fouling and corrosion."

I am, dear Sirs, your obedient servant,

CHARLES LUNGLEY.

# PEACOCK AND BUCHAN'S IMPROVED COMPOSITION FOR SHIPS' BOTTOMS.

The best preservative known against CORROSION and fouling on IRON and other Ships, and giving additional speed, as shortly after immersion it becomes slimy like the back of a fish.

Apply to the Manufacturers direct, Southampton; to

ALFRED BRETT & Co., 150, Leadenhall Street, London; to Messrs. Cato & Overend, Drury Buildings, Water-street, Liverpool; or to Messrs. McSymon and Potter, Ship Chandlers, &c., Glasgow.

The *Persia*, *Atrato*, *Himalaya*, *Simla*, *Shannon*, *Nubia*, *Delta*, *Ceylon*, *Pera*, and other fast steamers, have always used the No. 2 Composition from the commencement of their career, and still continue to use it with unimpaired speed.

Several Compositions for Ships' bottoms having been patented within the last few years containing *copper*, (the Patentees being doubtless in ignorance of the injurious effects of copper on iron), Messrs. PEACOCK & BUCHAN conceive it to be their duty to inform the Public of the results of their experiments with preparations of copper commenced upwards of *twenty-one* years ago, and laid aside in 1847,\* and herewith annex a letter from the Superintendent of the Peninsular and Oriental Company on this interesting subject, after examining the Professional opinions of some of the first *practical* Chemists of the day.

From J. R. Engledue, Esq., to Messrs. Peacock and Buchan.

*P. & O. Co.'s Office, Southampton, Oct. 12th, 1859.*

Messrs. PEACOCK & BUCHAN,

Dear Sirs,—I am much obliged for your Mr. Peacock's letter on the subject of galvanic action on the bottoms of Iron Ships, accompanied by the Professional opinions of Dr. Noad, Dr. Normandy, and Dr. Medlock, against the use of Copper preparations for coating. My own experience is quite in accordance with these Gentlemen's views as well as you own; I remember that fearful results took place on the bottoms of the late steamers *Pasha* and *Madrid*, belonging to this Company, by the use of Baron W——'s Copper Composition† after only six months' trial, and I have never allowed it to be again used on any of the Company's ships, whereas our iron ships that have been using red lead and your Composition since the year 1848, are as sound and good as the first day.

I have lately had the *Buzine* scraped bright for examination. Her bottom is perfect, not a plate defective; whereas I learn that three iron ships of about the same size and age as the *Buzine*, which I am told have been using a preparation of Copper on their bottoms, have lately either been condemned or require *new bottoms*; we have not shifted a plate, and scarcely a rivet, in any of the Company's ships, except the *Haddington*, which vessel also had Baron W——'s Copper preparation on her for some time.

I continue to hear very satisfactory results of the use of your composition on our iron fleet in India and Australia, which you will be pleased to know.

I remain, Dear Sirs, Your obedient Servant,

(Signed) J. R. ENGLEDUÉ,  
Superintendent of the Peninsular & Oriental Co.

COMPOSITIONS FOR COATING SHIPS' BOTTOMS.—A number of gentlemen interested in ship-building assembled in the Southampton Docks on Tuesday morning, to witness the result of an experiment which had excited some interest among persons of that class. In the early part of last May the Royal Mail Company's steamship *Atrato* was coated on the starboard side with M'Innes's green copper soap, and on the port side with Peacock and Buchan's pink Composition, for the purpose of practically testing the relative merits of the two articles in keeping the bottom of the ship clean. On docking the *Atrato* on Tuesday for examination it was found that the starboard side was covered with coral pipe shells and barnacles, with a good deal of corrosion; while the port side was perfectly free from coralline incrustation or barnacles, having merely a thin slimy unctuous coating upon it. The result is considered as having inconceivably proved that preparations of copper are of little value in preventing incrustation or fouling on the bottoms of iron ships, while their galvanic action must, sooner or later, prove injurious to the rivets and plates. The green composition is now being scraped off the *Atrato*.—*The Times*, Thursday, November 17th, 1859.

*Bermundsey, 29th September, 1858.*

Messrs. A. BRETT & Co., 150, Leadenhall-street, London.

Gentlemen,—We have pleasure in handing you the particulars of the result of an experiment we have made with the Patent Composition of Messrs. PEACOCK & BUCHAN, on our vessel *Omega*, which was coppered in the spring of 1856, and the state of that material recently taken off, after two voyages to Australia and Bombay; during the two and a half years, one side was painted twice with this Composition, and the other side was left entirely with the bare copper, and we find the copper now taken off to weigh as follows:—

Port side, painted twice .....	46 cwt. 1 qr. 0 lbs.
Starboard side, not painted .....	37    "   0    "   13    "
Difference .....	9    "   0    "   15    " net.

If these facts are of any service to you, they can always be confirmed by,

Gentlemen, Yours truly,  
(Signed) WILSON & COOKE.

# MITCHELL'S MARITIME REGISTER, A WEEKLY JOURNAL OF SHIPPING AND COMMERCE.

PUBLISHED EVERY SATURDAY MORNING, IN TIME FOR THE  
EARLY TRAINS.

MITCHELL'S MARITIME REGISTER contains a digest of the Shipping Reports and Commercial Incidents of the week:—viz., Lists of Ships Loading, Homeward-bound Ships, Ships Arrived Home, Ships sailed for Distant Ports, Ships Arrived Out, Ships Spoken, Casualties, Wrecks, Rates of Freight, Law and Police Reports, &c., &c; together with a summary of Foreign, Colonial, and General News, received by Telegraph, up to the hour of publication.

May be had of any Newsmen, or of the Publisher, 54, Gracechurch-street, London, who will forward the Paper by post on the receipt of five postage stamps. Price 4d., or by post, 5s. 5d. per quarter.

---

## THE SHIPPING & MERCANTILE GAZETTE, LONDON DAILY NEWSPAPER—ESTABLISHED 1836.

*(Correspondents and Agents in all parts of the Globe.)*

Contains Early and Exclusive Intelligence of the Movements of all Merchant Ships—List of Ships for Freight or Passage and Homeward-bound Ships—Complete Dock Directory of the Port of London—Copious and Correct Market Reports, Proceedings in Parliament, Courts of Law, and Public Meetings—and the Latest Foreign, Domestic, and Miscellaneous Intelligence, promptly supplied from the most authentic sources.

Published every afternoon, at 54, Gracechurch Street, in time for dispatch by the Afternoon Trains from London; and may be had of all newsvenders.

---

*Just published, price 3s. 6d.*

### NAVIGATION OF THE PACIFIC OCEAN

CONTAINING A BRIEF ACCOUNT OF THE

WINDS, WEATHER, AND CURRENTS PREVAILING THEREIN, ACCORDING TO THE MOST EXPERIENCED AUTHORITIES.

ACCOMPANIED BY CHARTS

BY A. B. BECHER, CAPTAIN, R.N., F.R.A.S.

London: J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

THE  
LANDFALL OF COLUMBUS

ON HIS FIRST VOYAGE TO AMERICA

WITH A TRANSLATION OF

THE BARON BONNEFOUX'S  
HISTORY OF HIS PREVIOUS LIFE

ALSO

A CHART SHOWING HIS TRACK FROM THE LANDFALL TO OUBA

AND

AN OUTLINE OF HIS SUBSEQUENT VOYAGES

A. B. BECHER, CAPTAIN, R.N. F.R.A.S.

*Of the Hydrographic Office, Admiralty.*

AUTHOR OF THE VOYAGE OF H.M.S. CHANTICLEER, &c. &c.

*By the same Author.*

TABLES  
OF  
MAST-HEAD ANGLES

FOR FIVE FEET INTERVALS FROM 30 TO 280 FEET  
AND VARYING DISTANCES FROM A CABLE'S LENGTH TO FOUR MILES

WITH

THEIR APPLICATION TO

NAUTICAL SURVEYING

ALSO

THE DETERMINATION OF DISTANCE BY SOUND  
WITH AN EXAMPLE.

Small 8vo. Price Two Shillings.

J. D. POTTER,

31, POULTRY, AND 11, KING STREET, TOWER HILL

*Sole Agent for the Sale of Charts and Works Published by  
the Admiralty.*

**MALBY'S SCHOOL GLOBES.**

BRONZE MERIDIANS.

**36-INCH GLOBES.**

For Class Teaching.



Stout Stained Wood Frames with Iron Meridian, &c., very prominently divided, £81 the pair



Mahogany Pedestal, £10 each.

For the Coverings of Libraries and School-rooms, with Rack and Pulley.



36-inch Globe Map of the Earth, containing more than 28 square feet on its surface, £7 7s. each. 18-inch ditto, £2 2s. 6d. each.

**18 & 12 INCH GLOBES.**



Per Pair.

18-in. Stained Wood Frames	£5 0 0
18-in. Mahogany Frames	6 0 0
12-in. Stained Wood	2 10 0
12-in. Mahogany	3 0 0
9-in. Stained Wood	2 5 0
9-in. Mahogany	2 10 0



18-in. Mahog. Frames £8 8 0 the pair.

SLATE GLOBES.



12-inch. . . . £1 5 0 each.  
18-inch. . . . 2 10 0 "  
N.B. The 18-inch may be had with or without the outline.

A single Globe may be had in either mode of mounting at 10s. 6d. above half-price of the pair of 36-inch; 2s. the 18-inch; 2s. the 12-inch; and 1s. 6d. the 9-inch.

**MALBY'S GLOBES ON PEDESTALS.**



	Mahogany.	Rosewood.
18-inch . . . . .	£2 5 0	£2 15 0 the pair.
9-inch . . . . .	1 12 6	1 17 6 "
6-inch . . . . .	0 18 0	1 10 "
4-inch . . . . .	0 15 0	0 18 0 "
3-inch . . . . .	0 8 0	0 9 0 "
2-inch . . . . .	0 6 0	0 8 6 "

**QUADRANTS OF ALTITUDE.**

36-inch . . . . .	£1 1 0
18-inch . . . . .	0 5 6
12-inch . . . . .	0 3 6
9-inch . . . . .	0 3 0
6-inch . . . . .	0 2 6

**NEAT BRASS COMPASS BOXES.**

2-inch diameter . . . . .	3s. 0d.
3-inch . . . . .	4 0



**MALBY'S GLOBES IN NEAT MAHOGANY BOXES.**

2-inch . . . . .	8s. 0d. the pair.
3-inch . . . . .	6 0
14-inch terrestrial . . . . .	2 0 each.
14-inch terrestrial . . . . .	1 6 "

**MOLESKIN COVERS, OF ELEGANT PATTERNS, FOR GLOBES.**

36-inch . . . . .	£4 4 0 the pair.
18-inch . . . . .	1 10 "
18-inch, full length . . . . .	1 5 0 "
12-inch . . . . .	0 11 0 "
12-inch, full length . . . . .	0 18 0 "

**MALBY'S IMPROVED PLANISPHERES.**

Compiled from the Celestial Globes of the Society, which at one sitting can be made to exhibit the state of the heavens at any minute of any day of the year, on card-board varnished, 18-inch, price 10s.: 9-inch, on card-board varnished 3s. 6d.

**MALBY'S TELESCOPIC COMPANION, OR CELESTIAL GLOBE-ATLAS.**

In 21 sheets, 22 by 16 inches, neatly bound, £1 5 0; with the figures of the Constellations coloured, £2 0 0.

This important Atlas, in addition to the Stars, contains the Nebule of W. Herschel, Str J. Herschel, Messier, and Dunlop.

N. B. Old Globes may be re-covered with these new Maps, and brass-work cleaned, and thereby rendered equal to new, at the price of 3½ guineas for the 18-inch, £1 15s. the 12-inch, and 27s. 6d. the 9-inch.







