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THE NAUTICAL MAGAZINE.

THE

NAUTICAL MAGAZINE

AND

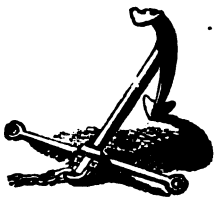
Naval Chronicle

FOR 1863.

A JOURNAL OF PAPERS

ON SUBJECTS CONNECTED WITH

MARITIME AFFAIRS.



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THE

NAUTICAL MAGAZINE

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Naval Chronicle.

JANUARY, 1863.

Saigon.

Of Cambodia and its great port Saigon, little as yet has appeared in modern times. The tourist who now makes his voyage of circumnavigation (excepting M. Mounot*) is as yet silent on the Annamite capital. To the French, who are strengthening their hold on this great seat of Buddhism, we are indebted for the accounts we have recently received of it; from which it seems likely that another great emporium of commerce will be established between Singapore and Hongkong. In our volume for 1860 we gave an account of their first proceedings there, and we have given in our last number some instructions which the mariner who is about to proceed thither will find serviceable to him. These we now complete, and add to them the port regulations adopted there, dated in August last: to which we have prefixed the extract from a recent letter alluding in strong terms to the boundless resources of the country produce in articles of commerce.

The great river of Cambodia is separated into three. The first comes from the West, and forms a reservoir for overflowing and fertilising lower Cochin China.† The second is called by the natives the

* See *Proceedings of Geographical Society* of March last.

† Cochin China has scarcely been taken possession of by the French, when it is traversed by electric lines. One is at work regularly from Saigon to Ton-Keon, and another to Tran-bou. Letters state that as soon as the dry season sets in, other lines are to be established between the principal towns.

Back River, and communicates by a number of channels with the Gulf of Siam. The third, called the Advanced River, passes by the fort of Mytho, and falls into the sea after watering the northern part of Cochin China.

The most important point of this immense extent of water (belonging to the Great River) is called *Les Quartre Bras,*—a large basin formed by four considerable streams flowing from Laos and joining there the great river and its three branches. Throughout the part we have gone over a remarkable contrast was vividly impressed on us; this was the wonderful richness of the country and the miserable condition of its people. In the midst of a most luxuriant vegetation, a soil of the most fertile kind, a run of water that at once supplies the means of transport and irrigation, one only meets with cases of distress. On inquiry into them the answer is, "Protect us from robbers and brigands and we will cultivate the ground. But we have no safety, and must be always ready to hasten away in our boats with all we have, to escape as well from the exacting demands of our chiefs as from the attacks of pirates." And yet it is a splendid country, abounding in cotton, silk, pulse, tobacco, indigo, enormous quantities of fish, which are eaten salted, presenting together abundant resources for commerce.

But for the resources of Cambodia to be fully developed, security of property is first required, and then that the kingdom of Siam should cease to drain it by plunder, as at present. Here is the state of the case. Fifty years ago Cambodia was a flourishing country, and traces of this are found even now. I could have wished to send you with this a sketch of the Palace of Ancor, or House of Initiation. Here is a rapid description of it:—

At a league from Ancor, a weak fortress, in the midst of a magnificent vegetation, stands a large square building, each side being 800 or 1,000 yards long, built of stone, ornamented with stone carving. At each of the four angles are fantastic figures in stone which resemble the Sphynx. A handsome doorway, decorated both in itself and its entablature with sculpture, leads by a very long corridor to a stone jetty, its two sides ornamented by a handsome stone balustrade. On two sides of the jetty are immense basins, and in the middle of it are the ruins of two temples. Seen from without, in spite of its neglected condition, the whole edifice presents an imposing aspect. The high walls, the twisted columns, the windows regular and equally cut in stone, the balconies, the cupolas,—all attest the magnificence of the priests of Buddha and their votaries. On the first story some figures are still in a good state of preservation, and here and there are some niches with statues of Buddha and his followers, and there is even a museum of religious collections. Months would be required to describe or even enumerate the many bas reliefs, so varied are they, and so elegant are the forms of the cupolas. It is quite evident that a race of people who are in possession of such monuments had attained an advanced stage of industry and civilization.

Ancor is two hours' journey from the great lake; but let us return

to Cochin China, properly so called. The situation of the three provinces is excellent in all respects. There is only one point which may be troubled by the rebels and that is Go-Kong. The chief of the rebels is a great scoundrel named Quan Dinhor. But the Viceroy has promised to do for him in two or three weeks; and he is our friend.

Sailing Directions between Singapore Straits and Cape St. James *during the N.E. Monsoon,—By A. J. Loftus, Master, Ship "Kensington."*

(Concluded from vol. xxxi., p. 642.)

Directions from the Mouth of the River to the City of Saigon,—N.E. Monsoon.

Having complied with the regulations of the frigate, get under sail at low water, with a commanding breeze from the eastward, and proceed towards point E., keeping in mid-channel and giving the small islet lying off point D. a good berth.

When near the point E,* brace up and luff, run close to it through the next reach. Should the wind be scant make a tack and proceed on to the point J., keeping it close aboard; then brace up and luff along the South reach, giving the mouth of a river below the point a moderate berth: steer on in mid-channel until near the point M., then haul up, and if the ship is handy, work through the East reach, otherwise back and fill or drop through if the tide be strong. Make sail again at the end of the reach and proceed, rounding the point O. in mid-channel, as there is a little shoal water off it. Keep very close in to that side of the river until the painted tree that grows out of the water at the point P. and the coral bank are passed, giving the tree a berth of half a ship's length, and following the track on the chart. [*See plan of coral bank.*]

Having passed the bank, run on, keeping clear of the bight Q., which is shoal. When off the point T., cross over to U., sailing along that side at a convenient distance. Keep close to the point V. if the wind be scant, and luff through the next reach; then keep away and brace sharp up at the point W., keep a close luff through the South reach, and bring up below the shipping.

Ships' papers must be shown to the harbour master on arrival, and a berth for mooring ship will be pointed out by him.

Stores and Supplies.—Water is obtained from a well built in the centre of the river at Chinese Town, three and a half miles from the city, and brought alongside in water boats. The fish are very small and black and very inferior eating. Ducks and fowls sell for about three dollars per dozen; vegetables are very scarce. There is a very limited quantity of ship's stores and little variety for visitors.

Few strangers escape from what is called the Saigon fever; it seems to be of a chronic form, and is not easily got rid of: emetics,

* Many seamen have mistaken the point **D.** for that of **E.**, and having luffed round it, have got aground on hard sand.

purgatives, and large doses of quinine, are used for its cure. Attacks of cholera and sun stroke are also frequent. Bathing, moderate exercise in the shade, spare regular diet, and ample rest, are the best preventives. Exposure to the sun, indolence, costiveness, irregular diet, and drinking fermented liquors, must be avoided.

During the day the heat is very great, the thermometer often rising to 100° in the shade, and during the night also the air is very close and heat oppressive,

Winds and Tides at Saigon.—The sea breeze generally commences in the forenoon and blows up the river fresh during the day, gradually dying away in the evening.

The tides are tolerably strong and regular about the springs; it is high water at 5h. 30m. at the full and change, the rise being 9½ to 10 feet. Neaps* are weak and irregular, with strong under-currents and very little rise and fall. The passage up the river generally occupies two days.

City of Saigon to Cape St. James,—N.E. Monsoon.

The average passage of small vessels to the mouth of the river is about five days, while large vessels have taken from fifteen to twenty days. The former have the advantage of being able to beat through nearly all the reaches, whilst the latter have to back and fill or kedge with the anchor under foot.

When unmooring at the city, cat the starboard anchor, keeping the port one down for kedging, and having broken ground, sheer from side to side, lying athwart the tide when convenient, and hugging the points, when there is no shoal off them, to prevent being set into the bights.

After rounding point V., keep on the same side of the river as far as U., and from thence sheer direct over to the point T., passing it closely, to prevent being set into the large river (Suirop) opposite. The ebb runs very strong into its mouth, and many ships have been hoisted on the soft mud bank lying off the point S., through delay in crossing over. Proceed on and when a short distance from the river R,† change anchors, giving that branch a good berth whilst passing, as the ebb tide sets strong into it. Having passed the bight Q. in mid-channel, keep close in to that side, and look out for the point P.; if the tide runs strong when the painted tree is approached, run out a line and check the ship round it, keeping the bushes close aboard to prevent being set on the rocky patch below the point; this precaution is necessary, particularly during the springs, as the ebb tide runs very strong, setting from the point P. directly over the rocky path.

Proceed, passing the point O. in mid-channel; strong sets will be

* Vessels dropping down during neaps, will find great advantage in having a square sail sunk under the stern with two guys leading forward.

† Vessels dropping past the river at R. and the coral bank, should always use the starboard anchor with the ebb tide, and the port anchor with the flood. By these means the river at R. and the bank will be passed without much trouble.

found in the bight at N. and off point M., and also into the rivers L. and K., the former of which is nearly blocked up with soft mud. Vessels should hug the points opposite these rivers very closely whilst passing, otherwise they will be hoisted into them, and meet with more or less delay.

Proceeding on, take care in passing the four branches, as the ebb tide sets strong up the two northern arms, the water also increases in depth at their junctions, making it very unhandy for kedging, and troublesome work for the men at the windlass.

The best way to pass is to keep as close as safety will permit to the mouth of the river at J., which is rather shoal, having but 3 fathoms across its mouth. Having passed it, keep very close to the point J., where plenty of water will be found, until beyond the tidal influence of the rivers.

Should the ship sheer off the point, carry a line out to the trees at J., and snub her round it, otherwise she will be hoisted into one of the northern arms and be delayed; several vessels have been delayed from one to two days through this cause. After passing the four rivers, proceed, keeping close to point E., as the tide sets strong into the bight opposite. The channel from E. to D. is much contracted by the extent of the banks on both sides of the river.

Having passed point E., proceed in mid-channel until the small island off point E. is rounded, keeping the North shore aboard until arriving at the frigate. By these means the strong set in the river C. and the extensive hard banks which lie on that shore will be avoided. These banks are pretty steep to, and vessels tacking or dropping in any part of this reach should borrow, if anything, towards the North shore, as the water shoals there more gradually. The lead at the same time should be kept carefully going, and very short tacks made, by vessels working through the narrows at the upper part of this reach.

Having anchored at Canjio, receive your arms, &c., and clearance from the frigate; then make ready for sea, getting away with the sea breeze on the ebb tide, and working the vessel through the channel to the eastward, being careful not to shoal the water under 7 fathoms when standing towards the banks.

When the frigate is brought to bear W. ½ N., or the trees on point B. W. ¼ N., bring the point A. to bear S.E.b.E.; work up for the point on these bearings, taking care not to stand too close to the high land of St. James, as the wind is generally puffy and unsteady, causing ships at times to miss stays. Should the tide be nearly done before getting clear of the cape, it would be advisable to anchor in Vang-Tau Bay until the next ebb makes, for, should the wind fall light outside, the flood tide would in all probability set the ship on the Bassok Bank.

Cape St. James to Singapore Straits,—N.E. Monsoon.

From Cape St. James shape a course to pass to the eastward of the coral patch and Pulo Condore, and from thence direct for Pulo Aor, making allowance for a set into the gulf of Siam whilst crossing its mouth.

When approaching Pulo Timoan during the night or in bad weather, make much allowance for a strong current setting to the south-westward direct into the bight on the Malay coast westward of Pulo Timoan, as ships have several times found themselves close to the North end of Timoan when they were well to the eastward of it *by their reckoning.*

Should the weather be thick and a fresh breeze blowing when near Pulo Aor, round to under its lee and wait a convenient time to bear up for the Straits of Singapore. The current sets S.S.E. between this island and the East point of Bintang, by which vessels running for the straits are liable to fall to leeward of the entrance, if proper allowance be not made. A S.S.W. ½ W. course from Pulo Aor would be advisable until close in to the Malay shore, coasting along it at a convenient distance, and passing through the North channel, giving the Romania Islands a good offing of three miles, to avoid the small reefs lying eastward of them. The ship will then be on the weather side of the straits, and have the advantage of anchoring under Water Island should bad weather come on.

It often happens that ships leaving Pulo Aor for the straits steer too much southerly, and are swept with the sea current and the ebb tide coming out of the straits so far to leeward of Bintang Island that they have been obliged to proceed round it, and come up through Rhio Straits.

In the month of March during the latter part of this monsoon, the winds are steady from the eastward, with a slow current and settled weather.

In April the prevailing winds are also from the eastward, but are much lighter and accompanied with calms and squally weather; from the latter end of this month to about the middle of May the monsoon gradually breaks up. The weather throughout this month is unsettled, the wind flying from all directions, accompanied with squally weather and passing showers of rain. The current begins to set gently to the northward about the end of the month.

Singapore Straits to Saigon,—in the S.W. Monsoon.

In this monsoon the winds prevail between S.E. and West in Singapore Straits, and ships will have no difficulty in sailing through to the eastward.

Having cleared the straits, shape a course to pass between the Brothers and the West end of Pulo Condore, making proper allowance while crossing the mouth of the gulf of Siam for a strong current setting to the *eastward* at the rate of about twenty-six miles per day. This happens during the height of the monsoon, in June, July, and August, when heavy westerly squalls, attended with loud thunder and vivid lightning, are frequent; and much rain will also be met with in these months. These squalls rise rapidly, giving little warning, and when dark clouds are seen banking up in the direction of the gulf, sail should be taken in without delay. After the strength of these squalls

is well spent, the wind generally remains fresh from the same quarter for upwards of twenty-four hours, and finally backs round to the S.W., when it gradually breaks up.

When drawing up to Pulo Condore from the S.W., the regular soundings when distant from it about forty or fifty miles are 18 to 17 fathoms, which will be carried close up to its western extreme. Off its southern and eastern sides in a N.E. direction upwards of seventy miles, even bottom in from 18 to 19 fathoms will be found, while in a northern direction between it and the Cambodia rivers, there are regular depths from 14 to 15 fathoms, the water shoaling gradually as the low lands at the mouth of the rivers are approached.

When the East end of Pulo Condore is brought to bear South with a westerly wind and lee current, steer northward, and the ship will soon gain the edge of the bank fronting the Cambodia rivers, and extending to the mouth of the Saigon River.

Strong freshes run out of these rivers during this monsoon, and join the sea current, whereby ships are obliged to keep the edge of the bank aboard to prevent being set to leeward of the meridian of Cape St. James. The lead should be kept constantly going while steering along the edge of the bank, keeping in not less than 10 fathoms. Should the water begin to shoal, keep off to the eastward, when it will soon deepen, as the soundings are pretty regular about here.

Continue along the edge of the bank with these soundings until Cape St. James is brought to bear about N.E., then steer direct for it, to avoid the coral patch off the cape.

Having arrived at Cape St. James, proceed on and anchor in mid-channel off point A. if the tide is ebbing; if not, brace up and work to windward in a N.W. direction until point A. is brought to bear S.E.b.E., and the group of trees on point B. W. ½ N., or the frigate W. ½ N., then work up for the mouth of the river on these bearings, keeping the lead constantly going and not shoaling the water under 7 fathoms.

This is the rainy season at Saigon, and the prevailing winds are from the West and S.W. Ships are able to partly drop and sail up the river in this monsoon. But when under canvas be prepared for heavy squalls with rain from the West and S.W., which travel across the southern part of Cambodia from the gulf of Siam. The tides also are stronger and of longer duration now than in the N.E. monsoon.

Having arrived at the frigate and complied with the regulations, at a favourable opportunity get away at low water with a westerly or south-westerly commanding breeze, and proceed up the river, making short tacks, if necessary, in the upper part of this reach between points E. and D.

When standing over to either side of the river above the branch C., do not shoal the water to less than 10 fathoms; but having rounded point E., in working approach either side to any distance as both shores are steep to.

When close to the four arms, the water deepens suddenly from 12 to

17 and 20 fathoms, and it would be advisable to pass these rivers under canvas, until beyond the influence of their conflicting currents, and shoaler water is met with.

In kedging or sailing past these rivers with the flood, keep in or about mid-channel, and be guarded against the tide, which sets strong from the N.W. arm into the small river below point J. Having cleared the small river at J., proceed, sailing or kedging, according to the size or handiness of the ship. The flood tide at the rivers K and L enters the main branch, consequently ships passing their mouths will be set on the opposite shore.

Having passed the point O., if under sail, I would advise taking it in, and kedging past the coral bank, with the anchor under foot in the manner formerly mentioned, as it very seldom happens in this monsoon that a ship can luff round the point P. and clear the bank.

In passing this bank with a fresh wind, and flood tide, take great care to starboard the helm quickly when rounding the painted tree off the point P., as the tide sets from that point directly into the opposite bight, and ships from neglect of this precaution would be apt to tail on the West end of the bank. Having cleared it, proceed, and pass the mouth of the river at R. closely, as the flood tide sets out of it over to the opposite bank.

When under sail or kedging, pass the point S. in mid-channel, and make directly over to the letter U., as the flood rushes out of the river at S., and sets over to the point T., sweeping the tail of the Danger Bank. Ships are very apt to be set on the South end of this bank when kedging past, if the point of the river opposite S. be not kept close aboard.

Continue on and give point V.* a close shave in passing, as the greater bulk of the flood tide runs to the northward, which is apt to carry vessels beyond the mouth of the smaller river, and with a head wind would lose a tide or so in getting back again. Whereas by hugging the point close, a couple of tacks will easily clear the reach, then bear away for Saigon and drop up to the shipping at leisure.

From Saigon to Canjio the ebb tide from the main branch enters the minor rivers and flows in a circuitous direction to the sea: whilst the flood, on the contrary, empties itself into the principal stream, the small river at J. being the only exception.

Saigon to Singapore,—S. W. Monsoon.

Ships leaving Saigon city in the S.W. monsoon, find little difficulty in getting down to Cape St. James, as the prevailing winds are almost invariably favourable for most of the reaches in the river.

When large ships cannot be worked through the smaller reaches, or are obliged to kedge, in consequence of foul winds, &c., the directions

* Ships dropping up or down this part of the river should, if possible, avoid the deep bight to the westward of point V., and keep close to the opposite point; as there are some obstructions in the bottom of that bight, by which vessels have lost their anchors.

already given for dropping down in the N.E. monsoon will be applicable. During settled weather in this monsoon the sea breeze sets in from S.W., South, S.E., and sometimes E.S.E. at Cape St. James.

From Canjio work out of the bay with the ebb tide to the cape, following the directions already given for the N.E. monsoon. Many good passages have been made by keeping the Cambodia coast aboard as far as the Brothers or Pulo Oby, and then crossing the gulf of Siam with a strong north-westerly wind until the Malay coast is reached, and afterwards working with the tides, keeping close inshore, by passing inside of the Timoan Group Siribuat and Pulo Sibu,* and thence to the straits of Singapore, taking advantage of the regular tides and the land and sea breezes which prevail during settled weather in this monsoon.

This route is generally adopted by ships from Siam and sometimes from Saigon; but the passage to the eastward of the Great Natuna is considered the best, particularly for large vessels.

Ships leaving St. James should take every advantage of the North and N.E. winds which frequently blow at night, and in some parts of the day, within a short distance of the coast, by running to the S.W., until the regular monsoon breaks them off to the S.E. These local winds often carry ships forty or fifty miles to the S.W. of Pulo Condore without any interruption.

While standing over to the S.E. the full strength of the S.W. current will be met with about the Charlotte Bank; it gradually decreases and becomes slightly favourable when the Great Natuna is brought to bear S.W.

Hereabouts S.E. and easterly winds will generally be met with, and smart sailing ships frequently pass through the channel between Subia and Low Island, and fetch direct into the straits of Singapore.

Strong westerly winds with rain frequently happen during the early part of this monsoon, and from this cause or by fetching 2° or 3° to the eastward of the Great Natuna with scant southerly winds after leaving the Cambodia coast, dull sailing vessels have often made the northern part of Borneo about the meridian of Cape Siric. When this is the case, make for the Api passage, keeping the N.W. coast of Borneo aboard from Tanjong Datoo until the Boorong Islands are reached.† This will be accomplished without difficulty, for strong land and sea breezes prevail, and the current is weaker near the coast.

The current in the offing runs strong to the northward and through the Api passage. Ships coming through this passage should never shoal their water to less than 12 or 14 fathoms between Tanjong Datoo and Tanjong Api, and should never pass them nearer than two

* The inside channel extending from Pulo Sibu to Siribaut, and formed by a chain of islands and rocks parallel to the main, is a good and safe one, having but few hidden dangers, and good anchorage all the way through. The large scale Admiralty charts for this part of the Malay peninsula are very correct.

† Many vessels through leaving the coast of Borneo too soon, have fetched no higher than Pulo Aor or Pulo Timoan.

or three miles, but should be ready to anchor in it and on any other part of the coast, as the tides are greatly influenced by the currents, which often change without warning.

Leaving the Boorong Island, pass either North or South of the Tambelan group. Should the wind be scant from the S.W. after leaving these islands, steer as high as possible, and endeavour to make Pulo Panjang, off the East side of Bintang Island.

Enter Singapore Straits by the South Channel, giving the N.E. point of Bintang a good berth of two and a half to three miles when rounding it, to avoid the Postilion Reef and the strong irregular tidal currents about there. In the S.W. monsoon the southern shore of the strait is the weather side, and ships coming in should keep it aboard, and be cautious in passing the mouth of Rhio Straits, as the flood tide sets directly into it.

The following are the regulations of the commercial port of Saigon:

Duties of Captains on arrival.

Art. 1. It is strictly forbidden to introduce any arms or munition of war into Cochin China.

2. Ships destined for Saigon will anchor on their arrival in the bay of Cape St. James near the guard ship. They will communicate with her on their bills of lading, &c., and will make a declaration of the arms and ammunition on board for the defence of the ship.

Before leaving the anchorage of Cape St. James for Saigon, the captains will receive from the officer commanding the guard ship a pass, stating that the above mentioned requirements have been complied with.

3. He will moreover receive (the case requiring it) a paper stating the quantity of arms and ammunition on board. These same quantities are to be reproduced at his departure, in accordance with the permit, unless properly accounted for by their legal disposal, under a fine of 100 dollars, and its legal disposal as provided against the illicit sale of gunpowder and munitions of war.

The vessel breaking this article will be detained until the fine is paid or the deficiency is properly accounted for.

4. Ships proceeding up or down the river must receive the visits of the French ships of war.

The suppression of opium will render it necessary that one or two of their officers should be on board vessels while in the river. These officers will go on board the moment the vessels arrive.

5. Vessels destined for Saigon, on coming down the river are forbidden to leave the main branch of it to follow under any pretence whatever any of the several streams leading from it. The breaking of this regulation will incur a severe fine.

6. Captains of vessels on arriving at Saigon will receive directions from the captain of the port as to their berths and how they are to be secured. They will conform with the present regulations for the

safety of the port as well as concerning their crews landing that will be communicated to them by that officer.

7. Excepting under unavoidable circumstances merchant ships will never be fastened to the post fixed below the South fort. The space set apart for the merchant shipping is comprised between this and the Chinese river.

Merchant ships will have the jib booms run in and the lower yard arms topped up. A clear space through which vessels may freely pass will be preserved on the left bank of the river.

Duties of Commanders in Port.

8. As soon as the ship is perfectly secured, her commander will repair to the office of the captain of the port, to whom he will produce his pass from the guard ship at Cape St. James, as well as other papers, the manifest, list of men, bill of lading &c. He is not to commence his commercial proceedings until he has permission from the captain of the port.

9. Commanders are required to send to the chief officer of police a list of the names of all their passengers.

European passengers are to be informed by the commanders that they are to appear at the police office within twenty-four hours after the ship's arrival.

Passengers of Asiatic origin are not to quit the ship without special permission of the chief officer of police.

Every infraction of this article will be followed by a fine on the commander of 20 to 50 dollars, independently of the tax levied on Asiatics landed without authority.

All false declarations will incur a fine of 50 dollars.

10. All vessels anchored at Saigon are required to pay in the first eight days after their arrival, anchorage dues of half a dollar for every ton of measurement. The tonnage for sailing vessels is determined by the order of 18th of November, 1837, and for steamers by that of 18th of August, 1839. The ship and her cargo will be held responsible for payment of anchorage dues.

French and Spanish vessels are exempt from anchorage dues as well as those those freighted by the French government and those in ballast.

11. The payment of this duty clears the ship from all dues of customs as well as import and export dues on commerce. Opium only is admitted on a duty of 10 *ad valorem*, pending the forbidding of opium.

The introduction or attempt at introducing this article fraudulently, will incur, besides the confiscation of the article, a fine of 50 to 200 dollars.

12. Ships of all nations will pay, in the course of eight days after their arrival at Saigon, light dues of 3 cents per ton of measurement. This duty will be paid but once a year by the same ship or junk.

The following vessels are exempt from this duty.

Ships of war of all nations.

Merchant ships of all nations that come to refit, provided that no commercial transactions whatever are entered on.

Packets conveying mails or couriers from North to South or from neighbouring colonies.

Ships freighted by the State. Those ships which depart with a bill of lading will only pay half dues.

13. It is expressly forbidden to throw any sand, stones, or any kind of ballast into the river. The captain of the port will point out where all this may be deposited.

Every infraction of this article will be visited with a fine of 500 dollars.

14. All proprietors of lighters, junks, or vessels serving for the discharge of ballast from a ship, or any other purpose, will be required to moor them at their assigned places by the captain of the port, and in the manner pointed out by him.

If by neglect of the proprietor of any of these vessels they become stranded, or break adrift, a fine of 500 dollars will be levied on him for each, besides the expence of repairing the damage that may be caused by it, or those arising from the recovery of it as a derelict.

If the vessel should have been laden with ballast, the fine may be increased to 1000 dollars.

15. All commanders or pilots of ships are required not to quit the berth at the anchorage assigned to them by the captain of the port, without having his authority for doing so.

16. If a death should take place on board any ship at Saigon, either among the crew or the passengers, the commander is required to report the same immediately to the captain of the port, and to observe the regulations published on this subject.

Any infraction of this and the preceding regulation will be visited with a fine of ten to twenty dollars.

17. If a ship requires repairs, smoking or caulking, her commander will state the same to the captain of the port, who will direct the necessary measures to be adopted, in order that it may be done effectually, without any hinderance or accident.

Every infraction of this order, or any disobedience of the orders given concerning it by the captain of the port, will be attended with a fine of fifty dollars.

18. Should any ship be discovered in danger, all the commanders are required before any order is issued by the captain of the port, to send assistance to her, to the amount of half their crews, as well as anchors, &c., if such should be necessary.

On the first requisition of the commandant of the anchorage or captain of the port, they should furnish all the assistance required, and in case of their refusal they will be proceeded against according to the law of the French mercantile marine.

If the boats or hawsers employed in assisting are damaged thereby, the laws of average will make them good as determined by experienced persons.

Duties of Commanders on departure.

19. All commanders of merchant ships must give notice of their intended departure to the chief officer of police, two days previous thereto.

20. No commander is to receive on board his ship for the voyage any person whose name does not appear either in the list of the crew, or that of the passengers.

Any infraction of this law will incur a fine of fifty to one hundred dollars.

21. No ship is to quit Saigon without having been moved by the captain of the port, to whom the captain will submit the bill of lading, the list of the names of passengers *vised* by the officer of police, and the receipt from the officer charged with the collection of anchorage and light dues.

The pass of the captain of the port must be submitted to the inspection of the captain of the guard ship, at Cape St. James,

Saigon, 26th August, 1862.

To the foregoing we are enabled to add the following account of the light just established on Cape St. James:—

The Vice-Admiral, Governor and Commander-in-Chief in Cochinese waters, has the honour of informing navigators, that from the 15th of August, 1862, a first-class light has been established on Cape St. James.

It is a fixed white light, and should be seen 28 miles distant, but in clear fine weather has been seen 33 miles distant.

The height of the ground on which the tower stands is 456 feet, and the tower being twenty-six more, makes the total height 482 feet, and it stands 776 yards from the southermost extreme of the cape.

The latitude of the tower is 13° 20′ North, and longitude 106° 57′ East, according to the old charts not yet verified.

We perceive by a notice which follows, that we may look for a chart from the hands of M. M. Manen, commanding the *Torbin*, shewing the approaches to the cape, and are glad to learn that in all respects the light is found to be most efficient, and its regular appearance to be fully depended on.—*Moniteur de la Flotte.*

The letters used in the Sailing Directions of Captain Loftus refer to his chart, which with some important improvements will be shortly again published, by the Hydrographic Office, Admiralty.

JOURNAL OF CAPTAIN CRACROFT, C.B., OF H.M.S. "NIGER."—*New Zealand.*

(Continued from vol. xxxi, page 635.)

In tracing the outline of the proximate causes of this "native difficulty," and of these deplorable events, I have endeavoured to obtain reliable data upon which to form an impartial opinion, without giving heed to all the gossip and scandal, about the probable destination of the land in dispute, had it been quietly given up. I cannot see unmoved the misfortunes that have suddenly overwhelmed a flourishing community, and regret deeply that it is too much the fashion in one quarter to speak flippantly of this insurrection, and talk of the "wopping," that the natives will get, and how quickly they will be put down when "more" reinforcements arrive. Of course there is no chance of the individuals holding this language being exposed to any danger. * * * *

But there is another party, and by no means an uninfluential one, who honour the natives for the resistance they have made to what is considered an act of undoubted tyranny and oppression, which no one with Anglo-Saxon blood in his veins would stand for a moment. These gentlemen argue, not unnaturally, that if the natives are to be served in this manner, it may be the turn of the Europeans next; as it seems only necessary to accuse any one of disloyalty, invoke the Queen's name, and declare "martial law" by a simple stroke of the pen. They do not forget also that a few years ago, during the late war in this country, Wiremu Kingi did good service, and was our staunch friend. Loyal to the back-bone, he always upheld the Government; and now, because he refuses to part with his land,—in Maori phraseology, "will not agree to his bedroom being sold, because it belongs to the widow and the orphan,"—the same Government declares him a rebel, and threatens to exterminate his race.

The whole case, in all its bearings, reminds me very much of what has taken place in another of our colonies, and I shall close the subject for the present with some remarks from *Mason's Life in Natal*, which are considered very applicable to this one. Page 213:—"And here let me observe that these unfortunate Boers, so far from being the savage barbarians that the official despatches have always represented them to be, are simply rough straightforward country gentlemen, differing but little from ourselves in religion, by no means disloyal, and very much attached to English laws and usages; but detesting—as every true Englishman, whether in England or Africa, must detest—a form of government which enables one man, generally an imperious military commander, to make appointments only to fill them with worthless profligates, or confiscate property to enrich poor relatives, and then send a voluminous document to the Home Governmen putting down as arch "rebels" all who venture to raise a voice against such gross injustice, and demanding British troops and British treasure to support them in their iron rule!" * *

April 24th.—Our tender, the schooner *Caroline*, arrived to-day

from Auckland, which she left a week ago. This little vessel, of twenty-five tons, builder's measurement, and about fifty tons burthen, was purchased by the Colonial Government for £650, upon my recommendation, for the purpose of being employed in the Manukau as a gunboat under my orders. She was only six weeks off the stocks, built by a Mr. Micklejohn, at Omarr, a small settlement a few miles North of Auckland, and is a rakish-looking craft, very much like a Virginian pilot-boat. A 32-pounder of 25 cwt., one of four guns which I ordered to be landed from the *Elk* for the service of the colony, was put on board, together with 100 rounds of shot and shell and the requisite ammunition; and I sent Mr. Smyth, Acting-Mate, with six men, to navigate her round the North Cape, which she has thus successfully accomplished,—a pilot named Marks, well acquainted with the coast, having been also put on board by the Government.

The carpenters have her traversing-slide in hand, and I hope in a few days she will be thoroughly efficient, should her services be required; but I must confess that at present there does not appear to be any very imminent danger. The Waikatoes hesitate to commit any direct act of hostility; notwithstanding which, the panic at Auckland has not yet subsided. The Militia has been called out, block-houses are being constructed with all possible despatch, under the superintendence of Colonel Mould, R.E., on every commanding position round the city, and even at the settlements of Otahuhu and Onehunga; and in case of attack these are to be the rallying points. Scarcely a day passes that I do not receive requisitions for assistance, as though the tide of war had already rolled this way, and all business is at a standstill.

H.M.S. *Iris* arrived at Auckland on the 26th from Sydney, and her men are held in readiness to land; but Commodore Loring does not intend to interfere with my arrangements for the protection of her Majesty's loyal subjects on this side of the isthmus. * *

On the 27th the screw steamer *Airedale* arrived here from Taranaki; she brings no news of importance. The war still languished, although reinforcements had arrived from Sydney and Melbourne, and H.M. ships *Pelorus* and *Cordelia* were on the coast! By an arrangement made with the Superintendent of the Inter-Colonial Steam Navigation Company at Nelson, this steamer hauled alongside and gave us seventy-four tons of coal, an acceptable addition to our stock, which I hope to complete by driblets in course of time.

Monday, April 30th.—I started this morning in my galley, with the Master in the pinnace, well armed, to examine the southern shore of this magnificent harbour, and select the most eligible sites for stationing our force in the event of hostilities. My plan is to make Waiuku the base of operations, and the Waiuku Creek was our first point. But off Popunga it came on to blow very hard, split the pinnace's foresail, and so heavy a sea got up that we had to take shelter from the gale in Big Muddy Creek, where we met with a hearty welcome from one of the settlers, who gave us good accommodation for the night. Our host, Mr. Letheart, has lived here six years, and up-

wards of twenty in the colony. His land has been reclaimed from the Kauri forest, which comes down to the water's edge, and there were some magnificent trees at no great distance,—one measured eighteen feet in circumference close to the ground. The fern trees are also very fine in this neighbourhood.

I obtained here some specimens of what is sometimes called the wooden caterpillar dried, with a small plant growing out of the back of its neck. The plant is called the *Sphæria Robertsii*, and is a sort of parasitical fungus, the seed of which falling on the back of the moth *(Hepialus virescens)*, there vegetates and grows. These curious specimens of a defunct insect creation are usually found under a tree called by the natives "rata" *(Metrosiderus robustus)*, and the theory is that the creature goes into the ground to change into a chrysalis, when the seed takes root in the joints of the neck, and, growing there, the caterpillar dies. * * * *

The weather looked still more unpromising the next morning, so I returned to the ship, not without some difficulty, in the teeth of a hard easterly gale. During my absence the *Caroline* has been sent to Raglan (Waingaroa), a small settlement on a navigable river about sixty miles South of the Manukau, at the entrance of which there is, as usual, a dangerous bar. The settlers there, a small but thriving community, had become alarmed, and applied to the Governor to send a vessel to remove them.

The state of Kawhia, an infant settlement still further South on the coast, completely isolated, excites also some uneasiness, this being one of the strongholds of the greatest Waikato fighting tribe. In all probability every European will have to withdraw from it, and thus a fertile region which sends large supplies to Auckland of agricultural produce (the Kawhia* apples have a great *renommée*), will be ruined.

It has been broadly stated, that a war conducted by England in a colony, means a new and rich market for colonial corn and cattle, and a vast body of customers for colonial tradesmen: but these poor settlers in the bush, who are liable to be shot, or worse, may perhaps view the matter in a different light. To them it means homesteads in ruins, farms overrun with thistles and weeds, stock driven off or destroyed; themselves and their families without work, and "ashamed to beg," misery and want staring them in the face!

May 10th.—The gale which commenced on the 30th at E.S.E., continued with more or less intensity till yesterday; the wind veered round through North to S.W.b.W., blowing furiously in squalls at times with very heavy rain. The ship rode it out well, and none of the anchors started, very much to my satisfaction, but although so near the shore we could only communicate twice during this period.

The screw steamer *Victoria*, belonging to the Melbourne Government, arrived here to-day, last from Nelson, where she had gone to complete coal, after conveying a detachment of troops from Hobart Town to Taranaki. This beautiful vessel, a perfect yacht, has been

* Pronounced Karfia.

handsomely placed at the disposal of the Governor of New Zealand during the troubles, and her services as handsomely accepted. She brings the news that an unfortunate determination of the Executive has been carried out, by the deportation, much against their consent, of the women and children from Taranaki. They had been landed at Nelson, where to the everlasting honour of its citizens, they were provided with food and shelter at the public expence. I am utterly at a loss to understand the reasons that influenced this decision of the authorities, which must be considered impolitic to the last degree. It was in truth a craven policy, a virtual admission of defeat, for it must be obvious that nothing could tend more to influence the courage of the natives, and lower the spirit of the colonists, than this wholesale removal of their families upon any plea whatsoever.

Henceforward Taranaki must be considered by our own act and deed, as nothing better than an entrenched camp, the natural consummation of a series of blunders. One of these, and by no means the least, was the proclamation forbidding the exportation of sheep, cattle, and other farm produce. And what was the result? Large quantities of various kinds of stock were utterly lost to the proprietors, and fell into the hand of the Maories. The justification for this arbitrary proceeding was, "that the cattle, &c., were wanted for the use of the troops," who certainly have never benefitted by them, and remonstrances were of no avail. But for this proclamation, all or nearly all of the stock belonging to the outlying settlers might have been saved, especially that on the Tataraimaka block, whose proprietors have been great sufferers. One farmer there had just sold 300 head of fat sheep for the Auckland market, at twenty-eight shillings a head, and brought them in to Omata to be ready for shipment; these all became a prey to the Maories, as well as the rest of the stock, amounting to some 4,000 sheep, besides horses and cattle!

May 14th.—The *Cordelia* arrived to-day from Taranaki, she was out in all the late bad weather, as well as the *Pelorus*, which has suffered some damage. Captain Vernon gave me an amusing description of a grand *promenade militaire*, and expedition undertaken to punish the southern tribes, at which both he and Seymour assisted with a portion of their ships' companies. The story may be told in a few words. A thousand men marched some fifty miles, destroyed a few empty pahs, arrived in sight of one full of men, evidently determined to make a stand, upon which a council of war was held, and it was decided to return to Taranaki! Can it be wondered at if the natives become bolder, and more troublesome? But I shall refrain from any further comment on these proceedings, contented with the reflection that we (Nigers) are in no way mixed up with them.

May 19th.—The *Caroline* returned to-day from Raglan. I had become very anxious about her safety, having received no intelligence of her since she sailed, nearly three weeks ago. Her detention was owing to the impossibility of getting out of the Waingaroa river, till the sea on the bar subsided. She will now be completed with her armament, but precious time has been lost.

Although my attempt to reach Waiuku in the boats failed, I have since seen quite sufficient of the country to determine my course, in the event of hostilities breaking out.

The natural military front of the district in my charge, is the line of country lying parallel to the lower part of the Waikato River, and extending from the Great South Road near Drury, to the settlement of Waiuku. Canoes can descend the Waikato with the stream, at such a rate, as to reach the Awaroa creek, in a day and a half, from the most populous native districts; four hours would then suffice for Waiuku, the Mauku, or Drury to be reached, and it would thus be possible for an advancing enemy to bring the intelligence of his own arrival, especially after a night march. In the event of such a contingency as this arising, it will be necessary, in the first place, to consider how instant notice might be given to the capital.

1st. Unremitting vigilance on the part of the outsettlers is essential. The bend of the Waikato at Mangata-whirri should be constantly watched, and in the event of an assemblage of natives, a messenger would, even on foot through the forest, have several hours start of any armed party that might proceed in canoes, the only means of transport, and be able to give the alarm at Auckland in good time. The establishment of beacon stations, where tar barrels could be burnt at night, or bells rung and signals made by day, together with a mounted patrol, would very much facilitate this service, and raise the country in a very short time.

2nd. A man-of-war ought to be stationed in Waiuku creek, with half her crew landed, and ready to meet any foe advancing up the Awaroa. It would not be difficult to find a strong position near the head of the river, upon which a block house could be built, it might be victualled from the ship, which would receive all her supplies by water from Onehunga. The *Caroline* could be stationed at the entrance of Drury (Slippery) creek, and with two of the ship's boats to patrol at night, ought to prevent any movement in that quarter.

3rd. An expedition should be organized as soon as possible, having for its object the destruction of every canoe on the shores of the Manukau. Those belonging to the friendly natives might be hauled up at Onehunga, and placed in charge of the militia there. With these precautions, and another armed vessel stationed off the Whau, I should consider this side of Auckland perfectly secure.

While I write this, a great meeting of the Maories is being held in the upper Waikato district, ostensibly for the purpose of deciding which side the natives are to take; whether Wirimi Kingi's claim is to be supported or not; but also to pay homage to a chief named Potatau, who is looked up to as a sort of king among them, although he is said to disclaim all idea of assuming regal dignity. A Maori flag is also to be hoisted, but whether in token of defiance, I leave those who profess to understand the native mind to determine. For my part I consider all these proceedings utterly childish, and quite beneath our serious consideration.

May 26th.—We have now been at this anchorage more than six

weeks, and I have hitherto had no reason to suppose that it was anything but perfectly safe, especially after the heavy gales experienced, which the ship rode out without starting anything. It was therefore with no little astonishment, that upon the flood tide making this forenoon, we felt her heel over four or five degrees, grind against something below, and shortly after she had recovered herself, the men at work in the copper punt brought a piece of the false keel on board, which had floated up alongside, showing that some damage had been done to her bottom.

I was exceedingly puzzled at first how to account for this *contretemps:* the ground hereabouts was all soft mud when we moored, and both the master and harbour-master sounded carefully all round the ship, and could find nothing like rock within her own length. But upon mature consideration the cause was sufficiently manifest, and there can be little doubt that the rock, most likely scoria, upon which the ship grounded, has been gradually laid bare by the increased scour of the tide under her bottom, during the late heavy rains. This casualty is one of those which it seems impossible to guard against, except by periodically sounding under the keel with a rod, at high water, the necessity for which never entered into my head. But the experience will not be thrown away, should it ever be my fate to be again placed in similar circumstances.

Tuesday, May 29th.—I had intended moving the ship yesterday to a berth lower down the creek, where we anchored the last time we were here, but it was impossible to get a turn of the engines. The screw has been shifted, a serious crack having been discovered in one of the blades of that in use, new bearings have been put in, and all the glands repacked during our lengthened stay here, and it was supposed that the pressure of all four boilers was insufficient to overcome the friction, however by working the screw round all last night with the gearing, we were enabled to start to-day, and anchored about a mile below the White Bluff, abreast a little stream from which we can obtain our supplies, the distance from the Onehunga springs being now very inconvenient.

June 1st.—The attitude of the natives still continues peaceable, and if we do not molest them, there is little chance of their becoming the aggressors. Although I have not alluded to the subject before, I calculate, and feel convinced that I shall not be disappointed, upon receiving the most cordial co-operation and support of all classes of the community, in the event of our having to take the field. A finer body of men than the settlers in this neighbourhood it would be difficult to produce anywhere. They are full of fight, eager to show themselves equal, at all events, to the volunteers of Taranaki, who have already given proofs of what they can do, if allowed. A superb body of yeomanry has also been organized, who will doubtless be of the greatest service to my flying column, as they are most ably commanded; but with all these elements in our favour, I most devoutly trust not to be called upon.

June 7th.—The necessity for having our defects made good has been debated during the last week by the Commodore, as the worm commits incredible ravages in these waters; and in the present state of affairs, as the Governor can afford to spare us, he has decided that the ship shall be docked immediately. Accordingly I received orders to proceed to Sydney without delay, and should have started to-day, but our best bower chain had caught a rock, and it was impossible to weigh the anchor in time to save the tide; we carried away five capstan bars and all our runners in attempting it. There was also a repetition of the difficulty in moving the engines, but this had been anticipated.

At low water slack we hove taut down, but in tending to the flood the cable cleared the obstacle, and as the ship rose, the anchor came up easily.

June 8th.—After much delay and difficulty in turning the engines, we got away at 11 a.m., with a fine fair wind. At 12h. 40m. the pilot left the ship, and by 2 p.m. we were safe over the bar. Got the propeller up and put the fires out; there was some difficulty in drawing the shaft out, but the chief engineer has no misgivings of any thing being out of order.

June 10th.—The wind drew round to N.W. and N.N.W. as we got away from the land, and we experienced a heavy swell from S.E., probably the effects of a gale in Cook Strait. This morning the breeze declined almost to a calm for a few hours, and then shifted to S.b.W.

June 18th.—We have had a good specimen of what the *Book of Directions* calls a southerly burster, and I never wish to experience another. On the 15th, the barometer, which had stood very high for three days, began to go down, the wind gradually increasing, accompanied by a tremendous swell from S.E. About noon it commenced to blow from the South, and increased till its violence exceeded any thing that we have met with before, until noon yesterday, when the gale was at its height. The sea was frightful, but the ship behaved very well, and shipped very little water. On the 16th the jolly boat was blown clean away from the quarter davits, and the master met with an accident, which will, I fear, deprive us of his services for some time to come. In a heavy lurch one of the guns capsized, and took the first joint of his right fore-finger off, as if it had been done by a knife. My galley astern had a narrow escape too, having been so badly stove that it was a question whether her remains should be cut away or not; however, she has survived, and will I hope when repaired be as good as ever.

Our other casualties were the dolphin striker (which was tongued two years ago,) carried away, and jib boom sprung, and a storm staysail blown out of the bolt ropes. The shot also rolled out of the racks, and one of them smashing the fairleaders of the wheel ropes, such a stream of water poured down my cabin that I was fairly afloat: of course the ship leaked all over, decks, waterways, and top sides, and will require a thorough caulking.

Tuesday, June 19th.—The storm was succeeded by a calm rendering steam necessary. Last night, at 8 p.m., we made the Sydney Heads lights, and at 10h. p.m. lay to for the night, head off shore. This morning we stood in, and came up to the anchorage in Farm Cove, in a thick fog, worthy of London river.

(To be continued.)

The Atlantic Cable and its proposed Western Terminus in Newfoundland.—*With a Plan of the Localities.*

The great question of an Atlantic Electric Cable appears to be again revived, and the difficulties of connecting the old and new world by its means appear once more in a fair way of being grappled with. In our last number the report of Mr. Hoskyn, R.N., supplied some highly important information as to there being more than one easy road to the bed of the ocean, along with the opinion of this officer on the facility with which either might be followed, and the bugbear of the precipitous change of depth was exploded. It was certainly shown by him, as will be seen by the chart, that about the parallel of Galway there is more even ground, speaking generally, than further South. And therefore that such a locality was more favourable for an electric cable.

While Mr. Hoskyn was at work on the West of Ireland, adding important soundings to our chart, Captain Orlebar, R.N., was busy on the eastern coast of Newfoundland, doing the same there, and has selected a favourable site of a western terminus for an electric cable at a place called New Perlican, in Trinity Bay. With the permission of Admiral Washington, the Hydrographer to the Admiralty, we give the result of Captain Orlebar's examination of the bays of Trinity and Conception, and also a reduced copy of his survey of New Perlican, the position of all these places being shown on the small general outline of Newfoundland accompanying them. With our November number and that of January, there will be no difficulty in tracing on the charts the two ends of the cable, should these places be adopted.

That the failure of the first cable would be followed by another attempt, the importance of the object in view plainly foretold. Nor if this in prospect should fail, do we despair even of another. But we trust that many of the mistakes made in all the detail of the last will disappear in this,—and that a favourable *time* will be found for carrying out this very important undertaking.

We now therefore add to our present number the report of Captain Orlebar, with the remarks of Mr. Leeming; and as a preliminary introduction to them we preface them with the following brief view of the meeting which took place in this metropolis on the subject of the cable, on the 12th of December.

On December 12th an extraordinary general meeting of the proprietors in this company was held at the London Tavern, for the purpose of receiving a statement from the directors, and considering a proposition for the issue of £600,000 new capital, in preferential shares of £5 each, bearing 8 per cent. interest, guaranteed, in case of success, by the British government; also, to consider the further proposition, that "any further profits—which, to a large extent, are, upon careful calculation, confidently anticipated, shall be appropriated in the first instance to paying a dividend of 4 per cent. on the old capital, and beyond that amount to an equal division between the old and new shareholders, and the formation of a reserve fund." The Right Hon. James Stuart Wortley took the chair.

Mr. G. Saward, the secretary, having read the notice convening the meeting,

The Chairman said he had never had the honour of meeting the shareholders so hopefully as on the present occasion. That hopeful state was derived principally from the great revival of interest on that subject, and the increased disposition of the public as well as among the shareholders to encourage the directors in their endeavours to complete that great and important work. All their privileges remained intact and perfect in their possession. From inquiries they had made the directors had ascertained that the place they had chosen in Newfoundland for the landing of the cable was the best that could be found, and no other company could obtain a better landing place. They had also greatly improved in the science of telegraphy. The danger to be apprehended to the cable was not from deep water, but from the shallow water. The company had now discovered a very smooth bed for laying the cable down, and had selected it for that purpose. The right hon. gentleman then read extracts of a letter from Sir William Fairbairn, who stated that he had every confidence in the success of the enterprise, provided the insulation was complete. He then stated that the gutta percha, as manufactured by Glass, Elliott and Co., was so impervious to water, that, under a pressure of 20,000 tons to the square inch, there was a perforation of only 0·40. The directors asked the government to survey the coast of Ireland for some miles from Valencia Bay, and they, with great consideration, granted their request. The report from that survey was that they had discovered a better and easier practicable route,—a bed all that would be desired for laying a cable, in which a dip 6 feet in 100 was the lowest, and a dip of 19 feet in 100 the greatest incline, and there were no sudden precipitous descents. The Chairman, after referring to the addition of Mr. William Brown, of Liverpool; Mr. Cropper, of the Magnetic Telegraph Company; Mr. Bidder, and the Chairman of the International Electric Telegraph Company, and others, to the directorship, concluded by referring to various other circumstances of encouragement, and moved the first resolution, authorising the directors to issue shares of £5 each, £1 payable as deposit.

Mr. C. M. Sampson seconded the motion, which was agreed to.

Mr. Bushell, of Liverpool, moved the next resolution, authorising

the directors to issue a prospectus stating the present position and prospects of the company, and inviting the subscription of a preference capital, to have a preference dividend of 8 per cent. and a further proportional dividend after the old shareholders had been paid 4 per cent.

The motion was seconded and agreed to; as was also a resolution pledging the shareholders to use their best exertions, individually and collectively, on behalf of the new scheme of the company.

After the usual vote of thanks to the chairman, the meeting separated.

Such was the manner in which the project was received. We now append the reports and join in good wishes for its success:—

Sounding of Trinity and Conception Bays, Newfoundland.

Charlotte Town, Prince Edward Island, November 24th, 1862.

Sir,—Herewith you will receive the charts containing the soundings taken in Trinity and Conception Bays, and also eastward of St. John to the meridian of 50° W. A dotted red line indicates the route I consider best adapted for the Atlantic Telegraph Cable, and for which I beg to submit the following reasons:—

1. You will observe that it is only the most northern line of off-shore soundings that gives muddy bottom, and that this leads right into the mouth of Trinity Bay. The soundings further South are more irregular, less deep, and give stones, rock, and sand. At the entrance of Conception Bay the soundings have the same character, giving fifty fathoms less depth than Trinity Bay.

2. Also in Trinity Bay a channel with muddy bottom five miles wide and more than 130 fathoms deep can be carried from the offing more than forty-five miles up the bay to New Perlican, where it approaches within a mile of the South shore.

3. The nature of the bottom was everywhere noted, and specimens of it have been prepared for the microscope by Mr. T. J. Leeming. The examination of these specimens, and of the rocks on the shore of Trinity and Conception Bays, which are of the silurian system, leads me to suppose that there is nothing on the shores, or at the bottom, likely to impair the working of the telegraph cable. On this subject I enclose a memorandum by Mr. T. J. Leeming, naturalist.

4. Trinity Bay is twenty miles wide at the entrance, and is well lighted by Cape Bonavista and Catalina Green Island Lights on the North side, and Baccalieu Island Light on the South. Icebergs generally ground on the shoal banks off Catalina and Cape Bonavista, and even those that enter the bays are most frequently driven over to the North side.

5. In Fitters Cove, New Perlican, which is too exposed for vessels to anchor, the bottom is sand, with scattered rounded stones, and at its head there is a beach of fine sand, on which the telegraph cable, if protected by a sheath of iron near the land-wash, might be safely

landed. It would have to traverse for half a mile a rocky slope, having a depth of thirty fathoms, decreasing to eleven fathoms; but it appears tolerably even, and is too far within the bay to be visited by icebergs, or disturbed by the ocean swell.

6. On the northern side of this bay the soundings are more irregular, and the bottom rocky, whilst there is more ocean swell and more danger from icebergs.

7. For these reasons I think the western terminus of the ocean telegraph cable should be at New Perlican, and on that account I have prepared and transmitted herewith a plan of New Perlican on the scale of four inches to the sea mile.

I have, &c.,

JOHN ORLEBAR,

Captain in charge of Newfoundland Survey.

Admiral Washington, Hydrographer, Admiralty.

General Observations during the Sounding of Trinity and Conception Bays, Newfoundland, by Mr. T. J. Leeming, Naturalist, &c.

Orders having been received on the 20th June to sound Trinity and Conception Bays, the steamer *M. Stevenson* proceeded at once to the scene of operations, and commenced sounding on the 3rd of July, running the first line from Baccalieu Island to Catalina Harbour. The coast from St. John to Cape St. Francis is very bold and rocky, especially near St. John, where the rocks are of great elevation and steeply scarped, so that, with the exception of a few sheltered bays and coves, landing is impracticable, the rocks, for the most part of the Grauwacke system, appearing of a coarse conglomerate, varying in texture from that of a sandstone to a concrete gravel.

At Flat Rock Point at Torbay the different textures appear in alternating beds with an inclination of about 10° towards the North. At Cape St. Francis the rocks are slaty, with quartz and a small quantity of copper pyrites. The shores of Trinity Bay, as far as the survey extends, are also very abrupt. The Sugar Loaf, on the South side, consists of conglomerate, with quartz veins rising sheer from the water's edge to the height of 415 feet. Bonaventure Head, on the opposite side of the bay, in like manner rises to 467 feet. Some of the other elevations taken (barometrically) as follows:—Breakheart Point, 326 feet; Hants Harbour Hill, 123 feet; Mount Misery, at New Perlican, 334 feet; Horse Chops, 263 feet. Towards Catalina and Cape Bonavista the shore is much lower, Cape Bonavista at the lighthouse being about 150 feet.

The geological character of the rocks, as far as opportunity for examination offered, was as follows:—At Bonavista, alternating layers of sandstone and concrete gravel at an inclination of 40° to N.N.W. At Catalina Harbour the rocks are slate, with a slight inclination varying from 3° to 15° towards the sea; on the N.E. side of the harbour is abundance of cubical iron pyrites, called locally "Catalina

Spar." The other side of the bay is mostly of conglomerate, and towards New Perlican slate appears.

The soundings, as indicated by the chart, give mud for the middle of the bay, while the South side is more rocky and gravelly. The mud appears to be of uniform character throughout; when dry, scarcely distinguishable, but when first taken up, that towards Trinity Harbour, and thence about half way across, is rather of a higher colour, while generally it is black or dark green. When washed in nitric acid and submitted to the microscope, the same appearance is everywhere presented, a considerable variety of siliceous organisms, among which will be found *coscinodiscus cocconema, gallionella, cocconeis, navicular spicule, &c.* Several washed portions have been in glass, which together will be found to contain all the species that have as yet been noticed in these soundings.

The mud of Conception Bay is identical in character, but not nearly so plentiful. Near Salmon Cove a cast of the lead brought up several scales having the appearance, as to metallic lustre and colour, of gold; but, owing to the strong wind blowing at the time, the particles were scattered. One small scale was secured under glass and is sent along with the sounding. The shores of Conception Bay are not nearly so wild as those of Trinity.

With the exception of the extreme North of the bay about Split Point, which is of considerable elevation, the face of the rock and the natural fissures being inclined about 15° from the perpendicular, the vegetation extends nearly to the water; the greatest elevation being about Portugal Cove and towards the head of the bay. The Look-out at Portugal Cove rises to the height of 530 feet. Among the other elevations taken were Island Cove Head, 106 feet; Western Bay Head, 185 feet; Blowmedown, 182 feet; Spectacle Hill, at Cupid Cove, 308 feet; Brigus Lookout, 357 feet. At Spectacle Hill the rocks are clay slate, variegated with ferruginous layers, having a dip of about 36° towards N.W.; the direction of the natural cleavage running N.E.

At Blowmedown the slate is very fissile, and a vein of coarsely grained quartz, about eighteen inches thick, traverses the station in a N.E. and S.W. direction. Bell Island is an elevated deposit, alternating strata of flag and slaty rock, of a nearly uniform elevation, save where worn into valleys of denudation; cliffs worn nearly, and in some places beyond the perpendicular by the action of the sea; beaches of slaty and conglomerate shingle at Lance Cove and Grand Beach. It has the character of being the most fertile land in Newfoundland: Kelly Island is nearly identical in character.

The summer was unusually late this year. On the morning of the 17th June was a perfect snowstorm from the N.E., lasting from six a.m. till noon. The ice was last seen in Conception Bay on the 21st of August. A large berg was afterwards seen off St. John, October 2nd; its position at 10h. 30m. a.m. was about 47° 27′ N. and 52° 15′ W. There had been a fall of snow the day before.

Professor King's "Preliminary Notice of the 'Porcupine's' Soundings" Considered by Dr. Wallich.

[While we admit the justness of this appeal and insert Dr. Wallich's reply (having given to the world the paper that has produced it), we cannot agree to our limited space being occupied by such matter.]

17, *Campden Hill Road, Kensington, December 6th*, 1862.

Sir,—Already your widely circulating journal will have afforded Professor King's "Preliminary Notice," in your issues for November and December, a publicity far beyond that I can command for those writings of mine from which he has so largely, and without the slightest acknowledgment, borrowed.

On these grounds I rely on your sense of justice when I request that the following statement and extracts may be inserted in the next number of the *Nautical Magazine*. They constitute but portions of the proofs I could adduce, but will, I believe, be considered as more than sufficient to satisfy both you and your readers that I am bound to protect myself from such wholesale plagiarism.

I remain, &c.,

G. C. Wallich.

To the Editor of the Nautical Magazine.

The *Nautical Magazine* for December, 1862, contains a short paper entitled "Preliminary Notice of the Organic and Inorganic Objects obtained by the Soundings of H.M.S. *Porcupine* off the West Coast of Ireland, by Professor William King, Queen's College, Galway, and Queen's University in Ireland;" the three first paragraphs of this Notice having, however, already been inserted in the November number of the same magazine.

As the greater portion of the propositions sent forth by Professor King as original, and disposed of in one or two short sentences, will be found discussed in detail either in my "Notes on the Presence of Animal Life at vast Depths in the Ocean," published in November, 1860, in the printed abstract of a lecture given by me on the same subject at the Royal Institution of Great Britain in February, 1861, or in Part I. of my work on "The North Atlantic Sea-bed," published towards the close of last September, I feel myself imperatively called upon to put the public in possession of a few facts and extracts upon which our respective claims to originality of thought and correctness of reasoning may readily be estimated.

In the brief space of three pages, Professor King disposes of the following questions, in terms sometimes identical with mine:—the nature of the deep-sea Foraminiferous deposits; the vitality of the organisms constituting their immediate surface-layer; the rate of increase of the deposit, and conditions upon which that increase is dependent; the supply of calcareous salts in the ocean; the source whence these salts are derived; the relation existing between the

demand and supply of calcareous matter; and lastly, the constitution of the "Carboniferous, Permian, and Jurassic Oolitic Limestones;"—all of which subjects, with exception of the last, had, as already stated, been carefully treated by me in the works referred to.

I shall endeavour to confine myself, at present, to placing in juxtaposition extracts from Professor King's "Notice" and my published observations on three most important questions, namely—the nature of the organic deposits of the deep sea—the saline constitution of the ocean—and the relation existing between the rate of reproduction of calcareous-shelled organisms and the supply of calcareous matter. I shall then briefly state my reasons for dissenting altogether from Professor King's views regarding the "Orbulo-globigerinous" constitution of the Oolitic limestones.

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"The mud" ("Orbulo-globigerinous"), "consisting as it does *of living and dead* specimens of Foraminifera and their comminuted débris, is clearly an organic deposit."—*Preliminary Notice*, p. 653.

"The rate at which it (the deposit) is formed will therefore depend on the rate of reproduction of these organisms, all other circumstances being favourable."—*Preliminary Notice*, p. 653.

"While investigating this subject, however, we must not overlook another of some importance. Both Corals and Foraminiferous shells are formed of lime derived from certain, if not all the calcareous solutions occurring in the ocean—the principal being *sulphate of lime* (4·617 *per cent.*) and CHLORIDE OF CALCIUM* (3·657 per cent.)—that is, proportional to other associated mineral ingredients. How these two compounds are in the first place derived, *as appears to be the case*, from another calcareous compound, viz. bicarbonate of lime, common to the water which

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"The relative proportion of living to dead individuals (Globigerinæ) in the prevailing form of ooze thus receives a ready explanation. The normal habitat of the Globigerinæ is on the immediate surface-layer of the deposit." "The latter (the substratum of deposit) is what Captain Maury describes the entire floor of the ocean to be, a vast necropolis," &c., &c.—*Notes on Animal Life at vast Depths, &c.*, p. 18. See also *North-Atlantic Sea-bed*, pp. 139, 140; and *Abstract of Lecture*, p. 6.

"Lastly, the definite boundaries of the Globigerina-deposits, to which allusion has already been made, afford presumptive evidence that the increase of the organisms is dependent on conditions prevalent on the spot, and consequently evidence of vitality."—*North-Atlantic Sea-bed*, p. 140.

"Under these circumstances it may not be out of place to review, as far as the limited data permit, the conditions under which the most important constituents of sea-water present themselves at great depths."—*North-Atlantic Sea-bed*, p. 122.

"The association of the more extensive Globigerina-deposits with the Gulf Stream and its several offshoots is, I conceive, dependent on the vast supplies of carbonate of lime brought down to it by the great rivers that discharge themselves into the G[illegible]f o. Mexico and the Caribbean Sea."—*North-Atlantic Sea-bed*, p. 140.

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rivers discharge into the ocean; or how they are afterwards decomposed by the *vital agency* of coral-forming Zoophytes and Foraminifera, and next converted into the carbonate of lime of their skeletons or coverings, are subjects beyond my present purpose."—*Preliminary Notice*, p. 654.

"It has long been the opinion of geologists that many limestones are of organic origin; but considering that travertine (Rome) and pisolite (Carlsbad) are purely chemical deposits, it is believed that a number of other calcareous rocks—*oolites* in particular—have been produced by chemical action."

"Dried specimens of deep-sea ooze procured from 1500 and 1750 fathoms bear a striking resemblance to the roe of a fish, owing to their containing myriads of Globigerinæ and Orbulinæ."—*Preliminary Notice*, p. 655.

"It is now evident, however, that the great bulk of our limestones is organic in its origin, formed immediately *by vital action*, like Orbuloglobigerinous mud and coral reefs, *or derived from* the disintegration of shells and other invertebrata."—*Preliminary Notice*, p. 656; *see also* p. 654.

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"The calcareous salts are essentially derived from fresh-water discharges."—*North-Atlantic Sea-bed*, p. 140.

"It is probable that the saline and mineral substances present in sea-water exercise a much more marked effect on the formation of the organic deposits of the deeper zones of the ocean than has been admitted under the antibiotic view so often referred to. From the nature of the difficulties by which the inquiry is surrounded, not only is the chief portion of our knowledge regarding the deep-sea bed rather of a theoretical than a practical kind, but, unfortunately, it must long continue to be so. It is doubly expedient, therefore, to test this knowledge by the light of every fact that science or accident may throw in our way." * * * "Few persons now-a-days regard the calcareous deposits as having resulted from chemical, or the siliceous concretions from mechanical action; but, although the presence of the shells of the Foraminifera in immense profusion in some limestones supports the view that the animals to which they belonged effected the separation in question, there is no such proof forthcoming in the case of the altered limestones."—*North-Atlantic Sea-bed*, pp. 120, 121.

"Whilst the sounding-apparatus itself brought up a considerable quantity of minute granular particles, *looking like a fine Oolite*, but which was in reality a nearly pure Globigerina-deposit."—*Lecture*. p. 7.

"At present it is only necessary to state that no exceptional law is invoked, but, on the contrary, that the proof of these organisms being endowed with a power to convert inorganic elements for their own nutrition rests on the undisputed power which they possess of separating carbonate of lime or silica from waters holding these substances in solution." * * * "We discern in the liberation of a portion of the oxygen and carbon of the carbonic acid, of the hydrogen of

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"The question for consideration is—Are calcareous solutions as copiously supplied to the *Atlantic* for its Foraminifera as they are to tropical seas for the uses of Coral-forming Zoophytes? *I see no reason to doubt the affirmative*, as the percentages *above* given *are deduced from analyses* made *by Pibra*" (sic) of water from the *Pacific, Atlantic, and German Oceans.*"—*Preliminary Notice*, p. 654.

"Chloride of CALCIUM."*—*See above, Preliminary Notice*, p. 654.

"It may also be observed that the *balance of nature* requires us to believe that the Foraminiferous life of the deep Atlantic is *quite equal to the supply of calcareous matter.*"—*Preliminary Notice*, p. 654.

"Thus, *considering that rivers are every moment conveying enormous quantities of lime from the land into the sea*, and that oceanic currents are widely diffusing it over the Atlantic, we may conclude that *Foraminiferous organisms everywhere occurring* on the deep-sea bed" (?) "are *appropriating the calcareous matter as rapidly as it is supplied.*"

"The rate at which it" (foraminiferous mud) "is formed will therefore depend on the rate of reproduction of these organisms."—*Preliminary Notice*, p. 654.

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the water, and the nitrogen of the atmospheric air, *a vital act* heretofore regarded as characteristic only of the vegetable kingdom."—*North-Atlantic Sea-bed*, pp. 131, 132.

"According to Bischof, ('Chemical and Physiological Geology,' vol. i, p. 379), the total quantity of saline matter present in water from the *Pacific, Atlantic*, and *German* Oceans *(as deduced from the analyses of Bibra)* amounts to 3·527 per cent.; whereas the several ingredients occur in the following proportions:—

Chloride of Sodium ...	75·786
Chloride of Magnesium	9·159
Chloride of CALCIUM*	3·657
Bromide of Sodium ...	1·184
Sulphate of Lime.....	4·617
Sulphate of Magnesia.	5·597
	100·000."

North-Atlantic Sea-bed, p. 122.

"In both cases, moreover, the *demand and supply* of the material (carbonate of lime and silica) are *balanced* with such unerring nicety, that the failure of either one or the other could not take place without altogether disturbing some of the existing conditions of the globe."—*North-Atlantic Sea-bed*, p. 122.

And again:—

"*Taking all these circumstances* into consideration, it appears probable that the demand for *carbonate of lime at the bottom* of the sea *is limited only by the supply*; for, inasmuch as *the quantity of calcareous matter* introduced by rivers *is so great that, in the absence of an unceasing drain* upon it by *calcareous-shelled* creatures, its waters would very speedily become saturated and give rise to chemical separation." * * *—*North-Atlantic Sea-bed*, p. 125.

And again:—"If these views are correct, it is obvious that the *rate* at which the increase of the deep-sea calcareous deposits takes place depends entirely on the rate at which carbonate of lime can be poured into the ocean by rivers." * * *—*North-Atlantic Sea-bed*, p. 125.

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"Although little is known regarding the subject just mentioned" (rate of growth), "still we may form some idea of the rate at which Foraminifera increase or multiply by a reference to facts supplied by other living objects."—*Preliminary Notice*, p. 654 (top).

"They" (Foraminifera) "evidently play the same important part in our seas as the coral-forming Zoophytes in warmer latitudes; *and although the latter are labouring* in shallow depths, and building up the more striking atolls, and fringing reefs, the latter" (sic) "are nevertheless working quite as efficiently in the abysses of the Atlantic, and forming an enormously wide-spread calcareous deposit. * * * In conclusion, reflecting on all the considerations which have been noticed, I feel my convictions strongly supported that a telegraph cable, if laid down on the *Orbulo*-globigerinous bottom of the Atlantic, will, after a lapse of a few years, become sufficiently covered up to be protected from any ordinary danger." *Preliminary Notice*, p. 654.

"Dried specimens of deep-sea ooze procured from 1500 to 1750 fathoms off the west coast of Ireland, bear a striking resemblance to the roe of a fish, owing to their containing myriads of *Globigerinæ* and *Orbulinæ*. This circumstance led me to suspect that the roe-stone or oolitic limestone, instead of being, as is generally conceived, a concretionary deposit, is a purely foraminiferous formation. In prosecuting my investigations on this point, although I have failed to detect any well-defined specimens of *Globigerinæ* in oolite, I have been rewarded by discovering that it consists essentially of an allied monothalamous genus. Having carefully examined type specimens of Carboniferous, Permian, and Jurassic Oolitic limestones respectively from Edenderry in Kildare, Sunderland in Durham, and the Isle of Portland, *I have no hesitation* in stating that they consist for the most part of an *organism identical*

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"Of the rate of growth of coral-reefs, very little is known beyond the fact of its being extremely gradual. Of that of the Foraminiferous deposits, nothing of a definite character has as yet been ascertained."—*North-Atlantic Sea-bed*, p. 124.

"Taking *into consideration* the *very important part played by these organisms in the* structure of the earth's crust, that vast strata have in ages gone by been built up by them, and that similar strata are at the present time been formed along the beds of existing seas, the investigation of these questions becomes of the highest consequence, as bearing on the successful establishment of ocean telegraphy."—*Lecture*, p. 1.

Although my own opinions are at direct variance with those of Professor King on this point, I think it better to append the opinion of Mr. Etheridge as quoted in the 'Memoirs of the Geological Survey of Great Britain, in the Geology of the country round Cheltenham,' by Edward Hull, A.B., F.G.S. It is as follows:—

"Although the presence of Foraminifera in the ovules of this formation might be inferred from their occurrence in the oolitic beds of the Carboniferous Limestone, and from the fact of the Chalk being to a large extent composed of these shells, as has been shown by Mr. Lonsdale, yet Mr. Etheridge, who has examined numerous specimens, has never yet been able to detect their presence. He says, 'I have made sections of the oolitic beds of the Great and Inferior Oolite, and find the spherules of which the rock is composed made up entirely of concentric layers of carbonate of

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with, or allied to, *Orbulina universa.*" *Preliminary Notice*, pp. 655, 656.	lime, having from eight to fifteen distinct layers, but in no instance have I detected any organism within the spherule.'"—P. 36. To this I have only to add, that, under the polariscope, the entire absence of Foraminifera of any kind in the granules of the oolitic limestones is remarkably manifest, the characteristic black cross never presenting itself either in the walls or interior of the granules.

But my task, painful enough heretofore, does not end here. Not content with the appropriation of my arguments and facts, Professor King appropriates my *error!*

At page 122 of my "North-Atlantic Sea-bed" I insert Bibra's table of the saline constituents of sea water as given above. In that table there occurs an important clerical error, Chloride of CALCIUM having been inadvertently written by me instead of Chloride of POTASSIUM. I say *clerical* because, as may be seen from the context, *my* reasoning does not apply to Chloride of *Calcium.* Professor King, however, *adopts my error and bases his argument on the assumed presence in Bibra's table of Chloride of* CALCIUM! (See extracts to which are attached an asterisk.)

In a footnote I mention having copied my table from the English edition of Bischof. In that edition there is no reference in the same page to the "*Pacific, Atlantic, and German Oceans;*" and the expression "*as deduced from the analyses of Bibra*" is mine, *not* Bischof's.

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Note.—Professor King alludes to the map appended to my "North-Atlantic Sea-bed." The Italics are mine throughout.—G. C. W.

THE WRECK REGISTER AND CHART FOR 1861.

Shakespeare compares England to a fortress, and the Channel to a moat; but if he saw the leviathan steamers now coming up that channel, he would be the first to acknowledge that the comparison did not hold good in the present day. We do not now look upon the sea as itself giving us a defence; it is only our chief medium of defence. But it is now, as in the days of Drake, our great commercial highway and source of our strength, girdling us, if it does not guard us, and bearing into our havens all the products of the known globe. All who leave us or approach us must do so by this great highway, which

carries on its bosom in the course of one year alone, to and from our own ports, no less than 267,770 ships, including repeated voyages, and which ships have probably been manned by 1,600,000 souls.

Such is the field of operations over which these dry statistics of the Board of Trade carry us. As usual, they have been most ably drawn up and collated in every possible form. Yet on nearly every page of this Register these startling facts, in admonitory terms, face us, that 1,494 shipwrecks occurred on British shores last year, from which 884 people are known to have perished.

The number of wrecks last year has unfortunately exceeded the number during any of the preceding nine years, and it is 260 in excess of the annual average of the last six years.

It is a lamentable fact that shipwrecks on our coasts have been of late years on the increase. Thus, during the last seven years, we find the following account:—in 1855, 1,141; 1856, 1,153; 1857, 1,143; 1858, 1,170; 1859, 1,416: 1860, 1,379; 1861, 1,494.

The accompanying Wreck Chart clearly shows the spot where each casualty occurred, and the number of lives lost by it.

We are told that this great increase of disasters in 1861 was owing to the fearful gales of January, February, and November of that year, when 842 wrecks took place, principally amongst our rotten collier class of vessels. Gales, even of a moderate character, are always destructive to these ships; or, in other words, they are doomed to certain destruction under circumstances in which a ship, if seaworthy, and properly manned and found, ought to be able to keep the sea. The best harbours of refuge in the world would not, therefore, prevent a tithe of these disasters, which unfortunately too often occur where neither the lifeboat nor the rocket apparatus is available to succour their unfortunate crews.

We regret to find that the number of collisions is also on the increase. No calamity is more fearful than that of a collision at sea during a dark stormy night. Its destructive effects are instantaneous, and frequently a large number of persons go down with either ship. The collisions in British waters were in 1859, 349; in 1860, 298; and in 1861, 323! But what is very remarkable in regard to these fearful collisions is the fact that, during the past six years, 750 collisions have taken place in clear and fine weather, 378 from bad look-out, 264 from neglect of rule of road at sea, and 61 from actual want of seamanship. The gross total of collisions during the past six years having been 1,864.

A natural sequence of the increase of vessels wrecked is the increase of precious lives lost. The number of persons who thus lost their lives in 1861 was, as previously stated, 884; while in 1860, it was only 536.

This, let it be remembered, is not a casual loss. It is a continual, if not an ever increasing one. The drain on our sailors and fishermen goes on year after year, notwithstanding all the benevolent and strenuous efforts made at the present day to stay the ravage. The sea is dreadfully exacting in its demands; and season after season, when the

equinoctial gales blow, when the winter sets in, or when the summer, as our last one did, yields to the temporary but powerful influence of storms, our shores are converted into altars, on which the Ocean offers his victims. It is unlikely that we shall ever effectually obtain the mastery over the waves; but, even at this moment, we are able to contend successfully with them in their blind efforts to swallow up life against our endeavours to save. If, for instance, during 1861, eight hundred and eighty-four people lost their lives on our coasts by shipwreck, yet no less than *four thousand six hundred and twenty-four* were directly saved from such a fate. The whole number makes up a considerable fleet of seamen,—men for whom, perhaps, in moments of national emergency, we would give any money,—and many of these were preserved under the most perilous circumstances by the craft of the National Life-boat Institution.

The total number of casualties in two years is 2,873, out of which 1,660, or about seven-twelfths of the whole, happened to ships of the collier class—a fearful disproportion, and calling loudly for a thorough and searching investigation.

The following table distinguishes clearly the description and tonnage of the ships lost during the past year:—

	Vessels.
Vessels under 50 tons	228
51 and under 100 ,,	434
101 ,, 300 ,,	639
301 ,, 600 ,,	135
601 ,, 900 ,,	31
901 ,, 1,200 ,,	18
1,200 and upwards	5
Unknown	4
Total	1,494

Let us briefly analyse the causes of this great destruction of property:—We find that 10 wrecks took place in a perfectly still sea, 14 in light airs, 51 in light breezes, 43 in gentle breezes, 103 in moderate breezes, 171 in fresh breezes, 149 in strong breezes, 66 in moderate gales, 124 in fresh gales, 230 in strong gales, 311 in whole gales, 102 in storms, 52 in hurricanes, and 68 in unknown and variable weather. Total wrecks, 1,494. Of these 619 took place amongst ships in the home and coasting trade, commanded by men not required by law to have certificates of competency. 266 wrecks only occurred amongst vessels in the home trade, commanded by masters holding certificates of service; so that the rivalry between ignorance and knowledge is an unequal one, as it ever has been and ever will be,

The estimated loss on these 1,494 wrecks is upwards of one million sterling. But who can estimate the loss of the valuable lives who also thus perished with the ships! Many a widow and orphan in our seaport towns and fishing villages will tell us how severely they have felt their bereavement!

The accompanying roll of the loss of life on British shores and

waters during the past twelve years will be perused with melancholy interest. The districts are thus classified:—

	Lives lost.
Farn Islands to Flamborough Head	670
Flamborough Head to the North Foreland	1,068
North Foreland to St. Catherine's Point	514
St. Catherine's Point to Start Point	82
Start Point to the Land's End	460
Land's End to Hartland Point, including Scilly	353
Hartland Point to St. David's Head	473
St. David's Head and Carnsore Point to Lambay Island and Skerries, Anglesey	969
Skerries and Lambay to Fair Head and Mull of Cantire	1,597
Cape Wrath to Buchan Ness	257
Buchan Ness to Farn Islands	280
All other parts of the Coast	922
Total lives lost	7,645

It is thus seen that the most serious wrecks, as was urged in Parliament last session, do not happen on the N.E. coast of England, but in those seas and channels mostly frequented by large foreign-going ships. This is a matter deserving earnest public attention. Some hundred thousands of pounds judiciously laid out in improving our great natural harbours of refuge would, we think, be attended with the greatest possible benefit.

Again this fearful list tells us in legible terms that man cannot avert the storm—nor prevent the occurrence of wreck and violent death at sea. The proudest vessels that he builds of wood and iron are but as larger straws before the winds of heaven. A breath can dash them on the shore, and they perish in their pride, and our vanity is humbled. We may never hope to rise superior to every storm or cause of wreck. It is our duty, however, to strive for safety—to continue to wrestle hard with danger—to confine disaster and death within the narrowest limits which human efforts can impose upon them.

How happily then the efforts of the National Life-boat Institution, the Board of Trade, and kindred bodies on the coast have been blessed during the past six years! During that period alone 16,119 persons have been saved from shipwrecks by means of the lifeboats, the life-preserving apparatus, shore boats, and other appliances, as the annexed list shows:—

	Lives saved.
1856	2,243
1857	1,668
1858	1,555
1859	2,332
1860	3,697
1861	4,624
	16,119

He must be less than man who can read unmoved and without a glow of admiration the account of such services and of those given in that institution's report. Take the rescue of the crew of the brig *Sisters*, of Whitby, on the 26th February last. It will serve as a suitable illustration of the dangers that have to be encountered by the skill, courage, and endurance that are needed of the brave fellows who man the society's life-saving fleet:—

The *Sisters* was laden with coals, and had been driven on shore on the South Barber Sand off Caistor. Her signals of distress having been seen from the beach, the Caistor boatmen proceeded to launch the lifeboat there through a tremendous surf, the wind blowing a heavy gale from the East at the time, and the night being intensely dark. Under these difficult circumstances, although more than 100 persons were engaged in helping to launch the boat, an hour elapsed before she could be got off the beach and warped to the hauling-off anchor laid down outside the surf. Sail being then made on her, she worked to windward to the scene of the wreck, where the anchor being let go, she was veered down, but owing to the darkness and the fearful sea breaking over the vessel, it then took an hour to get the crew of 9 men into the boat, and that at very great risk, as the lifeboat was often lifted by the sea high above the vessel's sides, and several times dashed violently against her and on the sand, thereby incurring considerable damage; also losing one hundred fathoms of her rope gear, which had to be cut away on hauling off from the wreck. It was indeed life for life, but humanity prevailed in the courageous encounter, and the wrecked crew were ultimately got safely in, and landed through a heavy surf. Forty-five pounds were paid by the institution for this service, viz., £40 to the twenty men forming the lifeboat's crew, and £5 to the parties assisting to launch the lifeboat.

Englishmen in every part of the world may surely pause with pride over such chronicles of lifeboat services on our coast, as also over the reports of the cheerful liberality with which the National Life-boat Institution is supported, to enable it to continue and extend with unabated vigour its merciful operations on our coasts.

We will recapitulate some of these beneficent gifts, and allude briefly to the society's operations.

The Lord Chief Justice Erle, and the Corporation of London, and the members of the Royal Thames and the Victoria Yacht Clubs, contributed liberally for the safety of the seamen. A citizen of Newcastle-on-Tyne, to whom a legacy of £19 had been left, passed it over, not to his own banker, but to that of the institution. "N.L.," residing in Manchester, sent £250 to defray the cost of the Kirkcudbright lifeboat; and a stranger "who would not give his name," left at the institution a bank-note for £200. Mrs. E. Hope, carrying out the dying wishes of her husband, the Rev. F. W. Hope, gives £340 to buy a new lifeboat for Appledore, Devon. The ladies of Newbiggin realized for the funds £301 16s. by a bazaar; Mrs. Hartley and Miss Bertie Cator, promoting lifeboat funds, were enabled to raise six hundred

guineas; Miss Burdett Coutts, in her exhaustless beneficence, gave the cost of the Plymouth and Silloth lifeboats; Mr. G. J. Fenwick, of Seaton Burn, contributed £250 to provide the Tynemouth lifeboat. Miss Brightwell, honouring her father, pays the cost of the Blakeney boat, and calls it after his name; and certain travellers in the smoking saloon of the North Kent Railway, bethinking them of the claims of the National Life-boat Institution, extemporised a subscription to increase its resources. Even from Abo, in Finland, £50 is sent to the institution in admiration of its services to the shipwrecked crews of all nations.

We have a list before us of the names of upwards of one hundred wrecks, from which, within the space of two years and a half, 726 lives were saved by the lifeboats of the society. It is on this list—this trophy of success—that the committee of this institution found their latest appeal. During that period its establishments on the coasts of the United Kingdom have cost £27,260. They have voted £2,458 as rewards to the crews of their lifeboats, and £572 to those who, by shore boats and other means, saved 562 shipwrecked persons, in addition to the above 726; making a total of 1,288 persons saved from a watery grave during the last two years and a half. Since its formation, the institution has been instrumental, by its lifeboats and other means, in saving 12,680 lives; and having now 123 lifeboats under its management, it requires a large annual income to meet the demands upon its priceless services.

A Surveying Trip through the Holy Land.

H.M.S. Firefly, Alexandria, November 7th, 1862.

Sir,—My last letter, dated September 29th, will have informed you of my return from the first trip through Galilee, having completed the topography to the Plain of Esdraelon.

On the 1st October I quitted Haifa, taking Mr. Hull with me, and proceeded to Mohraka, along the summit of Mount Carmel. The baggage and tents having taken a wrong road, we were forced to return to the village of Esfia for the night.

The next morning, starting early, we fortunately found the missing tents, &c., under Mohraka, in the plain of Esdraelon, all safe. Ascending the Um el Falim ridge, we reached the small village of Refferim (not in Van de Velde), and, the following morning, Um el Falim, a considerable village on the summit of the ridge; a most commanding situation, from which we obtained a fine round of angles.

October 4th.—Reached Arrabeh, the principal village of the district, passing through Sheik Zeit and Nebi Sibil (not marked in Van de Velde), overlooking the plain near Jenin, Gilboa, and all to the eastward. Here we remained the 5th, Sunday.

6th.—Sending the tents and baggage on to Sebastiyeh (Samaria), we struck to the eastward and ascended a high peak over Fendikuniyeh, overlooking the Merj el Ghurruk and the plain of Samaria. Thence we descended to Burka, prettily situated at the foot of the hill, and reached the tents at sunset.

7th.—Taking the high road to Nablus, which led through a well cultivated and watered valley, we reached the city in three hours. Procuring a guide, we ascended Mount Ebal on foot (horses cannot go). This is the highest point of the Samaritan hills; from which an extensive view is obtained. Returned to the tents, pitched amongst the olive and fruit trees below, near the spring, over the eastern shoulder of the mountain.

8th.—On rising this morning we found Yakob esh Shellaby, the head of the Samaritan sect, outside the tent. This was their Feast of Tabernacles, and hearing that some English travellers had arrived, he had come to offer himself as guide to the summit of Mount Gerizim, where the whole tribe were assembled, performing their devotions, &c. We gladly availed ourselves of his kind offer, and soon mounted our horses. The ceremonies have been so well described by Mr. Rogers that I shall not allude to them. These interesting people number about 149. They live apart from the rest of the world. Yakob has established a school, which is kept up principally by donations from travellers passing through. They are generally excessively poor.

Having witnessed the ceremony and obtained a good round of angles, we descended by the eastern pathway on its northern side to Jacob's Well, which at this season was dry. It has been purchased, with a portion of ground round it, by the Greeks, who intend building a monastery or church over it. We then crossed the valley to Joseph's Tomb, which belongs to the Samaritans. Returning to Nablus, we partook of a Samaritan dinner under the hospitable roof of Yakob esh Shellaby.

9th.—Leaving our tents pitched, and accompanied by Yakob, we were early in the saddle. After riding along the plain to within a mile of Howara, we suddenly turned to the right, passing through the village of Burun,—a rascally set and the greatest thieves in the district. Crossed the head of a valley and ascended the peak Sluman el Farsi, a very conspicuous point with a nebi on its summit, and visible from Gaza to Carmel. We had throughout called it Alam Uda, as in Van de Velde's map that mountain is certainly the highest and most defined. However, Alam Uda is farther west: it is in its right position, but badly drawn. Here we experienced more than ever the difficulty in procuring the right names of the villages, &c. The ignorance of the Rasarts (?) is quite remarkable, for beyond the immediate vicinity of their own village they are totally unacquainted, showing the sad state of the country.

10th.—Taking leave of our friend, we followed the Carcuan road to Howara. Thence turned eastward by a rugged path, passed through the villages of Kubalan Tell-Fit and Kuriut,—a wild district;

descended to Seilun (Shiloh); through Ternus Aya to Sinyil, situated near the top of a high ridge.

11*th.*—Descending through a deep ravine to the East of Et Tell, we came on to the great road, which we followed for half an hour; when, turning to the left, ascended by a very rough road to Mezrauh, on the summit of the ridge. Continuing South, in an hour reached a ruined massive-built square, tower which stands on the extreme point. Round it are very extensive ruins of an old city. This point is called El Burj. I believe it has not been visited before. Large cut and bevelled stones are scattered about in every direction and it has the appearance of having been of some strength. In Van de Velde's map a Burj Azzil is marked, but the villagers did not know the name. Passing through Selwad, we joined the main road near Yebrud, which now runs along the eastern edge of a precipitous ravine.

We reached Bireh at two p.m., and after a short halt pushed on to Jerusalem, where we arrived late, after sunset; pitched our tents outside the Yafa Gate.

Finding considerable difficulty in procuring fresh water, we decided on going to the hotel, and making excursions round the Holy City from there.

12*th, Sunday.*—Attended Divine Service at our church.

13*th.*—Occupied nearly all day on and in the vicinity of the Mount of Olives.

14*th.*—I was completely prostrated and obliged to remain at home. The day, fortunately, was very cloudy, with a strong N.W. wind, which would have prevented our seeing any great distance.

15*th.*—Mr. Hull visited the convent of Mar Saba.

16*th.*—The weather having cleared, we visited Nebi Samwil, and obtained an extensive round of angles.

17*th.*—Strong N.W. gale, with rain occasionally, the clouds considerably below the mountain tops. Quitted Jerusalem, and pitched our tents near the Pools of Solomon.

18*th.*—Clear weather. Rode to a peak S.W. of the pools, overlooking the whole Plain of Philistia, Jerusalem, Olives, Bethlehem, part of the Dead Sea, with Jibel Tureidis in the foreground. Hebron was unfortunately hid by the high ridge near Halhul and Beit Anun.

19*th.*—Hebron, the district to the southward, was in such a disturbed state, that the pasha of Jerusalem refused us an escort. We had therefore to return to the tents, and decided on descending to the plain by the ridge north of Wadi er Rumani.

20*th.*—Our road led through El Khudr, along a rocky ridge to Beit Atab and Deir el Hawa, a small village on a conspicuous peak immediately over the plain. Descending, we crossed the Wadi Ishmail, through Zanuah to Sarah, built on a spur of an almost isolated ridge.

21*st.*—Rode to its summit, and in half an hour got into a level road in the plain. Passing to the North of Khulda we reached the village of Abu Shusluh. Continuing northwards by Annabeh, Ji-

nizu, and Hacbithek, pitched our tents at Beit Nibah, a considerable village bordering the plain, amidst thick groves of olives.

22*nd*.—Rode to Deir Abu Mishal. At about an hour from Nibala we passed the ruins of an extensive village, apparently of great antiquity. It is called Benaten. Many of the houses still standing are constructed of large roughly cut stones. Other similar remains were passed one hour further, with the remains of a square tower. The villagers call this Khurbet Dusirah. Abu Mishal stands on a rocky eminence, and is visible throughout the whole plain. A mosque, built on the foundations of an ancient fortress, crowns the summit, with the remains of a wall, extensive water tanks cut out of the solid rock, and quarries in the immediate vicinity. The modern village, built amongst the ruins and rocks, is small, and the people very poor.

23*rd*.—Taking the road skirting the plain, we passed the villages of Deir Turif, et Tireh, Kuly, el Muzeireh to Mejdil. Half a mile to the west of the village of Kuly, and immediately to the right of the road, stands a small but very perfect temple with Corinthian columns, now converted into a *kibleh*, or praying-place, and called by the villagers Nebi Zehar. 'Mejdel is a considerable village, built on a rocky hill, and rendered very conspicuous by a large building or palace belonging to the sheik, apparently built on the foundation of an ancient edifice.

Continuing our route northwards, we pass, near Kefr Kasim, considerable remains of a deserted modern village, and at sunset reach the small hamlet of Hableh.

24*th*.—Leaving our tents pitched, we rode to a peak south of the village of Jujus.

25*th*.—Having completed as much of the topography as my present means would allow, I decided on returning to Yafa by the plain, taking the road through Jiljilliyeh, El Mir, El Fejjeh, and Selameh. We reached the town at one p.m. and found H.M.S. *Firefly* at anchor.

During my absence plans of Kaisariyeh and Yebneh had been completed, which I shall forward as soon as ready.

Quitting the anchorage on Monday the 27th, we steamed to Yebneh, where I landed and examined the locality.

A ledge of detached rocks runs parallel to the coast, distant only 1¼ cables. There is no appearance of their ever having been connected by a mole; neither could I discover on or near them any large hewn stones. The centre block bears traces of having been quarried. Although there is fourteen to fifteen feet water inside, they would afford no protection against the westerly winds, and from the narrow space could, in my opinion, only be turned into a harbour for small coasting boats.

Ruins of a fortress or building still exist on its southern point, with portions of walls nearly buried in the sand.

Continuing our course, we reached El Arish the following evening. The weather was fortunately favourable, and without any delay we

obtained sights for our chronometers, thus completing all observations connected with the Syrian survey.

I now commenced obtaining a few deep sea and other soundings along the coast of Egypt. A fresh breeze springing up, I anchored under Kara Burún, Damietta, till it moderated, when we steamed to Port Said, for the purpose of observing what changes had taken place since 1860 in the coast-line, &c.

At Port Said little change has taken place. The same wooden jetty or pier still exists, partly filled with stones. A small island has been constructed some distance from the end of the pier by screwing in iron piles, connected together by braces, so as to form a species of crate, into which stones have been thrown. Vessels are now able to lie alongside and discharge. This is performed by a small steam-engine. In short, steam-power is brought into play wherever practicable.

The sand is gradually forming a spit on the west side of the pier, growing out, as the space between the piles became filled with stones. This I have always anticipated. On the East a strong current was running out of Lake Menzaleh, which tended to keep a deep channel near the solid part of the pier, but banks were being formed further out.

M. de Lesseps had arrived the evening before, and conducted us over the whole establishment, which appears beautifully organized. The workshops and steam appliances are on a very large scale,—steam hammers, lathes, planes, and circular saws, in full work; and these now managed by Arabs. There is also a large foundry, besides stores full of material. The town actually contains upwards of 300 houses, with many building, and a population of 4,000 souls, consisting of Arabs, French, Maltese, Italians, Hungarians, Greeks, &c.; but, strange to say, the French are fewest in number.

The canal is cut to within a few metres of Lake Timsah, and on the 18th the waters of the Mediterranean are to be let into the Lake.

The depth actually cut is only three feet. From what I could learn their dredges are not of sufficient power; they are expecting twenty-six more from France.

The fresh water canal is finished to Lake Timsah, and by next June M. de Lesseps told me he hoped to have it supplying Suez.

I am now rating my chronometers, and intend examining the Main Pass again. I shall not leave this before the end of the month.

I remain, &c.,

A. L. MANSELL.

To Rear-Admiral Washington, F.R.S., Hydrographer.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*The King of the Sandwich Islands and his Book—The Amsterdam Canal—The Pacific Railway—The Chairman's Address—The Wrecks and the Lifeboats—The "Alabama" and her Friends—American Sympathy—An Episode on the Ocean—American Celebration of the Prince of Wales's Majority—Royal Courtesy Rightly Recognized.*

There, exclaimed Rodmond, as he entered the Club-room, there's work becoming a king! Tamehama the Third, the royal ruler of the Sandwich Islands, translating the episcopal prayer-book into his native language. And it is said that no one is better fitted for the task than his Majesty, whose knowledge of both languages is not surpassed by that of any foreigner.

Something worth greeting the arrival of the new Bishop (Stanley) with, which event came off on the 11th of last October, returned the Secretary.

Verily, continued Rodmond, some of our European kings may take a lesson from the example of his simple-minded Majesty of the Sandwich Islands.

So Mynheer Van Dunk will have a canal, observed the Commodore to make his Amsterdam more accessible to the world. It is said the canal is to be thirteen miles long, 200 feet wide, and twenty-four feet deep, and will shorten the distance from Amsterdam to London, and all ports south of the Texel, by about eighty miles; so that vessels will be enabled to reach the sea in a few hours, whereas the present journey over the Simluger and the North Holland Canal now occupies several days, and sometimes weeks.

It is an old project, said Albert, started some ten years ago. But they want a million of money, and Messrs. Croker and Burn, the engineers (what ominous names for a large scheme), will be very glad to see their favourite scheme taken up with the guarantee of 4½ per cent. from the Dutch Government. But progress is the order of the day, and when Mynheer goes to work he does it in earnest. He has a better chance of success than M. Lesseps, on another score besides that.

Another scheme in hand is the Pacific Railway, said to be fairly launched, a grant of six millions of dollars in U.S. bonds being made to the company. The route, continued Albert, will be by way of Sacramento, Washoe, and the Salt Lake. The stock subscribed on the first day was 400,000 dollars. The railroad will pass over the Sierra Nevada, where there is an unbroken ridge from base to summit, so that the grade will not exceed 105 feet per mile. The expense of construction is estimated at 88,000 dollars per mile. In order to prevent the snows of the Sierra Nevada from interrupting traffic, engines will be kept on the summit, with snow-ploughs to run over the line when snow begins to fall.

That's Yankee like,—ready at all points; what with their war, the

railroad, and the Atlantic Telegraph Cable, they have enough on their hands, said Rodmond.

Yes, said Albert, say what you like, they are a great people, worthy of the stock whence they sprung, and their true motto is "Onward."

The Chairman, taking up the last word, observed their duty too was "onward." He was glad to welcome his friends around him to discuss the progress of events. Change was the ever constant type of worldly matters, like the flowing and ebbing of the tide, which keeps the affairs of old ocean in healthy action, so does the progress of worldly events stimulate and encourage us all in our duties; and while we see, even in the order of nature, that change and progress are ever on the wing, we are reminded on every hand of the truth of the motto "Idleness is the root of all evil."

But alas, continued the Chairman, the elements of our atmosphere have been anything but idle lately. About a year ago we heard of deluges in America and China,—a few months ago the Cape colonists suffered equally,—and now it has come to our turn in Europe. Accounts from France speak of the same, and we have within a few days ourselves gone through a succession of storms, with their usual attendants—high tides, deluge, devastation, and wreck. There would be fearful accounts of our shipping. But before he went further they would clear off the effects of the former gales, which the Secretary of the Life-Boat Institution of this country had recorded.

The Secretary read the following report:—

An interesting communication was read from the Hon. C. F. Adams, the American Minister at this Court, stating, in reference to the valuable services rendered by the Lytham and Southport lifeboats a few weeks ago to the crew of eighteen men of the ship *Annie E. Hooper*, of Baltimore, U.S., that he had been instructed by the President of the United States of America to present £100 in his name to the National Life-boat Institution, and £31 to the crews of the lifeboats, in addition to the rewards, amounting to £15 10s., previously granted to them by the society. The committee acknowledged their high appreciation of the munificence of President Lincoln in this case.

A reward of £4 was given to the crew of the Padstow lifeboat for rescuing, under peculiar circumstances, the crew of four men of the sloop *Loftus*, of Padstow, which, during very thick weather, was wrecked off that place on the 9th of November. The weather was so thick at the time that the vessel could hardly be seen; but they pushed on through the heavy fog, provided by the institution with one of Dent's liquid compasses. The lifeboat reached the vessel, and took off her crew of four men, and safely brought them on shore. Mr. Shea, the officer of coast-guard, was in the lifeboat on this as on many previous occasions, and has assisted in saving twenty-five lives in her. As we stated in our last number, with the special permission of the late Prince Consort, the Padstow lifeboat is called the

Albert Edward, after the Prince of Wales, who is also the Duke of Cornwall.

A reward of £6 was voted to the crew of the neighbouring lifeboat at Bude Haven, belonging to the society, for saving the crew of the smack *Mary Elizabeth*, of Porthleven, which, in a heavy sea breaking fearfully on the coast, was found disabled on the 14th November. Mr. W. Maskell stated that "the sea was running in high enough to test the capabilities of any lifeboat in England, and in rollers very different indeed from the seas which break along our south and eastern coasts. But strong arms and good courage carried the lifeboat through the surf, which at times seemed almost to overwhelm her. Outside the surf the boat was in safer water, but had two miles to pull along a lee shore, the wind blowing dead and strong upon it. In three-quarters of an hour she reached the wreck, and took off the crew of two men and a boy. This was about a mile from the shore, opposite a reach of sand called Widemouth Bay. The sea was rolling in upon this sand in long waves, breaking first at least quarter of a mile out. But it was scarcely possible to pull back to the harbour against wind and tide, and the sea was more dangerous at its entrance, on account of the state of the tide, than when the boat started, and hence the crew determined to run the boat at once for Widemouth. She made a slight pause outside, as if the men knew it would be at the peril of their lives, and then dashed in safely. She was buried in the seas as they passed her, but she behaved admirably, and at last on one great sweeping wave ran in upon the sand. The lines of the boat were caught, she was hauled up, and the shipwrecked crew were saved."

A reward of £4 10s. was also voted to the crew of the Kirkcudbright lifeboat for saving the schooner *Ellen*, of Liverpool, which, in heavy weather, had struck on Kirkcudbright Bar on the 13th November, and was saved from destruction entirely by the lifeboat. The boat had been recently sent to this place through the munificence of a benevolent gentleman (N.L.) resident in Manchester.

A reward of £11 was voted to the crew of the Teignmouth lifeboat of the institution for saving, during the tempestuous night of the 18th November, two out of three men of the smack *John*, of that place, which had struck on the bar, the sea sweeping in heavy rollers over her. The piercing cries of the poor men having been heard, the lifeboat was launched as soon as possible. In the meantime one of the men on the wreck had thrown himself overboard with an oar, and was instantly drowned. The other two men were brought ashore in the lifeboat in a state of complete exhaustion.

It was reported that the Lytham lifeboat had been the means of bringing to a port of safety the sloop *Mart*, of Stranraer, which, in a fog, had been abandoned on the Salthouse Sandbank, Lancashire, on the night of the 15th November.

It was stated that one of the institution's lifeboats stationed at Dundee Harbour had assisted in bringing safely to port the schooner *James Dowell*, of Newcastle, which had become waterlogged in a heavy storm on the night of the 1st November.

Rewards amounting to £58 were also voted to the crews of the lifeboats of the institution stationed at Palling, Aldboro', Margate, Carmarthen Bay, Dundalk, and Arklow, for putting off with the view of rendering assistance to vessels which had signals of distress flying, but which did not afterwards require their services.

The silver medal of the society and £3 were voted to Thomas King, master of the smack *Paragon*, of Harwich, and £18 to his crew of six men, for their long and great exertions, extending over two days, in rescuing, during a gale, four out of six persons from the schooner *Thrifty*, of Goole, wrecked on the 19th October on the Long Sand. This was one of the most daring and persevering cases of saving life on record. Captain Jackson, R.N., Inspecting Commander of the Coast Guard, thus reports,—

"On the evening in question the *Thrifty* took the ground on the S.W. end of the Long Sand in a gale from the S.W. About noon on the following day (Monday) the smack *Paragon*, having sighted the wreck, closed with her, and tried to get the crew off; but, after two attempts, in both of which her boat failed and was nearly swamped, the smack was obliged to give it up. She then tried to give assistance by running to seaward of the sand, but in doing so she shipped a sea, and was obliged to run for Harwich, where she arrived about ten p.m. On Tuesday, about one a.m., the crew having got dry clothes and some refreshment, started again and reached the vessel about daylight, and about nine o'clock succeeded in rescuing the shipwrecked crew. The next day was occupied in getting the body of the mate's wife from the masthead of the wreck. I may say that the exertions of the smacksmen on the occasion were most praiseworthy, and that they seriously damaged their boat, the crew of which also incurred much danger in trying to reach the wreck. It is particularly worthy of notice that in bravely persevering in their exertions through three days these men lost many chances of making good salvage, several of the smacks of this port and that of Colchester having received more than £100 for salvage during this very gale."

Various other rewards were voted for saving life from wrecks on different parts of the coast.

During the past month the institution has sent two lifeboats to the coast; one to Tynemouth, in Northumberland, and the other to Fleetwood, in Lancashire. The cost of both boats had been severally presented to the institution by a benevolent lady and gentleman.

Some beautiful verses and music on the lifeboat, composed by a clergyman, were submitted to the meeting. The author hoped by their sale to raise the cost of a lifeboat. They are published by Boosey of Holles-street. (See advertisement.)

The Rev. W. Jackson, of Heathfield, and the Rev. N. M'Gachen, of Portsmouth, had recently been delivering lectures on the lifeboat and her work.

The committee expressed their deep regret at the lamented death

of Admiral Sir Charles Sullivan, Bart., who for nearly forty years had been a constant annual subscriber of £5 to the Lifeboat Institution. During that long period he had assisted the institution, by its lifeboats and its system of rewards, in contributing directly and indirectly to the saving of nearly 13,000 shipwrecked persons on our coasts.

It was reported that a contribution of £5 had been received from the late officers and crew of H.M.S. *Alecto*, through Captain H. J. Raby, R.N.

Payments amounting to upwards of £1,200 having been made on various lifeboat establishments, the meeting broke up.

Valuable to a degree, said the Chairman, not to be expressed as are the services of this Institution, they could not do everything. Wrecks continue and lives are yet lost, while the uncertain fickle elements have to deal with the frail barks, whose loss to their owners is covered by our *system* (he would call it, to use no stronger term, which it deserved) continues to be the law of the land.

But we have graver matters than this before us, continued the Chairman. We have just found out (although it had all along been most justly expected) that the *Alabama's* deeds are all illegal! The vessel was illegally fitted out in our neutral (?) port of Liverpool, and there will be enough to adjust presently. An appeal to our Government respecting her, it appears, was made, but its decision came too late,—she was gone. No wonder then that we read in the *Liverpool Journal of Commerce* that—

"Her Majesty's government have issued orders to their various agents at the ports of the Western Islands, that if the Confederate steamer *Alabama*, or '290,' should enter any of these ports, she is at once to be ordered off, and not allowed to take in coal or provisions. The order further states that if the *Alabama* should call at Fayal, or other ports, they are to inform Captain Semmes that if, after this notice, he should destroy any merchandise which may be consigned to British merchants in neutral vessels, her Majesty's government will at once take steps to capture and destroy the steamer under his command."

Here then, continued the Chairman, are some of the after fruits of our sympathy. There will be a day of reckoning; already it appears notice has been given on the part of the American government that the claim for the restitution of the value of all the captures of the *Alabama* will be made. Let Liverpool adventurers see to it. We ourselves have in former days set the Americans the example of a similar demand, for about the close of the last century they were compelled to accede to the validity of such claims that were made on them by our government. And without doubt in justice we shall have now to meet them.

And whose are they, continued the Chairman, those of a people so closely allied to us that they do indeed sympathise with that distress which has been occasioned by the war which is raging in their own country,

and this sympathy is fast assuming the form of a shipload of food and clothing, which are preparing to be sent to Liverpool. Out of their own abundant harvest with which Providence has blessed them, they are not forgetful of their "friends in England."

Good words cannot be too often repeated, continued the Chairman, and for this reason he must claim the indulgence of the Club, that he was sure would be acceded to him, when he submitted that they should preserve among their papers an account of an incident which had recently come off on the wide waters of the Atlantic on the occasion of the last birthday of our Prince of Wales, when he attained his majority. It has been truly said in one of our daily papers, the *Daily News*,—

Amidst the many signs, not only of alienated feeling, but of growing bitterness and hostility between the English and American peoples, any incidents that tend to show the irritation is after all only superficial, and that beneath the surface the old bonds of kindredship still unite the two great divisions of the Anglo-Saxon race, are peculiarly welcome.

On this occasion the American passengers requested to be allowed to open the proceedings by a toast in honour of Queen Victoria, and they were admirably represented by their spokesman, Mr. Samuel Bowles, of Springfield, Massachusetts. This is not the first occasion on which American citizens have shown their earnest desire to do honour to the Sovereign and Royal Family of these realms. It may be said, indeed, without exaggeration, that they have for years past spontaneously availed themselves of every suitable opportunity for expressing the feelings of respect and admiration they entertain towards the Royal Lady who has for a quarter of a century represented in so exemplary a manner the characteristic institution of this country. All who have carefully noted the public expression of American opinion on this subject, or who have mixed much in American society, can bear witness to the depth and reality of these feelings. With scarcely an exception, all the references to the Royal Family of England in American journals, as well as by American writers and speakers generally, are couched in terms of unaffected admiration and respect. Whenever occasion has offered, our American kinsmen have expressed the same sentiments by their conduct. It is sufficient to refer in illustration to the frank, cordial, and even enthusiastic welcome the Prince of Wales received on his visit to the States two short years ago. The intelligent and voluntary homage thus paid to the office, the person, and character of her Majesty by freemen and republicans is far more significant, is of infinitely higher moral value, than the blind and merely traditional feeling of loyalty that prevails so largely not only in continental states but in our own country. The sentiment which animates the Americans is not the blind adoration of mere rank, wealth, and social splendour, apart from all considerations of public dignity and private character. It is the respect paid by an enlightened and law-abiding community to exalted official station and distin-

guished individual worth; to the First Magistrate of a free and independent people—the First Lady, the most exemplary wife and mother, in a land distinguished for its social and domestic virtues.

Mr. Samuel Bowles, the representative and spokesman of the American passengers on board the *Europa*, admirably expressed the deeper and more permanent sentiments cherished by his fellow citizens towards the English people and their Royal Head. His simple, dignified, and profoundly truthful reference to the enduring bonds that unite the two countries, and the large hopes and interests depending on their continued cooperation, are so seasonable at the present juncture, and reflect so completely the feelings and aspirations of all right-minded men in both countries, that it is a public service to reproduce them.—The event is thus related in a Baltimore paper:—

"The occurrence of the 21st birthday of the Prince of Wales, during the late passage of the steamer *Europa* from Liverpool to Boston, was made the occasion of an interesting celebration by the passengers. Many of the latter were English army and navy officers, on their way to Canada, or the West Indies, who would naturally be unwilling to let such an occasion pass unnoticed. Captain Moodie, of the *Europa*, presided, and the close of the dinner on the 9th was chosen for the celebration, which was opened, by request, with a sentiment in honour of Queen Victoria from the American passengers. Mr. Samuel Bowles, of Springfield, Massachusetts, as their organ, said:—

"The American ladies and gentlemen of this boat's company claim the privilege, as they cherish the desire most cordially to participate in the festivities of this interesting occasion—the majority birthday of the future sovereign of Great Britain. We do not forget—it is too sad a fact ever to be forgotten—that the natural and general good understanding of the two peoples is now sadly and seriously interrupted. But we remember, also—and none of us who remember anything can fail to remember this—that the kinship of England and America is deeper than the interests of cotton, broader than the conflicts of parties, and longer, thank God, than the life of slavery. One in origin, one in language, one in religious thought and action, one in the traditions of the past and the hopes of the future, one in pioneership in all that is highest and noblest in modern civilisation, in all that enlarges the comfort and liberty of man as man, in all that elevates the social status and protects the individuality of woman, and in all that illustrates and advances the principle and practice of self-government—these two nations and peoples cannot long or widely be separated in sympathy or in action.

But I recognise also personal reasons for American respect and honour for the Royal Family of England. We should be false to our boast as the most gallant people of the world did we fail always to see and to say, that while Queen Victoria has occupied the most conspicuous position before the world of any person of her sex, she has also and always illustrated and honoured every virtue of woman-kind—

being at the same time the most august of sovereigns and the most womanly of women! Nor does our cause for honour here rest alone on a sentiment. When the history of the politics of the two countries for the last two years shall be written, it will embrace a fact commanding the gratitude of every American and the pride of every Englishman. I refer to the circumstance that the dispatch, in which the British ministry, in obedience to the popular feeling, and as they thought to the national honour, proposed to demand redress from the American government in the now famous and once alarming affair of the *Trent*, was softened in its somewhat curt and harsh tone by order of the Queen, acting under the advice of her always wise and now lamented husband, the late Prince Albert. Thus, it was made easier for the American pride to yield, as it did yield, to the demand, and rescue the world from a war between its two most conspicuous and most intimately associated nations, which, as it would have represented no great principle, would have produced only disaster and ruin to civilisation. England has many things for which ever to thank that modest and accomplished personage, the late Prince Consort, but among them all there is nothing so great, and noble, and useful as this. And here at least America will ever vie with her in doing honour to his name and family. Thus justifying the sentiment as no cold formality, we propose, with cordial good will to herself, her family, her people, and especially to you her loyal and right royal subjects here present,—'The Health of Victoria, Queen of Great Britain and Ireland.'"

The speech and sentiment were received with much enthusiasm, and the Queen's health drank with all the honours. After this,

Rev. Dr. Leitch, President of the University of Queen's College at Kingston, Canada, rose and proposed the health of President Lincoln. In the course of his speech he said,—It was not for him to anticipate the issue of the present struggle between the two sections of that country. But this he would say, that he had faith enough in the race to which the Americans belonged, in the progress of humanity, and in the Christian faith, to believe, that though they might have to pass through a baptism of blood, they would yet assert their place among the nations of the world, and fulfil the high mission assigned to them by Providence in advancing the best interests of humanity. The American people were in process of solving great social problems, and the nations of the old world were deeply interested in the solution. It would be a great blow to civilisation were this people, who have inherited England's progressiveness and love of liberty, to be prostrated by disaster in their attempts to work out their national destiny. It is the sincere wish of every true Englishman that the Anglo-Saxon race may, in the new world, achieve results of which the parent stock may be proud. America had already done much for civilisation and the advancement of human knowledge. In no country was so much done for the advancement of religion. It is but reasonable to expect that the descendants of the God-fearing and earnest men who landed from the *Mayflower* at Plymouth Rock should inherit the qualities of

their pilgrim fathers. The American missions put to shame the richer churches of the old country. Although he disapproved of some parts of the American system of education, yet he would declare, after personal examination of the most famed systems of education in Europe, that in no country has there been manifested so earnest a desire to make all sacrifices to elevate the people by means of education. They had reason to thank Captain Moodie and the Cunard Company for affording such pleasant opportunities to Americans and Englishmen for cultivating one another's acquaintance. They too often formed ideas of one another from the exaggerated pictures of newspapers. The Americans were taught to regard John Bull as a disagreeable, surly, jealous, old gentleman, and the English to look on Jonathan as a forward, pretentious, upstart. But meeting daily around that board, and pacing the decks together, they discovered that their American cousins were wonderfully like themselves, and that national peculiarities formed but slight differences compared to the substantial sameness of character. He would always remember with pleasure the delightful intercourse with American citizens in sailing with these ships. If Old John more frequently sailed with Young Jonathan under the genial influence of Captain Moodie, most of the present misunderstanding and irritation would be removed.

Mr. Lincoln's health was then drank with loud cheering.

The toast of the occasion next followed from Captain Kennedy, of the British navy, who, with a fervent prayer for the long continuance of the life and reign of the mother and for an equally honourable and successful career for the son sovereign, proposed—"The health of Albert Edward, Prince of Wales."

At this the loyal English enthusiam and the American kindly sympathy rose to their highest pitch, and his royal highness was pledged in the most devoted manner.

Mr. Eben. F. Wright, of Boston, proposed the good health of Captain Moodie, the gallant sailor and the accomplished gentleman, to which, after the response of his admiring passengers, he responded in an effective singing of "Auld Lang Syne."

Mr. John C. Day, of Hartford, Connecticut, next, in feeling and apt language, toasted "The Ladies," and they acknowledged the compliment through Mr. Robert C. Winthrop, Jun., of Boston.

The singing of "God Save the Queen" by the whole company concluded the exercises, which were throughout of the most pleasant and gratifying character. So far as it was an exchange of good feeling between English and Americans, it was a drop of oil upon a troubled sea, but even such small contributions to international peace and good will, may not be wholly without usefulness."

It would be difficult to imagine a more truly royal and Queenlike act—a nobler manifestation of imperial wisdom and goodness, than the one here referred to. The Sovereign interposed to soothe as far as possible exasperated international feeling, and to prevent the useless

effusion of blood. Had the high feeling and the sense of public duty, which in this instance animated the Highest Lady in the land, been shared by the upper classes of her subjects, we should have been spared some of the most humiliating and disastrous exhibitions of sectional jealousy and hatred that have disgraced this country for many a year. Unhappily that supreme crisis in our recent history was marked by an unexampled outbreak of aristocratic prejudice, violence, and passion. Certain sections of the upper classes, and their organs in the press, did their utmost to exasperate the excited feeling of the nation, and provoke a war. For this purpose they indulged in unmeasured abuse of the American government, and malignant misrepresentations of the American people. The attempt was fortunately defeated by the good sense of the nation and the prudence of its Sovereign, but the injurious effects resulting from it have not yet passed away. The defeated faction still pursue, as opportunity offers, the same course of wilful misrepresentation from the same motives and with the same objects. But it is well the American people should know, as they are beginning to understand, that this policy of violence and passion *receives no countenance or support either from the Royal Head of the nation, or from the great mass of her sober-minded, industrious, and suffering subjects.* Whatever may be the case with other classes, the two extremes of the nation, the Royal Head and the suffering members of the community, are at least agreed in their desire and determination to maintain friendly relations with the American people in the time of their terrible national trial, and preserve a good understanding between the two countries. This may well be taken by right-thinking Americans as a set-off against the systematic efforts of some journals on this side of the Atlantic to embitter the temporary feeling of alienation in both countries, to sow the seeds of hopeless dissension, and produce lasting hatred between the two great divisions of the Anglo-Saxon race. On the other hand, we may fairly accept the expression of the deeper and more permanent friendly feeling cherished by Americans towards this country, as a set-off against the same sort of malevolent attempt on the other side of the Atlantic.

During the last two years there have been honest misunderstandings between the two peoples, and justifiable causes of mutual complaint. But where there is honesty of intention, and a really cordial feeling, such grounds of difference are soon adjusted. It is wilful, deliberate, and systematic misinterpretation that creates so much animosity, and produces such intense bitterness of feeling, and in this respect the "leading journals" on both sides of the Atlantic are about on a par. It is hardly surprising that what is written here by aristocratic organs in league on the Slave Power, should sometimes be mistaken on the other side of the Atlantic for the expression of public opinion, and produce for the moment a feeling of intense exasperation against this country. An instance of this may be found in the American news this morning, in the shape of an extract from the *New*

York Times. Such violent expressions reflect a feeling which, though natural enough, is essentially superficial and transitory. The deeper, more permanent, and enlightened sentiment of Americans towards this country finds expression in such friendly and dignified words as were spoken on board the *Europa* at the celebration of the Prince of Wales's birth-day.

Nautical Notices.

Particulars of Lights Recently Established.

(Continued from vol. xxxi., page 687.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
36. Great Orme Head	Beaumaris Bay	53° 20·6′ N., 3° 52′ W.	F.	325	24	Est. 1st December, 1862. (*a.*)
37. N.W. Light-vessel	Liverpool Bay	.....	R.	38	11	Est. 10th April, '63. Interval once a minute. (*b.*)
Hoylake Lts.	Ditto	.....	..	..	..	Est. 10th April, 1863. (*c.*)
Formby Light	Ditto	.....	F.	..	..	Est 10th April, '63. Instead of two yellow lights.
Crosby Light	Ditto	.....	F.	..	..	Est. 10th April, '63. Instead of red.
38. Nieuport	Belgium	51° 8·3′ N., 2° 43·7′ E.	F.	96	14	Est. 1st Jan., '63. *Red.* (*d.*)
39. Saigon, Cochin China	Cape St. James	10° 20′ N., 107° 4·9′ E.	F.	462	28	Est. 15th Aug., '62. (*e.*)
40. Nelson	New Zealand	41° 15·1′ S., 173° 17·1′ E.	F.	60	12	Est. 4th Aug., 62. (*f.*)
41. Hanois Rock	Guernsey	49° 26′ N., 2° 42·2′ W.	R.	100	12	Est. 8th Dec., '62. *Red.* Interval 45 seconds. (*g.*)

F. Fixed. Fl. Fixed and Flashing. R. Revolving. I. Intermitting. Est. Established.

(a.) 36.—The light will be a *fixed* light, showing white when bearing from S.E.b.E.¼ E. round South to West, and *red* from West to W.¼ N.

When eastward of Orme Head, the change from white to *red* arises upon the line of bearing of the fair-way Bell Beacon, off the entrance to the Queen Channel in Liverpool Bay. The red light will disappear if brought to bear to the northward of W.¼ N., giving warning of the approach to the northern edge of West and East Hoyle. If the red light be kept in sight, those banks cannot be approached nearer than one mile.

(b.) 37.—The N.W. light-vessel will be removed to off the West extreme of the Three and Four Fathom Tongue, in 6¼ fathoms at low water, with the change of the Orme Head light from white to *red*, and the masking of the Upper Hoylake light when bearing about S.S.E. The Orme Head light will bear West, 20 miles; Queen Channel bell beacon, East, 3¾ miles; Formby light, E.¼ S., 6 miles; N.W. buoy of East Hoyle, S.S.E., 4¼ miles; and Helbre Swatch fair-way buoy, S.b.E., 4¼ miles.

(c.) 37.—From the westward the Upper Hoylake light will appear suddenly when bearing about S.S.E., in line with the N.W. light-vessel, and the

N.W. buoy of East Hoyle; and from thence it will be seen round South to the westward.

From the westward the Lower Hoylake light will appear when bearing about South, on the fair-way line between the East Hoyle Bank and the Four and Six Feet Flats; from thence visible round south-westward.

Sight the Lower *instead* of the Upper Hoylake light for clearing the flats, and the Hoylake lights in line show the turning point from the Horse into the Rock Channel, between Spencer and Dove Spits.

(d.) 38.—The light now exhibited on the West side of the channel will become a tidal light, and will be kept lighted whilst there are twelve feet water on the bar. The present tidal light near the end of the jetty will be extinguished.

(e.) 39.—The tower is twenty-six feet high, and stands on the southernmost of the heights of Cape St. James, at 776 yards from the southern point of the cape.

(f.) 40.—The light is visible from seaward through an arc of 120° or when bearing from S.b.W.½W. round by East to E.b.N. easterly.

The tower stands on the S.W. part of the Boulder Bank, which forms the breakwater to the anchorage at about ten miles south-westward of Pepin Island, and half a mile N.b.E. of the powder magazine. It bears from the extreme of Cape Farewell sand spit S.S.E.¼E. easterly; and from the West entrance to Waimea River E.b.N. easterly.

The outer anchorage is in six fathoms water with the light bearing E.S.E.

Caution.—Mariners are cautioned not to shut the light in, nor to approach within the distance of one mile of the lighthouse.

(g.) 41.—The tower stands on the south-western rock of the Hanois Group, with Pleinmont Point bearing E.S.E., distant one mile; the Casquets N.E.b.E.½E., 21½ miles; Corbière Rocks, Jersey, S.S.E.½E., 23½ miles; and Roches Douvres S.W.½S., 20 miles.

The water is deep to a quarter of a mile of the West side of the lighthouse, but dangerous rocks extend in a S.b.W. direction to the distance of a third of a mile, also to the N.N.W. for three-quarters of a mile, and to the northward for one mile. Les Grunes du Bois, a rock that dries ten feet at low water springs, and which has hitherto been considered the northernmost danger off Guernsey, bears E.b.N.¼N. nearly five miles from the lighthouse; but as several dangerous sunken rocks have lately been discovered outside it (one of which, Boue Blondel, has only five fathoms on it at low water, and bears from the lighthouse N.N.E., distant 3½ miles), vessels passing westward of Guernsey at night, to clear all dangers, should not bring the Hanois light to bear westward of South until the Casquets lights bear E.N.E. Caution is also necessary during light winds to avoid being set towards the island by the flood stream.

The light is visible all round the western horizon, and obscured only to the eastward by the Island of Guernsey, from its North point bearing E.b.N to the southward as far as Pleinmont Point. The line of eclipse in this latter direction is S.E. from the light, passing 3½ miles to the south-westward of L'Etac de Serk, and over the Pierres de Lecq Rocks.

Pacific Ocean.

We find in the *Commercial Advertiser* the following reports of shoals, important to navigators.

The first is as follows, lying to the North of Isabel Island, the

principal of the Solomon Group, dangerous to shipping and new to the chart under the name of the Lass Shoal.

The brig *Wailua*, Lass, October 11th, 1861, discovered a shoal in lat. 7° 45′ S., long. 159° 54′ E., about half a mile wide, and in length as far as could be seen from the mast-head; it stands N.W. and S.E. We passed over it and found 11 fathoms water. About one and a half miles from where we were, the water had a milky appearance, and think a vessel passing over there would be likely to strike. Did not find this shoal on any of my charts, therefore ships passing that way will require to keep a sharp look out. At the place where we went over, the rocks were plainly visible under the vessel.

The next by the same vessel is off the N.E. coast of New Guinea. The account says:—

October 28th, lat 5° 40′ S., long. 146° 18′ E., during the night we discovered another shoal, not down in our charts. It is situated between Rooke and Lotten Islands, and is about half a mile in circumference, and is covered with trees.

The position given places it near the Astrolabe Gulf, but just within the coast line about Point Iris. We therefore preserve the record for future reference. The Lotten Island is Dampier's Rocky Island, called Lottin by D'Urville. The charts of these parts, however, are yet in a very imperfect condition, and especially that portion bounded by the Admiralty Islands, New Ireland, New Britain, and New Guinea, that appears to abound in detached shoals and small islands, of the positions and contour of which we are yet very uncertain. The following from the same vessel as the preceding is also new to the chart, and must have presented an interesting spectacle to the crew of the *Wailua*. The account says:—

November 5th, discovered another shoal to the westward of New Britain, N.W. of Nord Island, five miles off shore. This shoal is about half a mile wide, and five miles long, having the appearance of a half moon. We lowered a boat and examined it, finding about 10 feet water thereon. On approaching this shoal the man at the mast-head cried,—"There she blows!" but on nearing it we discovered it to be a boiling spring, constantly emitting water about 150 feet in the air, and on first sighting this it had just the appearance of a whale spouting. This spring can be seen about twenty miles off.

Such scenes are highly interesting, but are to be expected in a sea over a volcanic bed that will throw up a cone like Lottin Island, above 3,000 feet in height, in which the volcanic principle is evidently at work by the emission of smoke, and a large hollow on its N.E. side, the remains of an ancient crater. There is abundance of work here for the nautical surveyor.

NOVA SCOTIA, SOUTH-EAST COAST,—*North America. Shoals Reported by Captain Shortland, R.N., in Shelburne Harbour and Channel leading thereto.*

The following description of shoals recently discovered in Shelburne Harbour, on the S.E. coast of Nova Scotia, is by Captain Shortland, R.N., 1862.

Middle Rock, in the channel approaching Shelburne, is a small rocky patch of 2½ fathoms, low water springs, with the remarkable boulder on Surf Point bearing W.b.N. ½ N., six cables, and Sand Point N.b.W. rather less than a mile. It is about half way between the North end of MacNutts Island and Sand Point northward of it, a 3 fathom shoal extending out to it half a mile from the eastern shore, the rock forming its outer extreme. The depth at a cable West from the rock is 5 fathoms.

Hero Shoal is a small rocky patch of 2½ fathoms (replaced on the chart by H.M.S. *Hero* in 1862), S.W., rather more than half a mile from the southernmost wharf of Shelburne, and about one third across from the western to the eastern shore, with the tower of the northernmost church in Shelburne on with a white house on the high land north-eastward of the town, bearing N.E. ½ N. At a cable eastward of the shoal there are 6 fathoms water, and between the shoal and the western shore 3½ and 4 fathoms.

The tower of the southernmost church in Shelburne on with the white house on the high land N.E. of the town, bearing N.E. ½ N. leads a cable eastward of the shoal.

The following Notices to Mariners have been given by the Superintendent of U.S.C. survey, A. D. Bache.

In the approaches to Newport Harbour, Rhode Island, two rocks have been discovered by Henry Mitchell, Assistant U.S. Coast Survey.

No. 1. Is about 700 yards West from the Poor House on Coaster's Harbour Island, and 375 yards N.b.E. from red buoy No. 6. It is about one acre in extent, with 17 feet shoalest at mean low water. At the lowest spring tides there will probably not be less than 15½ feet over it.

It is nearly mid channel in the northern passage. To clear it, hug closely the bold shore of Coaster's Harbour Island.

2. Is nearly on the line between the Rose Island Spindle, about 325 yards from it, and Goat Island Lighthouse. It has two sharp peaks N.W. and S.E., 14¼ feet on the outer at mean low water. West of this rock the depth is 5 fathoms; to the northward, 7 fathoms; to the eastward, 8 fathoms; and to the southward, 7 fathoms water. It is outside of the line from Rose Island Spindle to buoy No. 3. To clear it keep the Goat Island side of the channel.

Shoal on the Coast of Maryland.—The *Baltic*, drawing 18½ feet water, Captain J. J. Comstock, is reported to have run aground on a shoal about two and a half miles due East from Winter Quarter Shoal, about eleven miles from the coast of Maryland. It is not laid down on the charts, but will be surveyed as soon as possible.

Appliances for Saving Life from Shipwreck on the Coasts of Denmark.

A notice to mariners by the Danish government states that at various places on the coast of North Jutland and on the isle of Bornholm, lifeboats are stationed for the saving of lives from shipwreck, furnished with the necessary apparatus for the purpose.

The stations are the following, viz.:—

I.—On the western coast of North Jutland.

Skagen*†	Klitmöller*†	Vedersö Klit*†
Kandestederne*†	Nordre Vorupöre*†	Söndervig†
Hirtshals*†	Orum Strand*†	Sönder Lyndvig*†
Lonstrup*†	Vester Agger*†	Haurvig†
Lökken*†	Agger Kanal*	Bjerregaard†
Blockhusene*†	Thyboe Rön†	Nymindegab*
Slette Strand*†	Flyvholm*†	Hennestrand†
Thorup Strand*†	Ferring†	Blaavandshuk*†
Lild Strand*†	Tuskjar*†	Rindby Fanö*
Hanstedholme*†	Bjerehuse†	

II.—On the eastern coast of North Jutland.

Aalbek*†

III.—On the isle of Bornholm.

Allinge†	Svanike†	Rönne*†
Gudhjem†	Snogebæk*†	

* Lifeboat. † Rocket apparatus for carrying a line.

If communication with a stranded vessel in no other way can be effected, a nine yarn line will be thrown to the shipwrecked men by the aid of a rocket apparatus; hauling on board this line, a 3½ inch hawser will follow, at the end of which a block is made fast, in which is the bight of a thin line. Both ends of this line are made fast on the life-chair, that with its thimble travels on the 3½ inch hawser. The hawser must be made fast on board the ship as high as possible, in order that the chair, if possible, may clear the surf. By the aid of the thin line, that passes through the block, made fast on the hawser on board, the chair can be hauled to and fro from the beach, and thus the communication for the saving of the crew is effected.

New Books.

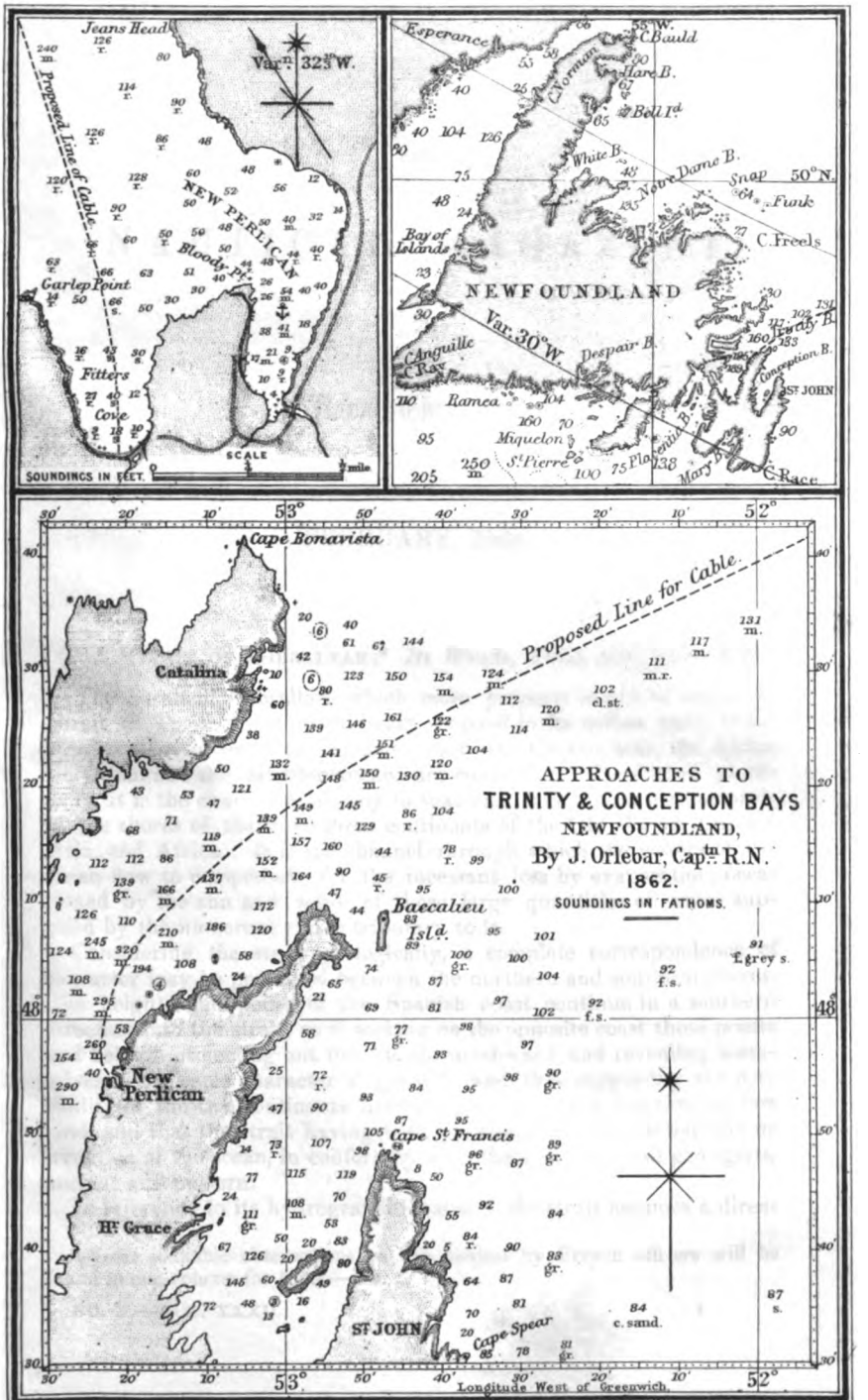
THE NORTH ATLANTIC SEA-BED, *Comprising a Diary of the Voyage of H.M.S. "Bulldog" in* 1860, *&c.,—By G. C. Wallich, M.D., F.L.S., F.G.S., &c., &c.* London, Van Voorst, 1862.

There is matter of fact about deep soundings that renders them valuable in more ways than one. To the mariner they are so because they go to prove or disprove the existence of *vigias*, those submarine dangers which full often have disturbed his rest, and they bring out submarine banks (such as the Porcupine Bank, shown in our November number), which are valuable as giving him infallible landmarks under water. But deep soundings are essential to ocean telegraphy, a science not dreamed of in days of vigias, and hence the voyage of the *Bulldog* before us, and the researches of Dayman, Pullen, and a number of our officers who have gone before them, not to mention those of the Americans. Another small but valuable instalment to the general stock in the Atlantic was that of the *Porcupine*, recorded in our November number; but all that we have named form but a small portion of those which would be acquired were the Atlantic sounded as it should be; and the philosopher, the electrician, and the mariner must content himself with the acquisition he has already made in this subject, and wait patiently till opportunity contributes to his store.

The *Bulldog's* voyage before us seems to have been occasioned by the proposal for a northern route for a telegraph cable,—which some daring theorists would consign to its office amidst the perils of ice! Well, there is no accounting for visionary schemes, unless it be that different views are entertained by different individuals, some of whom witness conditions of things different from each other, and others have not the advantage of witnessing them at all. Then the officials who would have to inhabit the localities of the stations. We fear they would be something like the unhappy Dutchmen whose story is related so graphically by Lord Dufferin, on his visit to Jan Mayen. How long would they survive the period these lasted? Let the proposers try the experiment.

But the *Bulldog's* voyage, as related by Dr. Wallich, is replete with interest. Under the able management of her commander, Sir Leopold M'Clintock, how could it be otherwise? Arctic experience had well qualified him for his charge. And the science of the naturalist has been no less ably supplied by Dr. Wallich, who glories so much in a single specimen of one of the deep sea fauna as to make it the subject of a whole plate to itself. How all the specimens of these organic elements of the North Atlantic treated on by the Doctor were obtained—how they affect the subject of marine telegraphy—how the difficulties they were collected under were overcome—and how ably they are treated on, we must leave to a perusal of the Doctor's narrative. He is evidently so warm an enthusiast in this interesting branch of natural history, that in our desire to see this kind of nautical investigation followed up, we hope he may have ample opportunity hereafter of gratifying his wishes in following a science so much in accordance with his taste, as is displayed in the work before us.

PROPOSED SITE FOR THE WESTERN TERMINUS OF AN ATLANTIC ELECTRIC CABLE.
TO ACCOMPANY CAPTN ORLEBAR'S REPORT.



Malby & Sons, Lith.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

FEBRUARY, 1863.

The Strait of Gibraltar:* *Its Winds, Tides, and Navigation.*

The Strait of Gibraltar, which more properly might be called the Strait of Tarifa—this town being situated in its widest part, is the *Fretum Herculeum* of the ancients, by which the two seas, the Atlantic Ocean and the Mediterranean, are connected. Considered physically, it is the channel of supply to that vast lake which washes parts of the shores of the three great continents of the Old World, Europe, Asia, and Africa. It is the channel through which the waters of the ocean flow to compensate for the incessant loss by evaporation, occasioned by the sun and wind, of those large quantities of water supplied by the numerous rivers tributary to it.

Considering the strait geologically, a complete correspondence of character may be perceived between the northern and southern shores. The heights and points of the Spanish coast continue in a southern direction into the strait, as if seeking on the opposite coast those points and heights projecting out there to the northward, and revealing themselves in the same character of ground; and thus suggesting the possibility of the two continents having been connected together by low land, and that the strait having been produced by some earthquake or irruption of the ocean, in conformity with the opinions of all geologists, ancient and modern.

In reference to its hydrographic features, the strait assumes a direc-

* Some valuable observations on this subject by French officers will be found in our volume for 1859.—Ed.

tion nearly East and West, forming a wider opening on its western side, where the waters of the Atlantic accumulate, so as to drift with greater rapidity through the narrower part by Tarifa.

Limits and Extent of the Strait.—The huge walls of the strait on the North consist of a part of the coast of Europe, and on the South of a part of that of Africa. The first, which includes that between Cape Trafalgar on the West, and Point Europa on the East, is longer and more sinuous, projecting considerably to the South, and comprehending a distance of sixty miles, including its bays. The second, limited on the West by Cape Spartel and on the East by Point Almina de Ceuta, is shorter and straighter, being only forty miles long.

The Spanish coast between Cape Trafalgar and Tarifa follows the direction (with its points) of S. 60° E., and that lying between Tarifa and Point Europa N. 63° E.; so that Tarifa occupies the vertex of an angle of 123°, by which the North shore of the strait juts out to the South.

The coast of Morocco from Cape Espartel follows the direction of N. 72° E. as far as Point Alcazar, from which it turns northward (N. 52° E.), soon to take a more easterly direction and terminate in Point Almina. And thus the African coast gives to the current of the strait its most direct course through it, which course may be considered as about W.b.S. and E.b.N.

Breadth of the Strait.—The western mouth of the strait may be considered as formed by Capes Trafalgar and Espartel, which bear from each other N. 12° W. and S. 12° E., distant apart 23¼ miles. The eastern mouth, limited by Points Europa and Santa Catalina, bearing also N. 12° W. and S. 12° E., is 12½ miles across. The narrowest part of the strait is between Point Canales, in Europe, and Point Cires, in Africa, 7½ miles from each other. The breadth at Tarifa, between this island and Point Alcazar on the coast opposite, is 8⅔ miles, bearing N. 5° W. and S. 5° E. of each other.

Winds.

It may be truly said that two winds prevail constantly in the Strait of Gibraltar. They are those from East and West, being called by local seamen *Levante* and *Poniente*. These winds are, generally speaking, the results of those from N.E. and S.E., as well as from N.W. and S.W., that are blowing outside the two ends of the strait, and which on reaching the narrows of the strait become East and West. Nevertheless, strong south-easters do not fail to blow in the strait, producing serious damage in the Bay of Algeciras, particularly in winter; as well as south-westers quite as severe, and commonly called *Vendavales*.

A multitude of observations have been made, both at Gibraltar and Tangier on the strength and duration of each of these winds; but the results do not yet afford means for establishing any fixed principle as to their periodical changes.

According to those made at Gibraltar, it appears that easterly winds prevail during July, August, September, March, and December; and

that in the other months East and West winds prevail alternately, but mostly the latter.

At Tangier, according to the observations of Senor Luyando, in 1825, there were 134 days of East wind, 195 of West, and 36 of variable, the easterly winds of May and June being exceedingly strong. There have been years which navigators called years of easterly winds, when these have much prevailed in the strait,—vessels being rarely seen in the Bay of Algeciras detained from running to the West.

Other years again there have been called years of westerly winds, from these predominating, when it has been especially difficult for vessels to get from East to West in the strait, the bays of Gibraltar and Algeciras, and the Spanish coast near the strait numbering hundreds of vessels waiting a spell of easterly wind to get away, without enumerating instances of single vessels having been kept one or two months waiting to clear so short a distance.

Easterly Winds of the Strait.—The easterly wind has always been dreaded by the navigator, as much from the murky weather it brings and its endurance, as from its strength and the damage it does, being called by a Spanish author (Lopez de Ayala) the tyrant of the country. When these winds commence in the eastern part of the strait they are accompanied by dark clouds, loading the atmosphere with humidity and covering the hills, being the more compact the harder the wind blows. Their approach is announced by light clouds, which insensibly accumulate about the summits of the mountains of Gibraltar and Algeciras and the hills of Estepona and Bullones. When all these heights are covered the East wind is upon them; and they are usually light (called *Chocolutero)* if the clouds do not pass away with a heavy shower, or if they remain on the slopes and recesses of the mountains. But if they top the mountains like a plume and the mountains show a clear space between the summits and the clouds over them (called *La Montera)* the Levanter will be very strong. All these distinctive features of this wind last while it blows, and disappear as soon as it is over.

The Levanter once set in goes on gathering strength in the strait in proportion as it penetrates into it, becoming strongest in its narrowest part. So much is this the case that vessels making for Tarifa are obliged to take in small sails and look to the larger ones if the wind is aft; or to close-reef them and even to bear up if going by the wind. Beyond the narrows the wind is not so strong, and more manageable on approaching Cape Trafalgar, with a totally different character. Off this cape the dark heavy clouds with which Algeciras and the African coast are covered all disappear, as if there were some barrier to them not to be overcome in the meridian of Tarifa: the sky becomes serene, the air is dry, and the wind abated considerably; these conditions becoming still more evident the further it is met with in the Atlantic.

Between Trafalgar and Cadiz the Levanter blows in squalls: the

sky keeps clear in the zenith, the horizon thick, the air parching to suffocation if it be summer. At this season the Levanter is stronger and more enduring when once set in, lasting in some years, often with great strength, in the Bay of Cadiz as long as fifteen days together. But it often happens at this season also that while vessels in that bay cannot be boarded by a boat, others will enter the strait from the eastward with an exceedingly weak easterly wind, which only gains strength as it approaches Tarifa or Cape Trafalgar.

It generally happens that when a Levanter sets in suddenly it blows very hard but not long. But if it does so stealthily and gently it lasts long, although it may not blow strong, or sometimes not even penetrate into the bays of Algeciras and Tangier. There it generally falls lighter at night and even freshens up in the morning early within the bays and along the coast, beginning to freshen up at sunrise.

In winter the Levanter brings rain and showery weather, especially when it draws to the S.E., from which quarter it is very trying in the Bay of Gibraltar, and especially so to those vessels either bound there or going eastward through the strait. In summer it is seldom attended with rain, and only occasionally at Gibraltar, Algeciras, and Ceuta, while at the same time to the West of Tangier the sky is perfectly clear.

Signs of the Levanter.—The Levanter gives abundant signs of its approach, but these are different in different parts of the strait. In the eastern parts of it, the heights of Estepona and Bullones, the rock of Gibraltar and neighbouring summits are covered with accumulating clouds, bestowing their favours occasionally in the form of heavy showers, especially after a calm has been prevailing, and sometimes a swell from the eastward anticipates the wind. On shore, and especially at Algeciras, Gibraltar, and Ceuta, the people know the approach of the Levanter as long as twenty-four hours beforehand. At Algeciras, in a calm night, with a clear sky, everything becomes damp that is exposed to the air and the streets become wet in the midst of fine weather; the morning and evening guns at Gibraltar will be heard, the sand of the neutral ground gives out a peculiar odour, and other little things occur that are sure signs of the Levanter being present within twenty-four hours.

In the western entrance of the strait everything is contrary to the foregoing. When, in Cadiz and its environs, the morning dew ceases and the atmosphere assumes a remarkable stillness,—when the sun at rising and setting has no defined edge (sailors call it greasy), so that it may be looked at with impunity by the naked eye, while the sky is clear in the zenith,—and when the gossamer web is observed about the rigging of ships,—the Levanter may be expected. All these indications continue while the Levanter lasts, the sky remaining clear, the ground damp, and the horizon hazy. It often happens, and particularly in summer time, that the Levanter does not reach Cape Trafalgar and the Bay of Cadiz until two or three days after it has been blowing at Algeciras; and even in this bay it will be blowing fresh

while in the other places it will be calm or the westerly wind is blowing. But at Cadiz and thereabouts it is very well known that the Levanter is prevailing in the strait from the whitish clouds, in the form of stripes of cotton, that hang about the summits of the mountains of Ubrique and the other heights of the strait.

Westerly Winds of the Strait.—Westerly winds are of a totally different character from the above when they penetrate into the Strait of Gibraltar. While in the eastern entrance of it they are dry and attended with a clear sky, in the western part of it they are humid and murky, attaining, like easterly winds, considerable power in proportion as they attain the narrow part at Tarifa, becoming then due West, although in the Atlantic Ocean they may be N.W. or S.W.

In summer time they are manageable with fine weather, of not much duration, and it is only when they last for fifteen to twenty days consecutively that they become inconvenient to vessels wanting to pass the strait from East to West. If at this season the West wind acquires much strength, it obscures the atmosphere, brings rainy weather, and throws a troublesome sea into the strait. But when they become changeable they do not last. These winds appear to get most head in the months of October, November, and December. Not so in the rest of the winter months. In this part of the year they are furious, particularly if they incline to S.W. In this season the westerly wind blows in heavy squalls; it brings showers and rainy weather, which obscures the whole western mouth of the strait. If it hauls to S.W. or S.S.W. it is called in the country the *Vendaval*, and then it becomes a gale, fearful for vessels which have to take the strait and not quite sure of their position. Along with the heavy sea which they bring there is a complete mist, which renders it difficult to distinguish the coast, and it becomes still more dangerous to the navigator the nearer he is to the coast of Spain. If he can make out Cape Espartel and get the bearing of it, he may be certain of getting into the strait without mistake, and will pass it with more security by borrowing over to the African shore, where he will have some little shelter from the sea

It happens sometimes at this season, when it is blowing hard from the S.W. in the Atlantic, that there is a strong Levanter in the Mediterranean. In which case, the division between them being in the strait, a strife for the mastery occurs in its narrows; and this continues for several days, much to the danger of navigators who are caught there at that time. The heavy rains and squalls from the S.W. are repelled with even greater strength by the easterly winds, which reach as far as the meridians of Algeciras and Tarifa, producing a contest in their vicinity, with tremendous squalls and whirlwinds, accompanied by a breaking sea, which endangers the ship that is thus exposed to two winds; it being no easy matter to make sure of reaching either the Bay of Tangier or that of Algeciras in such confusion.

If the S.W. wind hauls to the westward it will lose in strength; the showers become less, the weather becomes merely rainy, which

will only clear away as the wind becomes N.W. From this it passes to the northward, or perhaps comes off the land if the weather is inclined to settle and outside the wind has become S.W. But if the change has merely been apparent and the *vendaval* continues in the Atlantic, it again returns by the West to S.W., with additional strength and thickness in the atmosphere, rendering the coast navigation supremely dangerous, as well as to find an anchorage. If the wind settles itself in the N.W. the weather will clear up, although it may be attended with showers, occasionally tolerably heavy, accompanied by wind. This however subsides as soon as the rain is over, the weather becoming fine again, as on the coast of Cantabria. But if, after one or more days of a N.W. wind, it draws to the northward, the equilibrium of the atmosphere becomes established and fine weather follows.

In the western entrance of the strait in summer time, when strong S.W. and N.W. winds prevail, the heights of the coast become covered with clouds, and are concealed from the navigator coming from the westward. But in proportion as he penetrates into the Mediterranean, leaving the vicinity of the strait, these clouds disappear, the wind continuing the same, the sky becoming clearer and fine. In winter the *vendavales* penetrate more into the Mediterranean, and the showery, rainy weather accompanies ships as far as the meridians of Malaga and Cape de Gat.

Signs of the Westerly Wind.—In the eastern entrance of the strait the westerly wind declares itself in a manner as evident as the easterly. If in the course of this latter the clouds accumulated over Gibraltar Mountain and the Heights of Bullones evidently become less or dissipated, it is a sign that it will soon give way to the westerly wind; and it will be more certain still if those clouds entirely disappear. At Algeciras, Gibraltar, and Ceuta the atmosphere becoming dry is an infallible sign of the westerly wind, and also when that lassitude occasioned by the easterly wind is sensibly less, this is also a sign of the approach of the westerly wind; and when once set in the hills become clear, the sky also, and more so if the wind be N.W.

In the westeru entrance of the strait again, on the coast of Spain, the appearance of dews, even while the easterly wind is blowing and objects exposed to the air are still humid,—these are also prognostics of the westerly wind. This is the case especially in summer, when, at the end of an easterly wind, both coasts are covered with clouds, whitish and rounded; which, combining gradually together, collect in the western entrance of the strait, producing a wall of clouds which very soon envelope it entirely, maintaining this condition for a longer or shorter interval according as the westerly wind coming delays its approach.

Oscillations of the Barometer.—Winds from West to East by the North produce a high barometer, and it continues so during the easterly wind, falling with the opposite. Thus it is that a rising barometer indicates winds from N.W., N.E., or East, and the contrary

when it is falling. Even while rain may be coming down it keeps high with the wind at East or N.E.; but the moment these become S.E. or South it falls. As the winds from S.W. to S.E. by the South are the most humid and dirty, they are the easiest indicated by the barometer with a considerable fall. But such a change is not always an indication of the strength of the wind, this being mostly occasioned by the proximity of heavy showers.

(To be continued.)

JOURNAL OF CAPTAIN CRACROFT, C.B., OF H.M.S. "NIGER."—*New Zealand.*

(Continued from page 21.)

June 21st.—H.M.S. *Herald* is here, having lately returned from a most successful survey of the Coral Sea; and Captain Denham has been good enough to give me an outline of his operations in clearing up the question of the existence of certain doubtful islands and shoals that were supposed to endanger what is called the "Outer Route," to the eastward of the Barrier Reef. He has also obtained a vast mass of valuable information for the benefit of the navigators of Torres Straits, particularly in ascertaining that no current exists in the fair-way between the Cato and Bellona Reefs.

The shoals that may be now erased from the charts by his patience and perseverance include, among others, Young Reef, which the supposed discoverer should have known was Mellish Reef had his reckoning been correct. Lihou Reef is proved not to be in existence; it has evidently been confounded with Alert Reef. A strict search was made for the Diana Bank, but after traversing its assumed position over and over again, nothing could be seen of it, nor any soundings obtained at two hundred fathoms. Another terror to the navigator, known as Bougainville Reef, circumstantially described in the best charts, and even to be found in Horsburgh, must also be struck out of the catalogue of dangers. The inference drawn by Captain Denham is, that Holmes Reef has been confounded with the reef Bougainville saw.

The geographical position of Willis's group of islets has been determined. Many of these dangerous traps for shipping are only a couple of feet above the level of the sea, covered with enormous drift timber and debris of wrecks. The true position of the Osprey Reef has also been ascertained. This is one of the most dangerous places in the world to approach. Its margin is as smooth as a pavement; only shows at half-tide; while at high-water only three or four black heads of coral, about two feet high, are visible, and there are no soundings a ship's length from it. Raine Island was visited, and the beacon tower erected by the *Fly* and *Bramble* some fifteen years ago found in a

complete state of ruin. Supplies of provisions were, however, left for the use of shipwrecked mariners.

These and many other important results were not obtained without great privation and suffering, especially from scurvy and want of water, the surveys having extended over a very long period. * *

Notwithstanding our pressing claims, the *Herald* is to go into the dock at Cockatoo Island immediately, and we must wait till she comes out before our defects can be attended to. But the week's delay this involves gives us an opportunity to clear the holds and cleanse the tanks, a purification very much wanted.

Sunday, July 1st.—H.M.S. *Fawn* (17), long looked for, arrived to-day from England. She is a beautiful model, of 750 tons and 100 horse-power, nominal.

The *Moa*, brig, intended for our coal depôt in the Manukau, sailed this morning. I sent an officer and twelve men to navigate her across. This vessel, a very good specimen of colonial ship-building, was purchased by Mr. Arquimbeau, the Master of the *Iris*, before my arrival. Her cost, with everything complete, perfectly ready for sea, and 250 tons of coal on board, was £1,850, which ought to be considered a good bargain; in fact but for the owner's anxiety to retire from business, she would not have been purchased so cheaply. We shall have, however, I fear, much difficulty in keeping her supplied from hence, as no vessel can obtain an insurance for the West coast of New Zealand.*

Tuesday, July 3rd.—There is evidently something wrong with the machinery. In attempting to draw the screw shaft back since our arrival here, all the gearing carried away, and nothing but the screw-jacks could move it. So I hired a tug yesterday to tow us up to Cockatoo Island for five guineas, and we hauled into the dock this forenoon.

5th.—At daylight yesterday the dock was dry, and we were enabled to ascertain the defects. Found thirty-three feet of false keel gone forward, and the copper off in several places. Unfortunately, by some oversight, a piece of timber (iron-wood) had been left upon the blocks abaft, and the ship settling on it, gave us another defect to make good, as it cut deep into the main keel. Lifted the propeller, took out the bearings, and examined the end of the shaft. Found the brass casing broken to bits, and it was doubtless the fragments which had got embedded in the bearings that occasioned the late difficulty in turning the engines.

This brass casing was discovered to be defective more than eighteen months ago, when the ship was in dock at Whampoa, several small cracks being visible in it. But as there was no foundry at that time in China capable of making a new casting, thirteen screw bolts were

* A contract had been taken for the supply of 1,000 tons of coal from Sydney, and after some trouble and negociation we succeeded in getting a vessel and cargo insured; but she was totally lost in a heavy gale, with all hands, about four or five miles North of the Manukau. This misfortune set the question of insurance at rest for ever.

inserted by Mr. Rock (Chief-Engineer), and the casing was rivetted firmly on the shaft, in hopes it might be made to last until the ship's return to England.

Fortunately there was an engineering establishment here ready to take the necessary repairs in hand; and Messrs. Russell, of George Street, undertook to complete a new casing, without having the shaft out, in about eight days.

Mr. Cuthbert contracted for the repairs of the hull, caulking, &c., and his bill amounted to £292 14s., shipwrights' wages being *seventeen* shillings a day while the ship remained in dock, and *sixteen* at Farm Cove. Caulkers, fifteen and fourteen, the same as last year. Messrs. Russell's account came to £60 5s., including £6 15s. for lengthening the stern davits. Their working engineers' wages are *eighteen* shillings a day.

A survey had been held on the remains of the galley, and her repairs were recommended to be done by Looke, who built her; which was carried out, at an expense of £15, and the boat is as good as new. A sixteen feet dingey was also purchased from Looke, to replace the boat blown away, for £18; and a twenty-six feet gig, built of teak in China, from Captain Harrington, Master of the ship *Castillian*, in lieu of a four-oared boat condemned as worthless, for £30.

The plumber's account, for repairing pumps, &c., was a heavy one, but plumbers' wages are £1 2s. 6d. a day.

So much for some of the expenses of our refit, with reference to which I can only repeat what I have said before, at page 123 of last volume, being more and more convinced that the sooner there is a proper naval establishment here, worthy of this great country, the better.

Late on the 11th the *Victoria* arrived from Auckland, having made the run in less than five days, the fastest on record. She brings most disastrous intelligence of our proceedings at the seat of war. Our forces have sustained a repulse in an attack upon a pah near the camp at the Waitara, and the loss is very serious. Between sixty and seventy men are killed and wounded, including among the latter Captain Seymour, of the *Pelorus;* and there is a very bitter feeling in the colony against ———, who, it is stated, marched with a support of 250 men to within a mile and three-quarters of the field, while the struggle was going on, there halted, and, without attempting to communicate with the camp, returned to Taranaki! * * *

As soon as the news had been telegraphed to Melbourne, Captain Norman was summoned there, and will take Major-General Pratt over immediately, to supersede Colonel Gold in his command. * *

The *Fawn* got away on the 15th with a hundred men of the 40th Regiment, all that could be spared; indeed every available man has now been sent from Australia and New South Wales.

At daylight on the 17th we hauled out of dock and steamed down to Farm Cove, the engines working admirably. I had taken advantage of the detention in dock to get the caulking outside finished, and Mr. Cuthbert's foreman was all ready with a gang of hands to com-

mence the decks as soon as we anchored, so that not a moment was lost.

In consequence of a strike at Newcastle we had some difficulty in procuring coal; but succeeded, almost as a favour, in getting 124 tons Woollangong at 23s. and 93 tons Newcastle at 25s. per ton. Completed provisions on the 20th, and got our stores from the freight-ship *Chance*, which fortunately arrived in the nick of time to prevent more purchasing, our store-houses being cleaned out. This ship had emigrants on board also, and an objection was made to breaking bulk before they had all landed. But, under our peculiar circumstances, the rule was relaxed by the government officers.

On Saturday, the 21st, I made an attempt to put to sea; but the weather looked so threatening that I deemed it advisable to remain in port, and anchored in Watson Bay, just inside the heads, in seven fathoms.

Wednesday, July 25th.—Since anchoring here, it has blown a tremendous gale of wind, the worst that has been known at Sydney for many years. It may be said to have commenced on the 19th, when heavy banks of clouds collected in the S.W. and the rain came down in heavy squalls from W.S.W., interrupting our coaling sadly. During the 20th the wind shifted to the southward and the barometer began to fall. On this day and Saturday the rain continued falling in heavy showers, and the wind veered to S.E. On Sunday the wind continued to increase, veering to E.S.E. in the squalls, the rain falling incessantly. The sea between the heads had been gradually getting up, and in the afternoon ran fearfully high, breaking nearly across the entrance. The P. and O. Co's steamer *Ottawa*, with the mails for England, had great difficulty in getting out.

I had fully intended to start on Monday, but soon saw the impossibility, and gave it up. Two of the beautiful, fast Hunter River steamers, however, gallantly faced the sea, and one succeeded in getting clear out. In the evening I veered to six shackles after dropping the second anchor, housed top-gallant masts, and pointed yards to the wind.

Yesterday (Tuesday) morning the gale was at its height, blowing furiously. A small schooner had run the gauntlet of the entrance during the night, and at daylight was observed at anchor in a very perilous position, between the Middle and St. George Heads, being unable, I concluded, to fetch further in. There was a frightful sea running, and, viewed from our deck, there seemed every prospect of her going down bodily if her anchors held (she had two down), and if the cables parted nothing could have saved her or a single soul on board.

It was impossible to avoid feeling very anxious about her safety, so, after waiting till nine o'clock, finding she made no signal, and there being no signs of a lull in the weather, I sent the First Lieutenant, with a picked boat's crew, to offer our *gratuitous* assistance to remove her to a place of safety. Blake got back with great difficulty by the help of breakers veered astern; but to my surprise the offer was de-

clined. And yet I ought not to have been surprised at the refusal of the Master of this vessel to accept of my assistance, although freely and gratuitously offered, as it only confirmed what I had heard stated frequently by those who had opportunities of knowing, viz., the intense feeling of dislike that exists among seafaring men in this part of the world against men-of-war, and everything connected with them. I had now a proof of the fact. Here was an illustration of it, for this man declared (perhaps he did not consider his danger imminent) that he would rather founder than be under an obligation to one of H.M.'s ships! I felt deeply mortified, although the causes that have led to this lamentable state of feeling are well known,—are as plain as the vision that was written on the tables "that he may run that readeth it!" * * * *

About noon there was a sudden, almost an unnatural, lull in the weather, with a shift of wind to S.W.; but within an hour it was back to its old quarter, E.S.E., and blowing harder than ever. During this lull we observed a pilot-boat go alongside the schooner, which immediately commenced making sail, preparatory to shifting her berth; but long before she was ready to move the return of the gale forced her to furl everything again. In the mean time the news of a vessel in distress had spread, and hundreds of people, many from Sydney, had collected on the high ground near the lighthouse, expecting every minute, doubtless, to see her dashed to pieces,—an expectation which I had the satisfaction of disappointing. At 1h. 30m. p.m. the schooner hoisted her colours "union down." I was fully prepared for this; so, making a signal for a pilot, our fires, which were only banked up, were brought forward. In an incredibly short time (considering the dreadful weather) the anchors were picked up, and we dropped down into a good position for laying hold of her, anchoring about a cable's length to windward. The sea here was running fearfully heavy, and in an instant drew the clinch of the ring bolt for the deck stopper, taking the bolt clean out of the deck. I thought at first the cable had parted. The ship rolled her gunwales into the water, but hawsers were soon passed to the schooner, and before four o'clock the *Sancho Panza* was safe in Watson Bay; where I anchored also, close to the pier in front of a very handsome looking hotel.

This morning I went to the upper lighthouse, where the keeper, who had been fifteen years in his present situation, assured me that the gale of yesterday was by far the worst he had ever known; even the fearful gale in which the *Dunbar* perished could not be compared with it. The lighthouse vibrated from its foundations under the terrific force of the wind, and the lights were shaken down in the lamps. When daylight broke the scene was awfully grand: the sea was breaking over the heads, and even swept clean over the lighthouse. This may seem incredible, for its elevation is 347 feet above the level of the sea; but later in the day I witnessed this myself, and can bear testimony to its truth,—besides, tons of water fell in the gallery at the summit of the lighthouse, filling the tanks and drenching the houses on either side below. Across the heads the sea rushed with tremen-

dous velocity, more like great solid walls of water than waves, and breaking in fourteen fathoms. The lighthouse keeper and all the pilots I conversed with, declared they had never witnessed so grand a sight.

Saturday, July 28th.—It blew very hard again from the S.E. all Thursday, but being in complete shelter, we rode it out with only one anchor down. This morning there was a light air off the land, and as the swell had subsided, I made a start. It was very satisfactory to me to see the demonstration that the merchant ships made—and there was a large fleet windbound—on this occasion. They all hoisted and dipped their ensigns as we went out.

We had cleared the heads before 8h. a.m., when all sail was made, starboard, topmast and top-gallant studding sails set, the propeller lifted, and fires put out. It is fortunate we have a fair wind, as one of the boilers is defective and it will take several days to repair, the defect being in the interior steam pipe, difficult to work at, owing to the very confined space.

Saturday, August 4th.—A week out to-day, and we have made just 240 miles, the fair wind upon which I had congratulated myself having lasted not quite twelve hours. It has blown ever since most perseveringly dead in our teeth, varying two points on each side of East, with sharp squalls at times, and a current against us averaging twenty-five miles a day. The boiler was finished on Thursday and steam raised in it yesterday; but it still leaked, and was blown out again until Monday. * * * *

Wednesday, 8th.—The engineers worked till midnight on Monday to get the boiler ready, and I should have got steam up yesterday but the wind veered a little in our favour. Sighted Lord Howe Island in the afternoon. During the night the wind drew round to N.E., enabling us to lay our course, and at daylight Ball's Pyramid was in sight; but the breeze gradually declined, and steam was got up in the afternoon and a course shaped for the Three Kings. * *

Tuesday, August 14th.—We made the North Cape at noon yesterday. It was blowing hard from S.E., and with top-gallant mast housed and fore and aft sails set, we fetched into the middle of Exhibition Bay. Before 10h. p.m., with the help of a slant off the land, we were abreast of Cape Brett. Here we ran into a very heavy swell, which obliged me to ease the engines. The Poor Knights were in sight at 2h. a.m., and at daylight I bore up and passed inside these islets, though they are too small to afford much shelter. At 2h. p.m. we passed the Little Barrier, and at seven o'clock anchored off Auckland once more. Our passage has thus occupied nearly eighteen days, three of which were under steam. Found the *Iris* here, but the Commodore is absent, with nearly all his crew, at Taranaki.

On the 16th I went alongside the Queen Street pier, and completed coal very expeditiously. We commenced at 8h. 30m. a.m. and at 6h. 15m. p.m. we had taken on board 117 tons. Hauled off, and moored in our old berth.

The *Breadalbane*, a fine clipper bark, was also alongside the pier.

This vessel left Sydney the same day we did, but arrived here last Thursday (twelve days). On comparing notes and logs, I found that the Master of her, who is an old, experienced navigator in these waters, instead of standing away to the northward, as I was tempted to do, kept as near as possible in the parallel of Sydney, plying to windward in the light variable winds which prevailed for two or three days, when he caught a southerly wind which carried him nearly to the North Cape. The rule he invariably follows is to get away from the land as soon as possible, on account of the strong currents which prevail inshore, and which we experienced to our cost while trying to get clear of Lord Howe Island.

August 30th.—Last week the useful colonial steamer *Victoria* arrived in the Manukau from Taranaki, bringing Major-General Pratt to confer with the Governor. The Commodore came also, and having given me orders to go round to the Manukau, they both returned to the seat of war on Sunday, taking also a detachment of my men, in charge of Mr. Gassiot, Mid., to reinforce the naval brigade.

Saturday, September 1st.—The weather has been execrable since our arrival; not a day has passed without rain falling. During the intervals of fine weather I crammed the ship as full as she could hold with provisions &c., and this morning at seven o'clock got away from the anchorage. It was blowing hard from S.S.W., and we stood out under fore and aft sails, crossing the top-gallant yards, and making sail after rounding the North Head.

We averaged eleven knots all day, and were abreast of Cape Brett, passing within a mile of Percy Island, at six o'clock. The North Cape was rounded before 4h. a.m. on the 2nd, and after church we tacked about three miles from the northernmost of the Three Kings, and fetching about half a mile to windward of Cape Maria Van Diemen, passed between it and the five fathom bank, on which the sea was breaking heavily. Before dark we had a good offing, and were laying well up for the Manukau,—indeed, at one time, there seemed every prospect of our arrival there to-morrow. A shift of wind, however, at eight o'clock forced me to tack and stand off this dangerous coast for the night.

Sunday, September 9th.—The motto of New Zealand ought to be "*Varium et mutabile semper*," as regards weather, for never did I experience, in any part of the world, such rapid alterations in it. Since Monday we have had two gales of wind, both right in our teeth, the wind veering two or three points on each side of S.E. About 4h. a.m. on Thursday it blew very hard indeed, and brought us to a close-reefed main topsail and trysails. Saturday was a fine day, and I stood close in, and tacked not far from the spot where the French frigate *Alcmene* was wrecked, the low sandy spit off the Kaipara just in sight to the southward. In the evening the wind fell very light, and the prospect of being kept out only to experience more bad weather (which tears the ship to pieces) when so near our port, induced me to get the steam up; and this morning at 8h. 30m. we crossed the bar, anchoring below Popunga, off the saw mills, to wait for the tide,

which served in the afternoon, and at 4h. p.m. we moored in the narrow channel; about half a mile above Cape Horn.

In going up we met the *Victoria* on her way to Taranaki. The *Cordelia* is moored just above us, and our coal-depôt, the *Moa*, brig, above her. The gunboat *Caroline*, in charge of Lieutenant Medley, of the *Iris*, is close up to Onehunga, quite ready for service.

September 12th.—During our passage round from Auckland fresh intelligence of a very unsatisfactory nature has been received from Taranaki. To sum up in one word, we have been "stalemated" by these astute savages. It seems that they have all retired into the bush, leaving their empty pahs, which have been taken possession of with a flourish of trumpets! The finale to this disturbance is evidently as far off as ever. * * * *

Received twenty tons of Drury coal fresh from the mine; which I hope will turn out better than the last, as a new vein has been opened and report speaks very favourably of it.

On the 15th the *Wonga Wonga*, a small screw steamer chartered by the Government, arrived from Taranaki. She brought the Commodore up, who has had some difference of opinion with General Pratt, the Commander of the Forces; in consequence of which he is anxious to withdraw his men from the scene of action, and on the 17th I received orders to go to Taranaki for that purpose.

Tuesday, September 18th.—We got away at 10h. a.m. Inside the heads a smart little cutter, called the *Will Watch*, was lying becalmed, with a mail on board for the same destination. She had been already nearly a week trying to get out. I took the mail and towed her over the bar, which we cleared at 1h. p.m.; then made sail to a light northerly wind and banked the fires up. The next day we arrived at Taranaki and communicated with some difficulty, owing to the heavy swell. As the weather looked very threatening, I put to sea and remained standing off and on between twenty and thirty miles from the land till Saturday, when I stood in close under steam, but found the surf too heavy for any boat to be launched; so I steamed out again to an offing of about six or eight miles, and banked up the fires once more.

(To be continued.)

SHIPS' EQUIPMENTS, FISHING VESSELS, AND LIFE BOATS. *Jury Report. International Exhibition*, 1862.

(Continued from vol. xxxi, page 585.)

Means for Lowering Boats.—Much attention has been given during the past ten years to the improvement of means for lowering boats at sea, so as to afford increased safety to this usually uncertain, and often dangerous operation, and the Jury have much pleasure in recording some very meritorious inventions under this head.

It may be considered that Mr. C. Clifford was the first to produce a practical method of disengaging a boat from the suspenders at each end by a simultaneous action. Also the power of lowering and releasing at will from the boat, so as to enable the crew to watch a favourable moment for dropping the boat in the water, a point in the operation upon which so much of the safety of the crew generally depends.

Mr. Clifford [2,659] suspends his boat by single pendants, which after leading through blocks near the kelson, and the ends put through a hole in a windlass situated in the centre of the boat (much upon the principle of the string of a humming top), are wound up to the necessary length. A rope is wound round the windlass counter ways to the pendants, and it is by this rope that the crew in the boat lower her. To control the lowering process, and also to keep the boat upright, the pendants are passed through nipper blocks attached to spans, and so adjusted as to allow the pendants to render only sufficiently free as to give the crew proper control in lowering. A self-acting disengaging arrangement of gripes is provided to secure the boat when at the davits. Mr. Clifford's mode of lowering has been in practical use several years, and the Jury have awarded him a medal for his meritorious invention.

Following upon the steps of Mr. Clifford appear the methods of Messrs. Rogers, Watson, and Taylor, all of which are illustrated in the Exhibition by working models.

Mr. Rogers [2,799] obtains his simultaneous disengaging action by slip hooks, operated upon by connecting link bars on each side of the boat, and meeting in the centre, where they are confined by a common disengaging slip bolt, worked by a lever. The power of lowering the boat by the crew is not obtained in this plan. It has, however, been fitted to a considerable number of ships, and the reports justify the Jury in awarding "honourable mention" to the invention.

Mr. Watson [2,733] also employs slip hooks, which are operated upon by a rolling bar running along the kelson, and moved by a lever. Each end of the bar is furnished with a bayonet socket-like receptacle for the disengaging bolts, which are released by the turning of the bar allowing them to escape from slots in the socket. This plan does not appear to have been largely adopted.

Taylor's plan [2,799]. In this arrangement a bar in the bottom of the boat for operating on the slip hooks is also employed, but it differs from Watson's plan by the bar having a horizontal withdrawing action, produced by a disengaging arrangement in the centre of the boat.

Differing in some respects from the previous plans, appears another mode of lowering a boat, the invention of the late Captain Kynaston, R.N., C.B., a model of which is exhibited [2,742a]. This consists in the disengaging action existing in the hooks themselves, the slip action being produced by tripping lines worked by the crew in the boat. This mode has been spoken very highly of by many commanders of

ships, and its employment in the Royal Navy is becoming extended. Honourable mention is deservedly awarded to this efficacious plan.

Miscellaneous.—In the miscellaneous collection of nautical appliances brought together in the International Exhibition which, without presenting any marked features of progress, or superiority of design, are still worthy of examination and record, we may notice,—

A collection of well manufactured logs and sounding-machines by Walker and Son, Birmingham [2,809], on the well known principle of Massey. [Immediately subsequent to the close of the Jury's duty of examination, a divergence from Massey's principle, both in the log and sounding-machines, has been introduced by Messrs. Walker. In this new log the rotator is immediately attached to the register part or body of the machine, instead of being detached by the use of a small drift line. This is an ingenious and desirable economy of space and prevention from fouling. The new arrangement, which it is understood is undergoing trial, bids fair to be successful. In the sounding-machine the rotator is fixed in the centre, and thus immediately over the lead, instead of at the side, as in the old plan; the rotator consequently descends in a direct vertical line, which appears a decided improvement. Experimental proof is, however, yet required.]

A sounding log by M. Pécoul [France, 1,365]. This log (of brass) is similar in principle to the well known canvas bag and nipper of Burt, formerly much in use. The application of self-registering sounding-machines has now greatly superseded the above methods of obtaining depths; they are nevertheless useful adjuncts to a ship's fittings, and should not be lost sight of.

An ingenious but somewhat complicated "self-acting" log for registering long or short distances at sea, is exhibited by J. Adcock [2,774]. The log is affixed to the after part of the keel, and communicates by an air tube with an index placed in the cabins above. To the present time the working of this log has not been brought to a successful issue under all conditions of fair and foul weather, sail or steam; but from the reports of the few trials that have been made, the register of the ship's progress has in general been fairly kept.

A sphereometer, designed for the purpose of facilitating the practice of great circle sailing, due to Captain Berger, of the British mercantile marine, and exhibited by J. Solomon [2,804]. This is a half or whole globe (as convenient) of slate or enamel, with the parallels of latitude and the meridians marked for every 10°; an accompanying brass quadrant scale and protractor, afford ready means of determining the great circle course and distance between any two points on the earth's surface, sufficiently near for the ordinary purposes of navigation. For the purpose of elementary instruction, Berger's sphereometer is simple and efficacious.

The Nautical Instrument Manufactory at St. Petersburgh sends a sounding apparatus for procuring specimens of the bottom of the sea [338]. It consists of a rod, to which are fastened, on hinges, two hemi-spherical nippers; by the arrangement of a supplementary dis-

engaging weight the nippers are closed on reaching the ground, and retains the superficial deposit till brought to the surface. It will be remembered that a very efficacious plan for bringing up specimens of the bottom from great oceanic depths resulted from the voyage of H.M.S. *Bulldog*, under Sir F. L. M'Clintock, to Iceland and Greenland in 1861. As a knowledge of the nature of the deposits on the bed of the ocean is of great importance in relation to the laying electric telegraph cables, an efficient machine for procuring specimens is a valuable auxiliary in all preliminary inquiries and surveys.

A boiler for making tea, as fitted in ships of the Russian Imperial Navy [332], and arranged for providing warm refreshment for a large crew, is worthy of notice. The one exhibited, which occupies a small space, is said to be available for 350 or 400 men.

Proceeding with the examination of the miscellaneous subjects of Class XII., the Jury have awarded medals to a diving dress apparatus,—which has been found practically useful, and economical in its manufacture,—exhibited under the title of "Scaphandre appareil de plongeur," by J. M. Cabirol, Paris [1,369]. As also to the model of a cargo boat and arrangements for propulsion by steam on canals, exhibited by F. Bouquié, Paris [1,371]. In this application of steam power a small high-pressure engine is temporarily placed in the canal boat for the journey, which picks up a small chain laid along the bottom of the canal. This system, tending to supersede the employment of horses and much manual labour, it is understood has been favourably reported on in some of the canals of France.

A medal has been awarded to W. H. Ward, of New York, for his system of night telegraphy. Much ingenuity and patient labour is displayed in the whole of the arrangements, and although, from not having made experimental proof of the general efficiency of the plan, the Jury refrain from a decided expression of approval, they yet observe in it marked progress in the right direction for a good system of night communication at sea.

In the matter of ships' lights, so essential in these days of crowded coast navigation and rapid speed, some well manufactured specimens of night signal and storm lights are exhibited by William Nunn, London (not catalogued), to which honourable mention is awarded. The various lanterns and lamps used in the Imperial Navy of Russia [613] will be found to repay inspection.

Foreign Fishing Vessels and Boats.

Amidst the variety, or rather the profusion, of objects which the Exhibition displays, ships and vessels of all kinds are few in number and occupy but little space, notwithstanding the large share they have had in bringing these very objects to our doors from every part of the habitable globe, the inter-communication they keep up between remote nations, and the deep influence they have exercised on mankind by being the pioneers of discovery and the means of spreading civilization to the uttermost parts of the earth. And especially does this remark of scarcity of specimens apply to the various forms of native

vessels, boats, and canoes which the navigator meets with in the eastern seas and among the numerous islands in the Pacific Ocean, where each group has its peculiar form; some of which, when we were first introduced to them by our earlier circumnavigators, as Tasman, Vasco da Gama, Cook, La Pérouse, Dupont D'Urville, Lütke, and Krusenstern, were found to be of unusual shape, to have many good qualities, to be very picturesque under sail, and occasionally ornamented by most elaborate carving. As, from some cause or another, these types are fast passing away, it may not be without interest to mention some of the more characteristic of them, and to compare them with the more familiar European forms. At the same time we cannot but express our regret that so few specimens of them are to be found in the Exhibition of 1862; nor, indeed, as far as we are aware, is there anything approaching a complete collection of models of native boats and vessels in any museum in Europe. The best, we believe, is in the Louvre at Paris.*

On the western coast of Africa, in the deep rivers of Senegal and the delta of the Niger, the canoes are hollowed out of the trunks of large trees, and some of them, especially those used for war, are fine powerful boats, propelled by thirty paddles. On the shores of Arabia, the dhow and bagala of Mokha and Maskat, with a high poop and low very raking stem, appear to have been the type of vessels of the middle ages. One peculiar feature is having the maximum of displacement abaft. The *garúkuh* boat, with its long raking stem; the *beden safar*, or great fishing-boat of Maskat, with an upright stem and one large lateen sail; and the *dungiyah* of the Gulf of K'ach, have each their peculiarity. On the Malabar coast is the *patamar*, with its arched keel; and farther south the snake-boat, a long pirogue, which is light for use, on the back waters or lagoons that extend south of Cochin.

In Ceylon the outrigger becomes a prominent feature, and with its aid the boat carries a larger sail, in proportion, than any that swims the seas. It is of light cotton cloth, and its surface is more than 200 times that of the immersed section of the canoe and its outriggers.

On the Coromandel coast we meet with the catamaran or raft, with its brown triangular sail, which at a distance resembles a buoy placed to mark a shoal. Off Madras, with the Masulah or surf boat, apparently clumsy and frail, yet admirably adapted for landing on the beach, on which the rollers of the Indian Ocean unceasingly break. On the Ganges and Hooghly are numerous flat boats, a sort of floating houses, with very high, pointed sterns, low bows, and kiosk-like buildings amidships to give shelter from the sun. The war galley of the Birmans, with its thirty rowers, and the *shupán doghe*, or state yacht, are magnificent vessels in their way.

On the coast of China there is an entire change, and however fantastical the form, there is no want of intelligence in adapting the junks

* See the admirable work, *Essai sur la Construction Navale des Peuples extra-Européens*, par le Contre-Amiral Pâris, C.B.

for the work they have to do. They have their greatest breadth abaft the beam, the stern is round, and the bow sharp, with no hollow lines. The sail is of palm canvas, with bamboo lathes across it, sometimes upwards of thirty in number, like a persienne or venetian blind: a Tonkin coasting junk, with its radiating ribbed sail and the curved head drawn forward, looking like a gigantic nautilus. In the Philippine Isles, as in all the country of the Malays, double outriggers, or one on each side, are used, the weather one serving to give stability by its weight, the lee one by its buoyancy: the *tarayas*, or fishing rafts, with their two masts in the form of shears, their very long bamboo lateen yards curving right and left, and the fishing nets suspended from them, are very picturesque. The Malay coasters have triple masts in the form of a triangle, while the build of the boats is not unlike that of the fishing boats of Provence. In these seas, which are always smooth, the notorious Malay pirates have reproduced the biremes and triremes of the ancient ages. They are very long boats, and the banks of oars or paddles are placed one above and outside the other on the outriggers, and the boats attain a great speed.

To the eastward of New Guinea we meet with only the single outrigger, the happy invention of some savage Archimedes, which, by its leverage, enables the small and narrow canoes to carry large sails. In the Caroline Islands we first see the flying proas, the sail being an equilateral triangle, having its side equal to the length of the canoe. This enormous sail is balanced by a single outrigger in the form of a small solid boat, and the lateral resistance is further increased by the lee side of the canoe being straight and nearly upright, as they always present the same side to the wind, changing the rudder from stern to stem when necessary. The natives of this group, the sailors *par excellence* of the South Seas, go distances of 700 miles out of sight of land: and their speed is such that the name of flying proas given by the earlier circumnavigators hardly seems an exaggeration.

At Vanikoro, where La Pérouse perished in the year 1788, the ends of the canoes are decked, and in the centre is a raised caboose, from the top of which long slight spars curve down to the outriggers on each side, giving the appearance at a short distance of a gigantic spider walking on the sea. Amongst the Viti or Fiji Group, as well as in the Tonga Islands, the canoes are much longer, reaching to sixty and occasionally eighty feet; some elaborately carved, evincing the skill and patience of the natives, when we consider that their tools were only sharp stones or pieces of shell. Their war canoes are preserved from the sun and weather under beautiful roofs, supported on elegant pointed arches. In New Zealand the raised stem and stern of the canoes is often adorned with large tufts of feathers. At Taïti, in the Society Islands, and Hawaii, in the Sandwich Islands, large double canoes were used. In the latter group, Captain Cook, in the year 1778, saw a canoe 110 feet long in the fleet of King Otu; but all these have disappeared, and coarse fishing canoes are the only native boats now to be seen.

On the north-western coast of America the baidar or umiak, made of skins, is entirely covered up, except a hole in the centre, where the native sits and dexterously plies his double paddle; and this form prevails as far as the coasts of Labrador and Greenland. A specimen of a Greenland fishing canoe, fitted complete, is exhibited by the Danish Government. In Guayaquil and along the coast of Peru, the balsa or large raft, made of a peculiarly light wood, is in use; and where the surf is very heavy, as at Arica and elsewhere, two large inflated skins, placed side by side, and united by a light platform between them, carry the passenger with safety to the beach. Prince Edward Island, in the Gulf of St. Lawrence, exhibits a specimen of the North American Indian bark canoe.

Home Fishing Vessels and Boats.

The models of fishing boats are not near so numerous in the present Exhibition as those sent to the Exhibition of 1851; still there are some, both from the ports in the United Kingdom, from Norway, and other countries, which deserve notice, and which we shall have occasion to refer to a little later. The value and importance of the fisheries to every maritime country, not only in a commercial point of view, but as supplying the poor with cheap and nutritious food, and as a means of raising up a body of intelligent seamen, conversant with the set of the tides and inured to every hardship, ready to man lifeboats and carry succour to a stranded vessel in case of need, is of such interest to all seafaring nations, that a brief notice of the more important European and trans-Atlantic coast fisheries, with a description of the best forms of fishing vessels and boats in use, might well form a suitable preface to our Report. But the means are not available, and we are reluctantly compelled to limit our notice to the fisheries of the coasts of the United Kingdom and the surrounding seas,—as the trawling grounds frequented by the Penzance, Plymouth, and Torbay fishermen in the western part of the Channel, the Dogger Bank and North Sea fisheries, the herring fishery on the coast of Scotland, the Nymph Bank, off Waterford, and the recently discovered Rockal Bank, off the N.W. coast of Ireland.

The fishing vessels and boats of Penzance, Plymouth, Torbay, and the South coast generally, are remarkably fine vessels, whether considered as sea boats or pilot boats. The Torbay and Plymouth vessels vary from thirty to sixty-five tons old measurement; they are cutter-rigged, and keep the sea in the heaviest weather, trawling with a hawser of 100 fathoms in the midst of Channel gales. The following are the dimensions of the pilot and fishing cutter *Queen of the Craft*, of Plymouth:—length on deck, 70 feet; breadth, 16 feet; draft of water, 10 feet; 62 tons, old measure; value, about £400. On a wind these vessels spread 500 yards of canvas; but in trawling with a free wind they set a square sail and a studding sail over, making, with the other sails, a spread of from 700 to 800 yards.

Such vessels sweep the bed of the sea with a very large net, of from

eighty to ninety feet in length; it is of a purse form, with wings forty-eight feet at the mouth, with the same length of trawl beam. The management in trawling displays good seamanship, and skill and knowledge of the position of the shoals and rocks at the bottom of the sea, which is determined by land-marks and experience. The fishermen, with a large hawser and net astern, wear and stay their vessels, even in severe weather, with great ease. The quantity of fish caught is occasionally very great, amounting sometimes to between three and four tons on a day's fishing. The fish consist of hake in large quantity, turbot, soles, whiting, dory, brill, plaice, and other kinds of fish.

In addition to these pilot fishing cutters, there is a fine class of boats, generally yawl-rigged, termed the Cawsand Bay boats. They are usually clipper-built, vary from twenty-five to forty tons, and are rigged with a gaff mainsail: value, from £80 to £150, or more. Of late years light luggers have been employed, of about thirty feet keel, and drawing about five feet. There is another class of boat on the South coast, termed a hooker, also worthy of notice. These are generally clench-built, yawl-rigged, and are used for hook and line fishing in about thirty fathoms. They ride easily, and come to an anchor, often in severe weather, ten to fifteen miles, or more, from the land. They are thirty-two feet in length, and cost about £70.

Besides these vessels, more immediately employed at Plymouth and Torbay, there is a very fine class of lugger-rigged boats found between Portland, to the East, and the Land's End, to the West. The eastern luggers are from forty to fifty feet long, fifteen feet wide, and draw about seven feet abaft. They are usually sailed with a fore and mizen lug and jib. They are generally employed in mackerel fishing with drift nets. These nets are each about fourteen fathoms on the rope and four fathoms deep. 120 such nets are commonly laid out in a line, to which the boats ride during the night. They not unfrequently land in the morning from 30,000 to 40,000 mackerel, which are immediately sent off by rail to London and other parts. The Cornish or Penzance luggers are vessels of a similar kind, but with a narrow bow and stern. They are sailed in much the same way as the eastern luggers, and are very fast and weatherly. They likewise enclose large catches of mackerel and pilchards.

Well-smacks suitable for fishing in the North Sea were first constructed at Harwich in the year 1712. Fifty years later the first attempt was made to fish for cod with long lines on the Dogger Bank, an extensive bank about sixty miles East of Flamborough Head, and in the year 1798 the vessels had increased to ninety-six smacks. About this period Gravesend, Greenwich, and Barking sent out smacks of similar description. At present the number and tonnage of the well-smacks, and of their crews, and the names of the ports they hail for, are as follows:—

Name of Port.	*Smacks.*	*Tons.*	*Men.*
Harwich	5	300	50
Aldborough	10	500	90
Gravesend	10	600	60
Grimsby	14	900	130
Greenwich	41	2,066	370
Barking	180	10,800	1,620
Total	260	15,166	2,320

These vessels are employed—forty on the cod fishery, six on the haddock fishery, and the remaining 214 in trawling.

There are also many of what are termed dry-bottomed vessels, viz., smacks built without wells, all fishing with trawls in the North Sea. The number of these vessels, their tonnage, and crews, now nearly equals those of the well-smacks. Hull sends out 100; Ramsgate, 96; and Brixham, in Torbay, 113: averaging about thirty-five tons and five men each, or a total of 309 vessels, of 11,185 tons, and 1,488 men and boys.

With respect to the shore fisheries, the following statistical account of the number of fishing boats and their crews on the coast of England was prepared by Mr. John Miller, the intelligent General Inspector of Fisheries in Scotland, and is for the year 1850, since which time, it is believed, no record has been kept. It will be seen that in the nine districts into which the coast of England is divided, there are 4,698 boats, manned by 20,459 men and boys.

Name of District.	*Extent in Miles.*	*Number of Stations.*	*Boats.*	*Men and Boys.*
North Sunderland District	80	29	576	1,238
Scarborough District	130	10	283	950
Yarmouth District	180	34	859	5,216
London District	300	24	626	2,826
St. Ives District	200	37	940	3,233
Bristol District	200	16	193	500
Liverpool District	—	—	371	1,838
Isle of Man District	70	4	605	3,865
Whitehaven District	120	14	245	793

The above Tables do not include the Channel Islands' oyster fishery, which employs forty-two boats and 200 men. On the adjacent coast of France, at the four ports of Granville, Cancale, St. Malo, and Dinan, 426 vessels and 2,938 men are employed. The French have lately set a good example in establishing oyster parks on different parts of their coast with great success. In the year 1859 M. Coste,

of the Institute, who had been so successful in his endeavour to stock the rivers of France with salmon, was authorized by the Emperor to establish oyster beds in the bay of St. Brieuc, about thirty miles to the westward of St. Malo. These have proved so successful, that it is understood they are being extended to Brest, Ré, Oléron, and elsewhere on the West coast of France,* The only instance, as far as we are aware, that this has been done in England is at Alnmouth, where the Duke of Northumberland has recently formed oyster beds, which are thriving well. He has also established beds of muscles, to enable the fishermen to supply themselves with bait close at hand, without having to go to a distance to procure it.

In Scotland, on the East coast, the herring fishery is carried on from the shore, and with the exception of some half-decked boats at Fraserburgh, entirely in open boats, which, partly on account of the shallow harbours, are found by experience to be most convenient for the purpose. The boats vary much in form. The Buckie or Moray Firth boats appear to be the best, but the very raking stem and sternpost are objectionable, as rendering the boat unsteady when sailing before the wind. The boats are from thirty-six to forty feet in length, by thirteen feet breadth of beam, and they cost from £40 to £70. On the West coast four-fifths of the Loch Fyne herring boats are half-decked, greatly to the safety and comfort of their crews. The number of boats employed in the thirteen districts into which the East coast is divided is about 13,000; and on the West coast about 2,500 boats; making a total of 15,500 boats, manned by 60,000 men and boys.

In Ireland much of the fishing is carried on in open boats; but on the South coast the Kinsale hooker is used to go off to the Nymph Bank, which lies about forty miles off shore, extending from Waterford westward nearly to Cape Clear, and also for trawling along shore. The hooker has the reputation of being a good sea boat; but this would seem to be its only good quality. The bow is very full and the quarter so lean that the mast is not only obliged to be placed far forward, but to be stayed over the bows, in order that the boats when under sail may not be always flying up in the wind. On the iron-bound coast of the West, from the Shannon to Galway, the fishermen use a canoe—a framework of ash covered with canvas—which each time they land they are obliged to haul up on to the cliffs. Altogether the fishery employs about 12,000 boats, making a total for the United Kingdom of 33,000 boats, manned by 130,000 men and boys, a branch of industry well deserving proper encouragement, as affording an inexhaustible source of abundant and nutritious food.

It is to be regretted that few models of European fishing boats are exhibited, nor can we obtain any description of the build of the boats, nor any statistics of the fishing; yet France, Holland, and Sweden must have large fisheries. Norway alone sends models of fishing

* See *Voyage d'Exploration sur le Littoral de la France et de l'Italie*, par M. Coste, 2ème édition, Paris, 1861.

boats, several well executed specimens being furnished by the Naval Department [85]. C. H. Brunchorst, of Bergen, [Norway, 77] exhibits a model of a fishing boat with a good form of sail; and O. Holmboe, of Wessen [Norway, 83] a model of a Nordland or Lofoden fishing boat, for which the Jury have awarded a prize medal as representing the carrying boats used in the Norway fisheries.

The principal herring fishing stations on the West coast of Norway are at or near Stavanger and Bergen, and for the cod fishery at the Lofoden Isles. In a country with so extensive a seaboard, and with its numerous deep fiords, having a large part of the population constantly employed on the water, it might be expected that many lives would be annually lost by drowning, but we were not prepared for anything like the amount of loss that really does occur. It appears from a small periodical named *Volkevennen*, or "Friend of the People," published at Christiania, by Mr. Eilert Sundt (one of the Royal Commissioners for Norway at the International Exhibition), that the average annual loss from drowning for the last ten years, in a population of only a million and a half, has exceeded 700, and this chiefly by the upsetting of boats. In the single diocese of Tromsö, which is the most northern of the five dioceses into which the country is divided, and has a large extent of sea-coast, the accidents from drowning, on an average of ten years, were 206 out of a population of 132,242.

The cause of this startling fact, which could hardly have been credited but for the authority it rests upon, deserves to be the object of the most careful inquiry and philanthropic interference. Is it that the boats are faulty in form? or the fishermen and others reckless in their use of them? or that the men, as a general rule, cannot swim? or that there is a want of a Humane Society and the most efficient means for saving life in such accidents, and for restoring animation? Perhaps all these causes combine, and we would fain hope that not the least of the benefits of the Exhibition of 1862 may be that, having witnessed the various establishments and means specially provided for saving life from drowning in this country, including the swimming schools set on foot by the Duke of Northumberland in the North of England, those appliances may be extended to the coasts and fiords of Norway.

In the Australian colonies generally, and especially in Tasmania and at Sydney, there are many well built boats of good form, and well adapted to the fisheries in those seas; but the only specimens exhibited are two whale-boats by the Commissioners of Tasmania [194, 330] the production of the best builders of Hobart Town (Chandler and Miller). These boats are of colonial wood, the harpoons and all the requisite fishing gear being fitted by colonial workmen. A medal has been deservedly awarded to this creditable contribution.

In connexion with Tasmania, whale fishing is a branch of colonial industry deserving mention. The fishing ground extends from the shores of this noble island to the Antarctic regions, and attracts many

foreign whale ships, which rendezvous at Hobart Town. The value of the produce from the South Whale Fishery exported in 1861 was £60,350. At the present time there are twenty-five vessels, with an aggregate tonnage of 5,746 tons, engaged in whaling from the port of Hobart Town; and 131 whale-boats (including fifty-one spare ones) identical in all respects to those exhibited, are attached to these twenty-five vessels, each boat costing, when fitted complete, about £70. The boats of the Tasmanian fleet find employment for about 700 men. A colonial writer, in treating of this branch of industry, observes,—"Whale fishing is sometimes attended with great hardship, but being looked on as a colossal aquatic sport, and combining the excitement of bold and perilous adventure with the contingency of a good prize and promotion according to merit, it has always been a favourite pursuit with the young Tasmanians, from whom might be selected some of the smartest boatmen in the world."

The well known racing boat builders, Searle and Sons, of Lambeth, [2,757] exhibit models of boats well adapted as racing boats for lakes and rivers, for which the Jury have awarded them a medal. A. Wentzell, of Lambeth also, [2,762] has some beautiful specimens of the outrigger racing boats. Few of our youths from the public schools, or young men from the universities, that are not acquainted with the randan gig, or the sailing outrigger thirty feet long, or the eight-oared outrigger sixty feet long, for racing in smooth waters. William Biffin, of Hammersmith, [2,744] exhibits the model of a yacht's portable boat, constructed to be put together and taken apart in a few minutes, the object being to save hindrance to speed in towing, and convenience of stowage. The principle is also extended to racing boats, for the purpose of easy transit and saving expense in carriage, as also for the convenience of housing during the winter or when not in use.

A Reynolds [New South Wales, 277] sends a cedar skiff of colonial manufacture, which has obtained a prize medal for excellence of construction and workmanship. G. R. Tovell, Ramsay, Isle of Man, [2,728] exhibits, among other vessels, the model of a racing yacht, to which the Jury have awarded Honourable Mention for superiority of design. W. Patterson, of Bristol, [2,703] the builder of the *Great Western*, steamship, also exhibits models of yachts, in addition to his fine models of steamships. Bermuda also sends models of her well-known sailing boats. Considering the prominent part taken by the Royal Yacht Squadron and other yacht clubs in encouraging beautiful designs of vessels, this characteristic feature of our country is hardly sufficiently represented in the Exhibition. The Royal Yacht Squadron, with its ninety-two vessels, of 9,400 tons, and manned by 1,200 picked seamen, with the Thames, the Western, and other yacht clubs, do honour to the country, and keep alive that familiarity with the sea and with ships that is so desirable in an island kingdom.

(To be concluded in our next.)

Sailing Directions for the North Part of the Grenadines, *West Indies, including Bequia, Isle Quatre, Battowia, Baliceaux, and Rocks adjacent.*

Bequia.—Bequia Island, with a population of 875 souls, is the most important and largest of those Grenadines which are under the government of St. Vincent, being six miles South of and next to that island, six miles and three quarters long, and from one to one and a half wide in the middle, and having the peculiarity of verging to a point at both ends. The most valuable gift it possesses is a well sh·l-tered bay or harbour (Admiralty Bay) on its western side. The ten sugar estates in working order which it formerly had are now mostly in ruins, and given up from the extreme want of energy in the people, who care not to undertake any kind of work, being content to loll about the beaches, or lie asleep in their little thatched huts from one week to another. The very existence of these people, so far as aliment is concerned, is to an European a complete mystery.

Admiralty Bay.—Admiralty Bay, on the West side of Bequia, is about two thirds of a mile in depth, and when in the inner pool of deep water near the head, a ship would be well sheltered from all winds except from due S.W. Even when blowing in this direction (an exceedingly rare occurrence, and what we have not seen) it is questionable if much sea could reach her in the upper part of the bay, for it would be broken in passing over the Belmont Shallow and the two banks projecting from the West side of the bay would so far as sea or swell was concerned make natural breakwaters. This upper pool is not of much extent, but is deep enough for any ship, and the channel to it between Belmont Shallow and the opposite bank is clear and distinct, and even traceable from its darker colour and deeper appearance. This place could only be entered by a large ship under steam, or by warping; but small vessels may work in.

For a leading mark which will guide to the neck of deep water between the banks,—look for the principal house, about the middle of the head of the bay (not easily distinguished on account of the trees) and bring it on with the notch in the hill, (see sketch,) which will lead up to it; but trust more to the eye, and colonr of the water, when passing through; borrow on the Belmont Shallow side, the water on which appears mottled, from weeds and rocks. If only intending to stay a few hours, the vessel's head may be laid for the beach, and she may be made fast to one of the large trees there, as in ordinary circumstances; with the Trade wind blowing, this bay is quite smooth.

The next anchorage within the bay for a small class of vessel, is off the eastern middle sandy bay, called Tony Gibbons. This is a very good anchorage, and may be taken under sail, by running in in any direction from the West, and anchoring in 22 or 24 feet at a quarter of a mile off the beach.

Vessels entering from N.W. on the port tack, the usual method, or running free from St. Vincent, or the North end of Bequia, when near the N.W. point of Bequia, must not shut in the town of Kingstown, in St. Vincent, or Mount St. Andrews at the back of it, (see sketch,) to avoid the Wash Rock off the shore; nor should very heavy ships haul up too much after passing that shoal, as the first bank and its nucleus of 18 feet, stretching out from the Fort Point, for them is dangerous: nor can they pass the mark which leads up the bay. A heavy ship, if not intending to run into the pool, under steam, should anchor in the deep water of 15 or 16 fathoms, short of the 5 fathom bank extending from Tony Gibbons.

All the banks with less than 5 fathoms over them in this bay assist the navigation greatly by showing their light coloured water, and from a high deck they are very easily seen.

There is no good watering place in this bay. Bequia has no running stream. There are some wells at the head of the bay, but the water is not very good. Wood is plentiful, and may be obtained by permission of estate owners; it is doubtful if the natives would cut it, being too proud to do so. Poultry may be had occasionally in small quantities, fish sometimes, vegetables never.

Isle Quatre and Cays.—The next largest island South of Bequia is Isle Quatre, with 37 people living on it. There are three cays between it and Bequia, and an island called Pigeon Island at its West end. These, with part of Bequia, enclose a large space of water, which is moderately smooth and everywhere deep, forming an open but safe anchorage at any time except the hurricane season. Even then, with steam, it is as safe as any other place, and there is no difficulty in leaving it at all times. Four channels for ships (steaming) either way are formed by these cays; but sailing vessels should only attempt them when coming from East to West with a commanding breeze, as the currents are strong. As a general rule, pass in the middle of each channel, except between Petit Nevis and Quatre, when you must borrow a little on Quatre, to avoid the breakers off the S.W. end of Point Nevis, which is generally conspicuous. But as little can be gained either in distance or position by taking either of these small channels neither of them should be adopted unless it be necessary.

Friendship Bay.—Friendship Bay, on the S.E. side of Bequia, offers a good shelter for small vessels of 10 feet draught. Here the American whaling schooners often lie in to watch.

Between this group and that more to the eastward comprising the Mustiques, Pillories, Baliceaux, and Battowia, the depth is uniform, being about 20 fathoms. The only danger is the Montezuma Rock, near Mustique.

Pillories.—Next North of Mustique is the Double Rock, followed by the Single, and then the Pillories. Between the Double and Single Rocks is a channel of 7 to 8 fathoms; between the Single Rock and the South Pillory is one of 3½ fathoms. Between the Middle and North Pillory Cay, (the largest and highest,) there is a 5 fathoms

channel. All these may be taken by very small craft from East to West; but without being absolutely necessary no ship should use them.

To the N.E. of Great Pillory Cay is a group of low rocks, between which and the Great Pillory Cay there is a good channel, half a mile wide. But there is a rock of 8 feet, generally breaking, to windward or S.E.b.E. from Great Pillory Cay two thirds of a mile, and within that, at half a mile distant from the cay there is another awash (always seen). Ships should avoid all this part.

E.b.N. from the group of small rocks last mentioned, at one mile distant, stands the prominent high rock of All-awash, on each side of which are the principal channels of entry at this part. All-awash is steep to, and may be passed on either side; even a sailing ship, with the assistance of the ebb tide, can work safely out of these channels.

Baliceaux.—The next island to the North is Baliceaux, with a house upon it. A 5 fathoms bank extends off its western side, on the edge of which with caution a vessel may anchor; but the water is never very smooth. It is not, however, dangerous for light draft vessels. The landing is not very good. A few deer exist on this island, the only one of the group on which they are to be found.

Battowia and Rocks.—To the North, not less than half a mile distant, is the bold looking cliffy island of Battowia, with its Bullet, an isolated lump at its North end shaped somewhat like a conical bullet. This cannot he mistaken. North-west of the Bullet, at a cable and a half distant, is a breaker; but so close to the land that it could scarcely be touched by a ship unless she was keeping unreasonably too near the land. The little channels between Battowia and Baliceaux, on each side of Church Cay, are only fit for very small vessels running. Black Rock, North of Baliceaux, is steep to; between it and Cactus is a shoal of 2 fathoms.

A sugar estate was worked formerly at Battowia. It was to this island that most of the black Caribs were sent when captured in the St. Vincent war, before their final deportation to Rattan and Honduras.

The bank to the eastward of these islands, the edge of which is about four miles from it, continues its northern direction for about 10 miles to the North of Battowia, then turns back close by Bequia, without joining the St. Vincent Bank. The channel between the banks is, however, narrow, and not over 300 fathoms deep. In this channel the tide and current are almost always setting to the West near the middle, but the ebb tide makes up to the East, where it feels the ground in less than 70 fathoms. At 6h. full and change the ebb stream begins to run to the East, and advantage may be taken of it to work to windward during its continuance under the lee of Bequia, on the St. Vincent shore, and between Bequia and the weather cays; but a ship has little chance of making any easting when the flood sets down, combined as it is with the current.

When the ebb stream sets to windward, along the Bequia shore

against a strong Trade wind, a heavy sea, with great turbulence, will be found in this channel.

So smooth and deep is Admiralty Bay, Bequia, that a vessel may be hove down there in great security to the sandy beach. We found it very convenient for cleaning and repairing our small surveying vessels. There are no conveniences for the purpose,—there is the bare beach to make the best of, with some large trees growing near it, for use when heaving down to anchors and ballast. Wharves might easily be constructed here for coaling purposes, and Admiralty Bay seems well adapted for such a purpose, to supply a few ships; but the anchorage space is far too limited for any extensive number of shipping, thus rendering it unfit for a packet station.

The magistrate for the St. Vincent Grenadines, resides here, also a clergyman of the Established Church for those islands, who occasionally visit the others, so far as Union Island, the last belonging to the government of St. Vincent. The population of Bequia is more numerous and actually lazier than in the others. Formerly there were ten sugar estates in this island, in high cultivation, that are now almost abandoned; and the low prices of this year will most probably settle this as well as many of the larger islands. The proprietor cannot grow the sugar for what it costs him in tillage, not counting the outlay for lands, implements, stock, &c. In fact, the ruin of the Smaller Antilles seems certain, notwithstanding what may be said respecting the beneficial effects of measures. The people never move if they can help it. In every contract or bargain for work, they try to overreach. It is their constant effort to overcharge even when they can be persuaded to work a little. All this the unfortunate employer of labour has to suffer. Nor will the law assist him, for almost in all cases the magistrate decides for the Negro,—perhaps popularity may be at the bottom of this; but the only people who seem to manage the Negro are the traders, who charge him double value for all goods from abroad, and as they employ but little labour, they are not subject to the vexations arising from the application of it.

The islands here enumerated are of the same geologic character as the rest of the Grenadines; they are formed principally of trappean rocks, or rocks closely allied to that material, dikes of which protrude in many places. Battowia is very bold and cliffy; all are much worn; above the trap or greenstone in many places is seen a brown stone, or indurated clay, and which is not unlike what the terras of St. Vincent might become after long exposure. There is no doubt that the superficial rocks of the Grenadines are much older and more worn than either Grenada or St. Vincent; those islands possessing more recent volcanic ejecta on their surfaces. If we acknowledge, therefore, that the Grenadines may have been larger than they are now, it is probable that their breaking up and decomposition has materially helped to form the marine base around them, which in a section from East to West through an island looks peculiar. Their very singular character might also lead one to suppose that they had been more extensive and

possibly joined each other. We do not find many other descriptions of stone about these islands, other than what are stated. On the Great Pillory there is a quartz dike, and on that cay are also found some good specimens of rock crystal; and on Mustiques, some stones of reddish quartz.

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A TRIP TO TANANARIVO:—*Madagascar.*

(Continued from vol. xxxi., page 650.)

At Maromby I chose for residence a house which had belonged to an American, known by the name of Wilson, and who resides still at Tamatava. He had formed some plantations, the remains of which to this day prove the richness of the soil. The coffee shrub, the cotton, the orange, although left to themselves for several years, are still there in a most flourishing condition.

My Hova officer, Rasolo, little accustomed to my rapid travelling, and who had no particular desire to arrive so quickly at Tananarivo, tried in vain to persuade me that we could not cross two or three streams which contribute to the River Yark, and that it would be far better to wait for the following day, so that we might make sure of finding canoes. But I was deaf to all his reasonings, knowing well that once conceding to his advice would oblige me to do so on other occasions, and be placing myself entirely in his hands for the rest of the journey. We therefore set out again at one p.m. At two we crossed a bridge over the Anala-miorika rivulet, formed by the trunks of trees; a league further we met that of the Manabonitra, which is not more fordable than the former, and where two bad canoes made some twenty passages to take us and our luggage over; and at six in the evening we found ourselves at the River Andranamafona, one of the principal affluents of the Yark, if it be not the principal itself. The current was rapid, the river some thirty yards across, but the rains not having yet been heavy, there is no water but as far as the aiselles, and we can ford it without accident to reach the town of *Voizunker*, which is often called *Andranamufrana* (hot water), on account of its proximity to the river, which obtains its name from a spring of hot water near its banks. I intended to have visited this spring, but it was now overflown by the waters of the river. The officers of the English mission, who were here some months before me, say that it is highly ferruginous, with a temperature of about 160° Fahr. The qualities of this water are known to the natives, but I am not aware of their curative quality.

The path we had taken from Maromby traverses a hillocky country,

these features being more remarkable the further it is penetrated into the interior, without presenting any particular direction in its undulations.

All parts of the ground exposed to the sea breezes are covered by a herb of handsome appearance at this season, but without a single shrub: and here we first see some flint and quartz rocks cropping above the surface. In the vales a fine tropical vegetation is strongly developed, amongst which the cane is most conspicuous, and of so flexible a kind that the end of it bends down again to the ground: there is a kind of balisier, the beautiful large foliage of which so nearly resembles it as to be mistaken for the *banana*; its green leaves are used for domestic purposes by the Malgaches,—they serve as plates and dishes, and by working them in a particular manner, as spoons and goblets. When dried, they serve for thatching their roofs under the name of *fountsy*, being plaited together, thus forming a light cool covering, through which the rain does not easily penetrate.

In the same places we also see the travellers' tree *(urania speciosus)*. Certain writers assert that this flourishes only in dry parts; others, on the contrary, affirm that its presence indicates the vicinity of water. These two opinions are each as much exaggerated as the other. I have always found the travellers' tree in Madagascar in company with other species of palms, from the saline sands bordering the sea shore as far as Biforna, the limit beyond which the ground becomes too high for this species of vegetation. The travellers' tree, again, owes it celebrity entirely to the arrangement of its foliage, which retains for a long time the rain water, which may be obtained by making an incision into their interior. There is nothing in this fact which leads to the conclusion that this tree only flourishes in a dry or humid soil; but like the rest of the palms it likes the low grounds and to be sheltered from the wind.

Another palm of great utility to the Malgaches, is the *raffier*, a species of lagus. Its leaves resemble those of the cocoanut; they are cut when tender, and they are then cleared of the fibre, of which *rabana* is made cloth of different quality, from the coarsest kind used in making up packages of produce, up to the finest kind used by the people for their dresses, and sometimes by the upper classes. I have seen European dresses dyed with the most beautiful colour by indigo, and may be taken for lasting without the rustling noise occasioned by friction.

The rabana cloth is an important article of commerce between the different classes of natives. It is constantly met on the road, being carried by bearers on bamboos, bearing two large panniers at their ends, these being filled with the fibres of the rabana going to the Hovas who weave it into cloth.

13th.—We set out at the usual time, about daylight. In leaving Voizanker we had to cross the same little brook four times before we reached Ambatoherana, where we breakfasted. The country begins to wear an imposing appearance: the border plain becomes more ex-

tensive, the hills become higher, vegetation is much the same, but the soil is ferruginous, with debris of rocks near the surface.

In the afternoon, before reaching Mahela, we crossed a wooded mountain, being the first forest we have met with on our journey,—the path being sometimes several feet deep, is often very difficult to pass. A tremendous storm overtook us in this part of our journey, most happily for us where we had no longer to descend. But notwithstanding this, I often thought that the bearers and their burdens would be washed away by the flood of water which rushed along our path through the ravine from all parts of it, converting it into a most dangerous torrent. I must do justice to my bearers, for indeed it would not be fair to doubt their abilities, for subsequently I had abundant opportunity of judging of their powers in places of more difficulty than this, where I had not the least fear of their failure,—but, on the contrary, my confidence in them became stronger, and I preferred being carried over dangerous passes by them rather than crossing them on foot.

We slept at Ampasimbé a large town built on the bank of a small river in a charming locality. In the country over which we passed yesterday, on the summit of the hills we frequently observed groups of houses, from which there was a view of the whole coast, and which could be attained by open roads. These were inhabited by the rice cultivators, who isolate themselves thus to be free from surprise, and in a better position from whence to overlook the country.

However naturalists may reckon a dozen varieties of rice, I have not observed more than two kinds of this cereal under cultivation in the course of my journey, water rice and mountain rice. The former is only cultivated on the low lands, where there is a course of water either natural or artificial. Here the ground is divided by steps, with the view of turning to the best possible account as much water as possible for its benefit. The ground is prepared for the seed by being trampled out by cattle, and the irrigations are directed according to the wants of the plant. The mountain rice is sown on the sides exposed to an amount of heat or humidity necessary for bringing it forward. I have been often told that for the cultivation of this rice a commencement is made by setting fire to the trees on the ground to be cleared, that they again burn in the following year the new sprouts which have been thrown up, and then they sow successive crops of rice, but after this the land becomes sterile completely, as well for the rice as for any forest produce; it will produce nothing but grass; and this to a certain degree explains the reason of the quantity of completely bare ground in this part of the island.

14th.—We found ourselves at the foot of the first range of mountains between us and Madilo in good time. The road, which always follows the crests of the mountains, is rough and difficult, and, moreover, a small rain has been falling all night, and has made the ground slippery, and the bearers hold on by each other to reach the summit without accident. From this point, which is the highest that we

have yet attained, all the country to the East is seen, and the sea appears on the horizon, although we are 35 miles from it. The descent is more difficult than the ascent, nevertheless we arrived tolerably soon at Madilo, and we continued our route after a short rest. We passed on through Mazzevo without stopping, and arrived at Beferona, where we halted until the following morning.

This station is justly considered the most unhealthy of the whole route. Surrounded on all sides by mountains, it is seated on low ground, where a winding stream is constantly sending off its vapours over the village without the power of escaping, consequently the air one breathes there is thick and humid.

The people themselves seem to like increasing this unhealthy condition by keeping herds of cattle about their ill sheltered houses, that tend to keep up about them and in their houses a filthy and most repulsive odour. And as if these evils were not sufficient, Beferona serves as a refuge for the most hardy and expert thieves, of which on my return I was a victim. Whilst I was sleeping at the end of a long fatiguing journey, I felt my bed clothes lifted off without the least friction. This completely awoke me, and I opened my eyes only to see them quickly vanish. But in my half dreaming condition I considered it merely a mental hallucination, and it was not until fairly roused up by cold that I could persuade myself that they had in reality been carried off by some thief. M. Clement, who slept near me, was plundered in another way, for when he was about to dress himself for departing, he could not find the clothes he had taken off: all had vanished. I was the more surprised at the impudence of the theft, as we had with us three very watchful dogs.*

But these hardened robbers do not venture into the interior of houses, for there they have less chance of escape should they be discovered, and the law of the country admits of their being killed on the spot. Having made their observations on the places in the course of their journey as to the facilities they offer for their purposes, they make an incision in the wall of foliage forming the abode and introduce into it the long handle of a sagaye, provided with a hook at the end, with which they get hold of the articles they desire. They then conceal them in the brushwood, and make no attempt to sell them until the traveller of whom they have plundered them has left the country.

Beferona is a place that cannot be avoided, owing to its distance from other towns; but the inconveniences which we suffered there seemed to be thought nothing of by our bearers. They had their fresh meal of betza betza and their liberty till the following morning. This was quite enough to make them forget the fatigues of the two preceding days. Very soon, therefore, after our arrival they had turned the village upside down with their usual amusements; which

* Madame Pfieffer bears her testimony to the thieving propensities of these people. At Mad. Julie's, already mentioned, she lost her watch,—and at another place her parasol.—Ed.

consisted of a gross debauchery, and kept us on the watch much of the night. So, as soon as there was light enough to see our steps, I gave directions for our departure.

15th.—We are all in a bad humour—some of us from want of sleep, others from having forsaken a pleasant pastime for a journey full of difficulties. First, we had to cross the Beferona Brook fourteen times, as it runs directly through the valley, leaving only a path first on one side and then on the other side of it. Then we had to climb up another mountain similar to the former, but higher, for again we observed the sea from its summit, while beneath us the village had disappeared in the thick bushes we had left, to which the beams of the early sun had given the appearance of an extensive sheet of slimy water

It is after passing this mountain that the forest of Analamazota commences, which requires two days to cross. The roads are abominable, and especially in the rainy season. It is almost always necessary to mount or descend from the slippery roads, often made worse by roots of trees and rolling stones; the lower grounds, receptacles of water which cannot escape, often take the bearers up to the middle.

After crossing the two first chains of mountains, when passing through the little village of Irihitra, we came to a magnificent torrent, already swollen by the rains; and we crossed it by means of the projecting rocks in its bed with some difficulty, after using great precaution, for here utter loss awaits him who loses his footing. After this we passed the village of Ambavanikasa, and we arrived at the crest of the mountain, commanded by an enormous rock, forming a peak seen from a great distance, and which is known by the name of the Queen's Rock.

After descending the western slope, we crossed the little river Analamasota by wading up to the middle; and shortly after arrived at the village of the same name, situated in the midst of a magnificent plain, surrounded on all sides by forests.

This village appears to form the limit of the Betanimen nation, whose territory we entered at Andevorante. There is nothing in it remarkable, excepting its desirable position in the midst of the forest to which it lends its name. Its distance from Beferona is a forced stage for the traveller, and he generally finds there some provisions, as rice, fruits, &c., but it is one of those places where these things must not be reckoned on. I take care in the course of my journey to provide two days' allowance of rice for my bearers every time I can do so. They carry their rations in their bamboos without any inconvenience. In spite, however, of my precaution of having always twenty-four hours' provisions with us, I once found myself short when returning from Tananarivo. This was at the village of Voizanhar, where we were detained two days by a sudden swelling of the Andramafana. The inhabitants, who did not number above thirty, had scarcely provisions sufficient for the journey when we were obliged to stay among them. It was impossible to induce them to go and look for provisions for us in their stores, which were on the other side of

the river, and we were obliged on the second day to content ourselves with a stinted quantity of unripe potatoes.

It is in this village, which appears besides to be behind all the rest in everything, that all the people set to in a thunderstorm beating on a wall of packages to terrify and drive away, according to the ideas of the natives, the evil spirit that attends thunder and lightning. To me it seems they might as well agree that this was for the purpose of diverting their attention from danger, often real, that accompanies these storms in a country so mountainous and with a soil of so metaliferous a nature as that of Madagascar.

At Anamalazota an officer was presented to me from Tamatave, who was travelling by easy journeys to the capital to sell some merchandize. I invited them both to dine with me. A bottle of champagne appearing with the desert on the mat which served us for a table, excited the conversation, for, being tired, it had become rather slow. This officer had been some time affected with the malady called diabetes, and was anxious to know if I could afford him relief. But I was unable to give him advice, for this was the first time I had ever heard of the malady; but a few days afterwards a second instance of it was brought to my notice.

16th.—The second part of the forest which we had to cross to reach Ampatsipothe, was perhaps worse than the first, and caused us quite as much trouble. An hour before arriving at the village we had to cross a deepish stream by means of the trunk of a tree which was standing a yard deep in water; and at 10h. we left the forest for good, after crossing one of those dangerous morasses called *prairies flottantes*.

The surface of this stagnant water was covered with weeds, interlaced with each other, totally preventing us from attempting to cross it rapidly; and if, unfortunately, we placed our feet on a part less substantial than it should be, they sunk down and became entangled with long slimy roots; and it commonly happens that cattle get into these morasses and disappear, and contribute by the decay of their carcases to increase the infectious gases which are disengaged from them.

Having got clear of this difficulty, we had the satisfaction of finding ourselves on a beaten path, which followed the side of a tract of cleared land covered with ferns, while beneath us was a ravine, entirely devoted to the culture of rice. The brilliant verdure of this, with the little villages of the labourers, and all lighted up by a warm sun, soon made us forget the fatigues and difficulties of the forest of Analamazota, and I alighted from my *takon* as much for a change as for the relief of my bearers, who had to travel on this very narrow path.

Half an hour befor arriving at Moramanga I found before me on a sudden one of the most captivating scenes that I had ever witnessed. From the side of a mountain, the different slopes of which were covered with verdure, there lay before me a vast plain, magnificently

lighted up and lost to the view in the horizon on the right and left, limited by two mountains closely approaching each other, and so distinctly lighted that all their minutest details could be distinguished; whilst the second, much the higher of the two, lifted its huge summit to the sky, to all appearance insurmountable.

The village of Moramanga, standing on the slope, appeared within musket range, while other dwelling houses were scattered over the plain; and as Thursday was the market-day of this centre of population, we had the satisfaction of seeing at once the movements of the merchants and their customers, collected on a point of the plain to which the various routes lead from the environs.

It was the province of Emirne, which is distinguished above all others by its extent and the number of travellers that frequent it. Along the whole length of the valley is seen the yellow and red ribbons of ochre, now winding over the nearest mountains and then disappearing at their summits, only to reappear on the slopes of a more distant range, as lighted by the sun like golden threads, until lost in the blue tints of the distant horizon.

The name of this extensive plain is Ankaky, and it is said to continue as far as Foule Point. The mountains nearest to it are those of Sfodi; and on the horizon may be distinguished those of Angavec, the natural limit of the province of Emirne on the Ankova country.

We learn at Moramanga that most of the presents brought for Radama by the English mission from Mauritius remain at this village; although there is nothing outrageous in their size, two months have passed in bringing them to this place from Tamatave.

Radama, in order to increase his popularity, has abolished the established task journey, which had been submitted to from time immemorial by the villages on the route to Tananarivo. The officers, therefore, who were charged with the duty of bringing the presents to their destination have a plausible excuse for their delay, and they do not seem to trouble themselves much about the execution of the orders they have received.

17th.—We crossed the plain of rich pasture, which in all probability serves for the use of their horses. The soil is not damp or swampy, except towards the middle, where the little stream of Sapase, near the village of Andronokobaka, is crossed upon a bridge of poles; the village being on a hill at the foot of which the road passes.

A little before arriving at Ambatovina the country resumes its irregular features as far as Andakana, a village situated on the borders of the Mangour, where two or three Hova soldiers are charged to convey travellers across in canoes, which the inhabitants of the village are obliged to provide, without any other recompense than a gratuitous present from those whom they carry over.

This River Mangour is embanked, deep and rapid, at least in the season when we crossed it, and is the most important that we met on our way to Tananarivo. It may be about fifty yards wider than the Andakana, and, like all the great rivers of the island, has the

character of being full of ferocious alligators. It waters the country so high above the level of the sea that it is not surprising the navigation of it should be impeded by falls.

Scarcely had we crossed the Mangour than we came on a plain thrown into a confused condition by earthquakes of an old date, in the midst of which stood the village of Andramalasa, just clear of the mountains of Ankaye, where may be perceived the first entrenched grounds of the Hovas. These are generally squares of some twenty yards, surrounded by a deep ditch and perched on the summits of isolated hills, some of which have the remains of dwelling houses in them.

Having crossed this chain the little brook of Ambodinifody is reached, which is crossed on the trunk of a tree. Then, after two hours' walking over a plain, occasionally broken by abrupt hills, we arrived at Ambodinangave, at the bottom of a basin formed by the famous mountains of Angave, the peaks of which rise around us. The valley forms one extensive field of rice; in the midst a small rivulet of water meanders and enlivens the landscape. The mountains around us are not accessible on this side, except by pathways which zigzag up their sides; but no beast of burden, however lightly laden, could ever ascend by them.

We pass the rest of the day and the night in a dwelling which M. Laborde has here, and we were reinforced by some fifty bearers, which Mlle. Juliette had sent to meet us as soon as she heard of our proximity to Tananarivo.

18th.—The reinforcement of bearers which we had received yesterday enabled us to scale quickly the first slope of the mountains. The opposite side, much less steep and partially wooded, was connected with two or three other mountains, which were as easily crossed, before we gained the Angava country, properly so called. All this part was dotted with little hills crowned with square forts like those already mentioned; in which, if an enemy were lodged, he would defy their attacks and, especially in certain places, could easily stop the communication along the narrow road, full of obstacles, that I followed.

All the villages of the Angave country are surrounded by ditches, cut vertically, two to three yards deep and as many wide. Most of them have a wall in them of hard clay tolerably thick; and one often finds at some distance similar ditches as protection, and which no doubt are intended to serve as a covered way to their defenders.

Towards the middle of the day we had quitted the direct road to Tananarivo to pass by Soatsimanapiavana, which, without adding much to our journey, had the advantage of affording us a comfortable lodging, often occupied by M. Laborde under the government of the old queen; and moreover, what was not to be despised, the temporary company of three young Frenchmen, who had established themselves here to wait for the end of the winter.

M.M. Theodore and Paul de Cambour had left Reunion, with one of their friends, two months previously, to come and obtain from Radama the grant of some ground, on which they proposed to plant the sugar-cane. After having passed some time at Tananarivo without without terminating to their satisfaction the business on which they had come, they had returned to Soatsimanapiavana, with the intention of not returning to the coast until the fine season would admit of ships coming there without danger. These three gentlemen passed their time either in riding the horses which they had brought with them or in shooting, and never passed a day without abundant provision of game. They had experienced an ample share of fever, but their youth and temperament soon recovered them, and every day they commenced life afresh without care for the days that had preceded it.

At Soatsimanapiavana we had a striking instance of what energy and perseverance can effect. Having only at his disposal the raw materials supplied by the island and the native soldiers, without the slightest notion of what he would have them do, M. Laborde, without any other information than that which he could obtain from manuals, had made masons, stone-cutters, carpenters,—had taught them what they knew nothing about, to work lime, to make bricks, to work stone for arches, carpenters' work for houses,—had made them construct large buildings to be used as workshops, then large furnaces for melting iron ore, crucibles, and, in fact, all the materials and tools necessary for a cannon foundry.

After this M. Laborde turns hydraulic engineer, so as to find a moving power to work his drills, gimlets, &c. He makes his men form terraces,—ponds he transforms into reservoirs,—channels of water are formed at high levels, and these lead it with sufficient force to turn three large hydraulic wheels at his establishment, which set in motion all his machinery. M. Laborde has thus contrived, entirely by his own resources, supplied by the island, to produce pieces of artillery of a respectable calibre, mortars, and shot and shell measuring twelve inches in diameter.

He has also added to these works a glass factory, and has instructed the Hovas how to use the very pure sand with which the island abounds. In fact, a very handsome establishment has been formed for large mirrors to be produced by native art.

These different works belonging to the state, the workmen are all Hovas soldiers, who form a military town, where they live with their families. The activity and business which resulted had made Soatsimanapiavana a choice abode for the aristocratic Hovas under the late Queen, who was frequently there for relaxation from the ennui of the capital. Her son Rakolo, now Radama II., other members of his family, and the principal persons of his court, have now their residences there.

At the present time the new King, in order to impart a desire for agricultural pursuits into his army, has caused these useful establishments to be abandoned, as well as the cannon foundry, the utility of

which his pacific turn of mind could not enable him to comprehend. In fact, Soatsimanapiavana is going to ruins, and is now only inhabited by an insignificant population.

I was taking my siesta on a most delicious bed when the arrival of two Frenchmen was announced from Tananarivo to offer me their services, and to judge, no doubt, for themselves what could be the motives which had induced me to visit the capital at this season. M.M. Soumagna and Marius Arnaud offered me their congratulations, with those of M. Laborde, giving me good news of the French missionaries and of the manner in which strangers were generally treated by the new King. We afterwards all adjourned to the residence of M. de Cambour, where we found seven persons who could converse off hand of our common country, and express the pleasure of meeting me in this distant part. It need scarcely be added that the evening passed gaily, and that we separated for our homes at the latest possible hour.

(To be continued.)

Rewards for Saving Life at Sea.

Board of Trade, January 3rd, 1863.

The undermentioned rewards for saving life at sea have been recently awarded by her Majesty's government and the Board of Trade:—

To the master and crew of a Spanish fishing vessel the sum of £10 for their services in picking up at sea, from their boat, the crew of the schooner *Lavinia*, of Dartmouth, which foundered at sea on the 4th of September last, and landing them at Port St. Mary.

To Robert Hunter Beattie, master of the schooner *Kelton*, of Dumfries, a telescope, in testimony of his services in rescuing the master and one seaman of the *Elizabeth and Jane*, of St. Andrew's (N.B.), on the 25th of August last, and landing them at Liverpool.

To Captain C. J. Christianson, of the Norwegian brig *Anaconda*, of Porsgrund, a telescope, for his humanity in rescuing the master and crew of the barque *Collooney*, of Sligo, from their sinking vessel, on the 21st of August last.

To the crews of the smacks *Harlequin* and *Wave*, of Colchester, the sum of £5, to be divided between them in such portions as they may agree upon amongst themselves, for their services in rescuing the crew of the schooner *Wesleyan*, of Goole, abandoned at sea on the 17th of October last.

To Captain Georget, of the French schooner *Gazelle*, of La Tremblade, a telescope, in testimony of his humanity and kindness to the master, crew and passengers of the steamer *Lord Royston*, of Wisbeach, whom he rescued at sea, after the burning of their vessel, 29th of September last.

To Jean Mare Lupine, master of the French lugger *Volante de*

Dieu, a telescope and 50 francs, and 500 francs to be divided amongst the crew, (seventeen in number), for their services in rescuing the master and crew of the brig *Free Briton*, of South Shields, which foundered off Cromer, October 20th last.

To H. Wilters, master of the Oldenburgh galiot *Immanuel*, a telescope, in testimony of his services to the master and crew of the *Sedgefield*, of Sunderland, abandoned at sea October 20th last.

To William Cockram, chief boatman, coastguard; Jeremiah Driscoll, N. Henderson, P. Tobin, and Sutton Frizzell, boatmen, 10s. each, for their services to the crew of the *Industry*, of Padstow, wrecked in Ballycroneen Bay, October 19th last, and to John Donovan, commissioned boatman, coastguard, the sum of £2 and a bronze medal, for his gallantry on the above occasion, in venturing through the surf with a line from the shore.

To Thomas Boyes, master of the *Ellen Highfield*, of Whitby, a telescope, in testimony of his humanity to the master and crew of the *Pandora*, of Middlesborough, whom he rescued from their water-logged and dismasted vessel October 21st last.

To William Haycock, master of the smack *Valiant*, of Hull, a telescope and £5; to John Potter, the mate, £5; to William Pritchard, seaman, £3; and to John Brady and Henry Mood, apprentices, £1 each, for their gallant services in rescuing the master and crew of the ketch *Biddesfold*, of Arundel, whom they rescued from their sinking vessel on the 23rd of October last.

To J. Baptiste Andrissen, Master of the French lugger *Dieu Nous Protège*, of Boulogne, a telescope and 50 francs; and the sum of 500 francs to the crew (fifteen in number), for their services in rescuing the survivors of the crew of the brig *Hugh*, of Shields, lost by collision on the 19th of October last.

To Dr. Cros Marcel, surgeon of the French transport *La Charente*, a binocular glass, in acknowledgment of his humane treatment of three seamen of the barque *Woodman*, of Fleetwood, after their rescue from drowning on the 7th of September last.

To Captain Louis Lonais, of the French brig *Marie*, of Binic, a telescope, in testimony of his humanity to the crew of the barque *Hornby*, of Whitehaven, whom he rescued from their sinking vessel on the 2nd of October last.

To Mr. Purden, master of the colonial schooner *Sphinx*, a gold chronometer, in acknowledgment of his services to the crew of the ship *Swithamley*, of Liverpool, lost on the Blenheim Reef, near the Saloman Islands, 1st of July last.

To J. J. Buiten, master of the Dutch schooner *Orion*, of Veendam, a telescope, in testimony of his services in rescuing the crew of the schooner *Sea Nymph*, of Yarmouth, abandoned at sea 23rd of October last.

To Emile Thomas, master of the French schooner *Anne Marie*, of Granville, the sum of 250 francs, for his services in rescuing the crew of the brig *George IV.*, of Hartlepool, abandoned at sea October 22nd last.

To H. J. Seistrup, master of the Danish brig *Hvalfisken*, of Copenhagen, a telescope, and to the crew the sum of £1 each, for their services in rescuing the crew of the schooner *Jasper*, of Caernarvon, abandoned at sea October 23rd last.

To Emile Geree, master of the French lugger *La Reconnaissance*, a telescope, and to the crew (twenty-two in number) the sum of 20 francs each, in testimony of their services in rescuing the crew of the billyboy, *Olive*, of Hull, abandoned on the 20th of October last.

To Mr. William Swarbrick, master of the steam-tug *Wyre*, a telescope and £3; to the mate, first engineer and pilot, £3 each; and to the remainder of the crew (nine in number) £2 each, for their gallant and humane conduct in rescuing the master and crew of the *Pudyona*, of Lancaster, from their disabled vessel October 27th, 1862.

To the crew (six in number) of the Belgian fishing boat *St. Eloi*, the sum of £12, for their services in rescuing the crew of the brig *Odd Fellow*, of Portsmouth, abandoned October 19th last.

To Mr. Keith Stewart Douglas, master of the *Veronica*, of Liverpool, a telescope, in acknowledgment of his services to the crew of the *Nepaul*, of Liverpool, abandoned at sea October 3rd last, whom he picked up and conveyed to St. Helena.

To Mr. Hans Noble, master of the pilot boat *Hamburg*, of Cuxhaven, £2, and 25s. to each of the eight persons forming her crew, for their services to the crew of the brig *Emmeline*, October 25th last, abandoned off Heligoland 23rd of the same month.

To Mr. C. Botte, master of the Oldenburg schooner *Pfell*, a sextant, for his services in rescuing the survivors of the brig *A. Smithers*, of Digby, Nova Scotia, on the 21st of September last, and landing them at Brake, October 27th.

His Imperial Majesty the Emperor of the French has awarded to Mr. George J. Young, farmer, of Hubberton, near Pembroke, and Mr. Mark Roch, farmer, of Pennyholt, near Pembroke, a silver medal each, in testimony of their services in saving the life of Captain Alexander Vallet, of the French brig *La Force*, wrecked in Freshwater Bay, on the 24th of January last; also to Mr. James Blaxton, master of the *Eleanor*, of Workington, a binocular glass, for his services in receiving on board his ship, on the 14th of June last, the crew of the French brig *Courageuse Eugene*, of Cette.

The President of the United States has awarded to Mr. John Williams, master of the ship *Charlotte Ellen*, of Lancaster, a gold watch, in testimony of his services in rescuing the master and crew of the American ship *Marengo*, of Brunswick, in Maine; also to Mr. Robert Clark, master of the ship *General Neill*, of Glasgow; a gold watch, in acknowledgment of his services in rescuing the master, passengers, and crew of the American ship *Scargo*, of Boston; and to Mr. Thomas Russel Anderson, master of the *Broomielaw*, of Glasgow, a gold chronometer, as a mark of approbation for his services to the officers, passengers, and crew of the American barque *George*, of Boston, whom he took from off the wreck of their vessel on the 12th of January, 1861, and conveyed them to Tenerife.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*An Old Messmate Found—Address of the Chairman—The Late Gales—The Dawn of Reason for British Sympathy with their Friends in the North—Jonathan's Sympathy for John Bull—The Late French Invasion—The Late Mr. Green, the Shipowner—The National Lifeboat Institution—The Nigers in New Zealand—Jack Junk's Song—Captain Toynbee's Lecture at Calcutta—Destruction of the Lytham Lighthouse.*

Ho! there,—ship ahoy,—Arion!—come back, eh? round the world? to bring us the last news from the Antipodes or the Amoor? which?

Aye, here I am, from Japan, if you like, returned Arion; glad to find the Club once more. Escaped from being frozen up, and frizzled up, too, on Mauna Loa,—well broiled at Aden,—swamped at the Cape,—wrecked at Hatteras,—half killed with Yellow Jack at Havana,—and blown home in a hurricane safe and sound, although was nearly ran over the Fasnet Rock in making for the Irish Channel. Narrow escape that,—blowing great guns,—midday, but no daylight,—all round us thick as a hedge,—heavy sea running; the white, sparkling, foaming, surf suddenly revealed to us the walls of the Fasnet just in time for us by a spoke of the wheel to clear it. We dashed past it like a flash of lightning, and well we did, or we should have been dashed to atoms, into food for fishes. 'Twas one of those escapes worth going to sea for, if only to talk over afterwards and exult in praises of a merciful Providence for saving us.

As soon as the hearty greeting with which Arion was received had subsided into a rapid conversation, the Chairman, taking his seat, opened their proceedings with the warmest congratulations of the Club at seeing their estimable friend once more in his place; who would, no doubt, he observed, tell us where he had been and what he had seen. If he (the Chairman) had also to express his sorrow that the old story of gales upon gales, and their necessary attendants—as long as our mercantile ships went to sea ill found and badly manned—wrecks upon wrecks, it was consolatory to know that our lifeboats were at work in the good cause of saving the crews.

But the first point to which he would call the attention of the Club was the philanthrophy displayed by our real American cousins to our unfortunate Lancashire operatives. If our sympathy was with the South [not ours, said several voices]—no, I mean, said the Chairman, if the sympathy of the *Times* and its readers was with the South, and that was after all but a fraction of England, the sympathy of the North, in the midst of their struggle against the abettors of slavery, was with their old friends in Lancashire. And that sympathy had taken the substantial form of a ship-load of provisions and clothing sent across the ocean to our shores—Scot free, as it might be said,—a present presented as it should be, free of all cost to those for whom it was sent. The event shall be duly recorded in the proceedings of the Club; where, added the Chairman, let it stand to the honour of the

donors, as the Christian proof that they had not forgotten their alliance with England.

People in this country, he was glad to find, at length had begun to see through the flimsy veil of bravery which covered the stain of slavery; and, if they had not already reached the President, Mr. Lincoln, many addresses from North and South of this country were on their way to him expressing sympathy with his cause, a heartfelt desire for his success, and an abhorrence of the curse of slavery. He would not allude to the monstrous appeals to Holy Scripture in support of the institution which had been made by its abettors; they were contemptible, and had received that denial which might have been expected from the fountain-head of Christianity.

He had no desire to go further on that subject, for he felt assured that those of our country who had broken her Majesty's proclamation, and had sent war vessels and munitions of war to assist the cause of slavery (witness the *Alabama* and how she was smuggled away), will have no sympathy from them. How precious the lesson,—how has England's name been tarnished by the fact,—that while her sons (happily a very few) were sending forth munitions of war to the southern states to use against those of the northern, these in return read us the lesson in Christian terms of sending succour to our distressed operatives; which distress, be it observed, had been brought about by those southern states in their exertions to uphold slavery. He was satisfied that the Society for the Suppression of Slavery here was virtually expressing the sentiments of the Club when, in their address to Mr. Adams, the American Minister in London, they said that—

"The identity of Americans and Englishmen as to origin, laws, and religion; the blood relationship subsisting between millions of both countries, and constantly renewed by emigration from our shores; the vast commerce carried on between the two nations must constitute a bond which, although occasionally slackened by political changes and temporary causes, will, it is hoped, at all times remain firm and indissoluble."

And that Mr. Adams, in his reply, spoke the real sentiments of the people of this country when he said—

"The more narrowly the facts are examined the more clearly will it appear that the only cause of the insurrection was the determination of the slaveholders to perpetuate slavery in America, so far as human power could be brought to bear to effect it. I cannot permit myself to believe that if this fact were once thoroughly understood in all the civilised portion of the globe there would longer be any sympathy entertained for such a cause. Least of all could it be maintained in this kingdom, which has identified itself for more than half a century with every effort to eradicate the evil in its primal source."

But he would turn to another subject—one of a pleasanter caste than that of slavery. We have all heard of the intended invasion of this country from across the channel. Who would have supposed that such an astounding event had been realised, and passed away like a dream. And yet hear what the Emperor Napoleon says to the

French Exhibitors, when distributing the rewards assigned to them by the International Council of the London Exhibition last summer. After congratulating them on their success, and pointing out where it was apparent that more exertions on their part would be required to preserve their superiority over our English produce, he observed—

"At last, then, that redoubtable invasion of British soil so long predicted has taken place. You have crossed the Channel; you have boldly established yourselves in the capital of England; you have courageously struggled with the veterans of industry. This campaign has not been without glory, and I am here to-day to give you the reward of the brave.

"This species of warfare, which leaves no victims, possesses many merits; it arouses a noble emulation, and produces those commercial treaties which draw nations closer together and cause national prejudices to disappear without weakening love of country."

And the Emperor himself might have added, after so glorious an invasion of old England, that even—

"*Le vaincu meme admire nos succés.*"

[Much amusement was expressed in the Club.]

There, continued the Chairman, our invasion is a *fait accompli*, and the year 1862 may be hereafter celebrated as having translated the threat of the French Emperor that his invasion meant with the arms of peace instead of, as formerly, the arms of war!

It was then voted unanimously that the abovementioned papers be recorded.

One more subject the Chairman would mention. He thought that they should preserve a record of the late Mr. Green, whose excellent character was of world-wide celebrity. He would propose that the following brief memento of him should be preserved among their papers. It was a resolution passed at a numerous and inflential meeting of the Trustees of Poplar and Blackwall, held for the purpose of testifying their respect for him:—

"That the trustees of this parish desire to record with unfeigned sorrow their deep sense of the great loss they have sustained by the decease of Mr. Richard Green, who during his life unremittingly and most liberally promoted the welfare of this parish, as especially shown in the extension and support of schools, in providing a home for seamen, in relieving the afflicted and distressed, and in largely aiding in the maintenance of the Poplar Hospital and other institutions in the place of his birth, and who always manifested a deep interest in everything which tended to the welfare and happiness of those by whom he was surrounded. He was justly recognised as a loyal and faithful subject, an intelligent and hearty supporter of the shipping and commerce of the country, a kind and liberal employer, and a noble benefactor to many of the most useful institutions of the land. He was at all times open, frank, and sincere: he lived universally respected, he died most deeply regretted."

The Chairman called on the Secretary to read the very interesting

report of the last monthly meeting of the National Life Boat Institution, on the 1st of January, when Mr. T. Chapman occupied the Chair.

A reward of £6 10s. was voted to the crew of the institution's life-boat stationed at Lytham, for saving on the 26th of December, in a gale of wind, the crew of thirteen persons of the barque *Brazil*, of Liverpool, at daylight observed on Salthouse Bank. The poor men had hurriedly abandoned the ship in their boat, as the sea was rolling with fearful violence over the wreck. The life-boat came up just in time to save them, for in a few minutes afterwards the seas filled the ship's boat, and instantly sank her. This valuable life-boat has this winter saved thirty-two shipwrecked persons. Amongst the number was a Liverpool pilot. On relating to his co-pilots his narrow escape with life, and the noble exertions of the life-boat crew, they voluntarily subscribed £14 amongst themselves, and handed the amount to the life-boat's crew. in gratitude for their services in rescuing him and thirteen others from the American ship *Annie E. Hooper*.

A sum of £6 9s. was also voted to pay the expenses of the Porthcawl life-boat for saving ten persons from the schooner *Champion*, of Liverpool, in a fearful gale of wind, which, on the dawn of the 20th of December, was observed water-logged on Scarweather Sands, near Swansea. The cost of this valuable life-boat was presented to the institution by a lady resident in Staffordshire, and her satisfaction must indeed be great in having thus contributed to the saving of ten persons from an impending death.

A reward of £5 10s. was also voted to the crew of the Cardigan life-boat for rescuing three persons from the smack *Countess of Lisburne*, which had struck on Cardigan Bar in a heavy ground sea. After considerable difficulty the life-boat succeeded in reaching the wreck and in taking off her crew, who having previously lost their boat, had no means of escape left, and, in all probability, would, in the absence of the life-boat, have perished.

A reward of £13 was likewise granted to the institution's life-boat at Hauxley, Northumberland, for saving, under the most perilous circumstances, four men belonging to the schooner *Little Aggie*, of Berwick, on Sunday, the 21st of December, wrecked in a hurricane near Hauxley. This noble rescue had excited considerable attention in Northumberland, where the conduct of the gallant fishermen who manned the life-boat in such fearful weather had received general praise.

A reward of £4 was granted to the crew of the Groomsport, (county Down) life-boat of the society, for important service rendered in the life-boat to the disabled American barque *Carioca*, observed, on the 19th of December, dragging her anchors in a heavy gale of wind. The ship was ultimately brought to a port of safety. Major Maxwell, who was mainly instrumental in obtaining a life-boat for Groomsport, zealously exerted himself on the occasion.

A reward of £4 was also given to the crew of the Thurso life-boat

of the society for saving, on the 19th of December, during a gale of wind, the crew of three men from the schooner *Sisters*, of Wick. The vessel soon afterwards became a total wreck. The cost of this life-boat was presented to the institution by A. W. Jaffray, Esq, of St. Mildred-court.

A reward of £6 10s. was voted to the institution's life-boat at Holyhead for rendering important services, on the afternoon of the 20th of December, to the barque *Highland Brigade*, of Whitehaven, by which means the vessel was probably saved from destruction. Captain Priest, R. N., like all the other honorary secretaries of the branches of the institution, spoke highly of the behaviour of the life-boats in very heavy seas and broken water.

A reward of £9 14s. was also granted to pay the expenses of the Whitby old life-boat, for saving twelve men belonging to the barque *Royal Rose*, of Falmouth, which, during the tempestuous weather of the 21st of December, had sprung a leak, and afterwards become totally wrecked outside Whitby pier. £13 16s. was also voted to pay the expenses of the Whitby new life-boat, for rendering most important services to the barque *Alice*, of Leith, which was found in distress in a heavy surf outside Whitby pier on the 22nd of December. The cost of this valuable life-boat was also presented to the institution by Mr. Jaffray, the gentleman before mentioned.

A reward of £6 10s. was voted to the crew of the *Rye* life-boat, belonging to the institution, who, in conjunction with the crew of the coast-guard boats, succeeded in rescuing from destruction the American ship *James Brown*, observed to be rapidly making water in a heavy surf on the Boulder Sandsbanks off Rye on the 10th of December.

Also, a reward of £5 9s. to pay the expenses of the Plymouth life-boat for assisting, in conjunction with a government steam tug, in bringing to a place of safety the Dutch galliot *Aremana*, observed to be rapidly driving on shore in a heavy sea on the 10th of December. This life-boat was the gift of Miss Burdett Coutts to the National Institution.

Rewards amounting to £48 18s. were voted to the crew of the society's life-boats at Tynemouth, Plymouth, Scarborough, Tyrella, Padstow, Carmarthen Bay, Southport, and Holyhead, some for assembling, others for putting off in compliance with signals of distress, with the view of saving life from vessels which had either succeeded in getting out of danger, or had their crews saved by other means.

During the year which has just closed the life-boats of this great and important institution have succoured 358 shipwrecked persons on our coasts. The boats having during the same period been manned on occasions of service and of quarterly exercise by nearly 6000 persons; with the sole exception of one poor fellow perishing, the institution has most providentially not lost a single man throughout the year in its perilous operations.

The silver medal of the institution was presented to Mr. W. Swarbrick, master of the steam tug *Wyre*, of Fleetwood, and to Mr. Robert Gerrard, pilot, in admiration of their noble conduct in rescuing

under the most perilous circumstances by means of the steamer, seventeen persons from the barque *Pudyona*, of Glasson Dock, stranded in a heavy gale of wind and sea in Morecambe Bay. There were thirteen persons altogether engaged in this gallant service to suffering humanity, for which services they have received elsewhere £55.

A reward of £18 was likewise granted to the crews of two fishing smacks, in appreciation of their gallant and persevering conduct in rescuing, at great risk of life, the crew of four men from the brigantine *John and Edwin*, of Whitstable, wrecked in a heavy gale of wind and terrific sea, off Whitstable, on the 21st of December.

An interesting report was read from the assistant inspector (Captain David Robertson, R.N.,) of the institution on his recent inspection of the lifeboats on the Irish coast. With one or two exceptions, he found the boats in excellent order.

It was reported that the late Mrs. Ann Cutto, of the Old Kent Road, had left the institution a legacy of £1,000 free of duty.

A contribution of 2s. 6d. in aid of the funds of the society was received from the wife of an old Scotch sailor. She was said to be a good sailor herself, and thought that everybody should give something to the lifeboat fund.

The institution decided to place forthwith a new lifeboat at Bude Haven, in Cornwall, and to completely renovate the lifeboat station.

Payments amounting to upwards of £500 were ordered to be made on various lifeboat establishments.

The cordial thanks of the meeting were presented to Mr. Chapman for the able and zealous manner in which he had presided over the meetings of the committee during the past year. The thanks of the institution were also unanimously given to Sir Edward Perrott, Bart., chairman of its sub-committee, for assiduously aiding to carry on the work of the institution.

The proceedings then closed.

The Chairman then said that the following were the papers relating to the aid from America to which he had alluded in his opening address:—

The ship *Hope* has arrived at Liverpool from New York, with a cargo of flour, &c., for the relief of the distress in Lancashire. She left New York on the 22nd December, laden with 1,010 barrels of flour, and 987 tons of guano, all of which will be sold, and the proceeds forwarded to the relief fund. The cargo is to be unshipped free of expense. The *Hope* was towed up the Mersey free of charge and dues.

The *New York Times* of December 30th contains the following account of the second ship and her preparations:—

The *George Griswold* will deservedly be an historical one in the noble merchant marine of the United States. She was built at Quincey, Massachusetts, near the house of the sage and patriot, John Q. Adams, by Deacon Thomas, a well known shipbuilder of that town,

who, it is said, never constructed an inferior ship. She is all oak, at least her frame is, with top timbers and stanchions of locust, and is copper bolted throughout. She is 200 feet long, 38 feet breadth of beam, and 24 feet depth of hold, with two decks. Her tonnage by carpenter measurement is 1,280 tons; but, being constructed for great buoyancy, she will carry probably 1,500 tons. She has a long flat floor with sharp ends, and will doubtless be a fast sailer.

Having already received about 7,000 barrels of flour, she has gone down only from 11 to 14 feet of draught. Captain Nye, who with Captains Charles H. Marshall and Thomas Tileston, is purchasing and superinteuding the loading of the ship, says he has never met with a more buoyant vessel. Her spars were put in at East Boston, by Francis Low, rigger. She is provided with double topsail yards, all handsomely proportioned. Her sails are of Scotch hemp canvas, an article which, in the scarcity and high price of cotton, has taken the place of the heavy duck made of that material. It is much softer and more durable, but does not hold the wind so well. She has a tank amidships, reaching from the keelson to upper deck, which will contain 5,000 gallons of water. With this exception the ship has a clear hold and between decks from stem to stern. Her ample cabin and other houses are upon the upper deck. Taken for all in all the *George Griswold* is one of the stanchest and best ships which has ever made her appearance in our waters. The noble mission to which her first voyage is consecrated entitles her to bear the name of one of the most honoured, though now departed, shipowners of New York.

The committee of the Chamber of Commerce, through their agents, have purchased 8,250 barrels of flour, at an average cost of about 6 dollars 25 cents per barrel, most of which is already on board. Besides this, they have put in 200 boxes of bacon, 50 barrels of pork (donated), 500 bushels of corn, and 50 barrels of beef, contributed by the committee of the Corn Exchange. Eight casks and two barrels of rice, donated by an unknown good Samaritan, and 500 bushels of corn, given by the "Buffalo Corn Man," whoever that philanthropic dealer in maize may be.

The ship will take from 3,000 to 4,000 barrels more, which will be put on board as rapidly as possible. She will be ready to sail probably inside a week.

Arion having been lately in New Zealand, requested permission to introduce a youngster who had been one of the *Niger's* crew on the occasion of Captain Cracroft presenting the Maori flag to the Governor of that colony. They would find the account of the event in one of their *Nauticals*, and how the gallant conduct of Captain Cracroft's party had been appreciated in the colony. He would say nothing of the war,—that had been condemned already. But he was glad to see that the services of that gallant officer in the dashing affair of the destruction of the pah, had been duly recognised, and they would perhaps like to see one of his *Niger* boys,—one of the six mentioned by Captain Cracroft in his Journal.

A general consent saved the Chiarman the trouble of putting the question, and the youngster quickly appeared, the following letter being read by the Secretary meanwhile from the *London Gazette:*—

H.M.S. Iris, Auckland, April 27th, 1860.

Sir,—I have the honour to forward for the information of my Lords Commissioners of the Admiralty, copies of reports which I have received from Captain Cracroft, of H.M.S. *Niger*, relative to the proceeding of a part of her crew employed on shore at Taranaki, at the requisition of his Excellency the Governor of New Zealand.

The capture of the pah, as described in his letter No. 10, was, on the part of Captain Cracroft, his officers, and men, a most dashing and judiciously timed affair.

His Excellency Colonel Gore Brown informs me that it was most opportune. The death of several of the most troublesome of the Taranaki chiefs, and of a considerable number of their followers, served not only to damp the ardour of the rebellious tribes, but also to avenge some cold-blooded murders which these very people had committed only a few days previously.

And it is now known that, under God's providence, this success was also the means of saving the lives of a detachment of the Colonial Volunteers whom the Maories had beleaguered in a neighbouring house, and whose ammunition was almost expended.

Captain Cracroft has not mentioned his own personal share in the affair, but I learn that his coolness on that and on other occasions was most conspicuous, and that he did not undertake this very hazardous service in a spirit of headstrong gallantry, but from a deliberate conviction that it was necessary that the attempt should be made, and therefore it was done, and done most successfully.

Under these circumstances I trust that their lordships will authorise me, in accordance with the request of Captain Cracroft, in his letter No. 11, to decorate William Odgers, leading seaman, with the Victoria Cross. These Maori natives are by no means a contemptible foe—man to man they are equal to ourselves; and in the storming of the pah it could only have been by eager and determined gallantry that success could have been attained.

I also beg to call their lordships' attention to his letter No. 12, enclosing a letter from the colonel in command of the troops in another part of the field, and also a letter from Colonel Gold, commanding-in-chief.

Lieutenant W. H. Blake's conduct, as senior lieutenant of H.M.S. *Niger*, has been uniformly correct and efficient, and whilst on shore, in command of fifty-five seamen, he has shown himself a gallant leader.

I much regret to state that his wound is of a serious nature; and I beg very respectfully and strongly to recommend him to the notice of their lordships as an officer whose conduct has rendered him worthy of promotion. I have, &c.,

WILLIAM LORING, *Commodore.*

To the Secretary of the Admiralty.

Well, youngster, what's your name? asked the Chairman.

They call me Bill Odgers No. 2, sir, said the youth,—a fine broad shouldered lad, with handsome features, just springing into manhood.

And you were one of those who took the pah, eh?

No, sir, they wouldn't let me go, I was not old enough.

But you know all about it?

Yes, sir, and the captain of our mess made a song about it.

And can you sing it?

Believe so, sir,—sung it often aboard.

Come, then, let's have it on shore.

On which Odgers No. 2 gave forth, in true forecastle style, the following yarn.

"Jack Junks," the Galley Poet's, Account of "The Battle of Waireka."

Now listen all ye Britishers,
As loves a jolly row,
I'll tell ye of the Waireka,
When it was fought and how;
And how these great big rascals,
The Maories they did run,
By Jove! it was a stunning lark,
Tho' not to all good fun;
For some they did get wounded,
And others they are dead,
And I myself, to tell the truth,
Got a crack across my head.

'Twas on the 28th of March,
If I remembers right,
That I, when sleeping very sound,
Was woke up in the night,
Or rather in the morning,
For 'twas after twelve o'clock,
They woke me up to go to fight,
When sleeping like a rock.
So we steered for the Waireka,
And there we found the foe,
Who'd been behaving very bad,
And built a pah, you know.

Directly that they see'd us,
Their balls they did let fly;
The first one nearly ketch'd me
A slap right in the eye;
But two can play at that game,
So we to fire begins;
I saw my very fustest shot
Knock a covey off his pins:
When we had scrimmaged for awhile,
They hooked it to the pah,
For all the world like innocents
A running to their "Ma."

No sooner had they done it
Then thus the Captain says,
Run down that pah, my jolly boys,
And mind you don't miss stays:
I'll give ten pounds unto the chap
Who first that craft will board.
And shiver all my timbers,
If he didn't draw his sword,
And run as fast as he could go,
Like a ship before a gale,
With half a hundred sailors
All shouting at his tail.

And he'd a been fust in the pah,
There ain't a doubt of that,
If a stone from an old Maori
Hadn't knocked him down quite flat.
My word we gave a holler,
As slap dash on we goes,
And here a shot (I may remark)
Pass'd right athwart my bows.
But not a minding that, sir,
I climbed their bulwarks over,
Them sticks they make such talk about,
Though why, I can't discover.
For only great land lubbers,
Such as them Maories are,
Would think to keep a feller out
By building of a pah.

The Maories being frightened,
Run for their lives away,
And 'twas only them that we could ketch,
We could persuade to stay.
So now I've done my duty
In telling of this tale,
If you please, I've no objection
To have a glass of ale;
And drinking it, I wish you may
Keep hearty as a tiger,
And bid you welcome any day
On board the good ship "Niger."

of Taranaki, N. Zealand, September, 1860.

Odgers No. 2 made a bend and a scrape with his foot on concluding his song, which was received with bravos from the Club.

Well done, my lad, said the Commodore; if all the Nigers were of your stamp, Captain Cracroft was fortunate.

We were fortunate, sir, to have such a captain. He was one of the right sort—a father to us all, sir. Wish I could always sail with him.

What he kept you all well—and clear of the doctor between decks?

Why, yes, sir. I had some advice from my father about that afore I went to sea, and Captain Cracroft thought it was very good, sir.

No doubt. What was it? On which Odgers No. 2 recited the following:

Take the open air—
The more you take the better.
Follow nature's laws
To the very letter.

Let the doctors go
To the Bay of Biscay;
Let alone the gin,
The brandy, and the whiskey.

Freely exercise—
Keep your spirits cheerful,
Let no dread of sickness
Make you ever fearful.

Eat the simplest food,
Drink the pure cold water,
Then you will be well,
Or at least you ought to.

Well done Odgers, said the Chairman. No doctor could have given you better advice than that. No wonder you are the pattern of health, my boy,—and mind you stick to your text.

The whole Club was greatly pleased with Arion's friend, as they called him, whom they well rewarded for his straightforward honesty of character and excellent principle.

His captain is as fine an officer as can be found serving her Majesty, said Arion. He was universally beloved in New Zealand, and well he might be. We merchant skippers delighted in him.

One of the best merchant skippers we have, continued Arion, is Toynbee. I see he is not unknown to our friend the *Nautical*. When I was at Calcutta on my way home, he was trying all he could to get up a retreat or a temporary asylum for the wives and children of sailors while they are afloat, and here is what was said of him and his lectures, given in the Town Hall.

When, in England's history, were British sailors ever known to fail the leader who put faith in them afloat or ashore? Whether it be fighting in despite of fate against two contending elements, the raging fire within and the stormy sea around, as in the *Sarah Sands;* or with all tenderness handing into the only boat the women and children who can alone be afforded that last forlorn chance from the foundering craft, which must in another short hour become the coffin of the brave hearts silently yielding themselves to the heroic self-sacrifice; or rousing their heavy guns like field-pieces over the broken ground in the Crimea; or cheering in advance of the whole force through the jungles, and racing 24-pounders along with the skirmishers in the vengeful advance upon Cawnpore;—bolder than the lion in their rage, gentle as the dove when their inner nature is touched, our gallant seamen never fail the man whom they trust in, nor put to shame the men who trust in them. A Peel in the field, or a Toynbee in the lecture-room, can point with honourable pride to the men they lead, and challenge the world to produce a nobler or more deserving race. Yet, who cares for the sailor? Excellent as is the Sailors' Home here, and useful as it is so far as its resources can be stretched, its limited accommodation and scanty attractions are a reproach to a great port like this of Calcutta.

We wish those who sometimes give a passing thought to the sailor as an uncouth, reckless, and incorrigible animal, could have looked in upon the gathering of seamen in the Town Hall, at seven o'clock on Wednesday evening, the 20th November, to hear Captain Henry Toynbee's lecture on their condition and their wants. Prompted

solely by his own good sense and right feeling, Jack dropped his cigar or put out his pipe before entering the hall. Cleanly, orderly, and hat in hand, he made his respectful salute to the ladies present as he passed them and took his seat; and no collection of highly educated gentlemen could have shown better taste or higher appreciation in the attention with which they listened to the speaker, and caught up and applauded the salient points of his address. A couple of the Dundreary species would have made more noise with their inane haw-haws than was to be heard, preceding or during the lecture, from the three hundred sailors whom the announcement of it had brought together.

The address of Captain Toynbee was excellently adapted and well put,—the work of a man who understood thoroughly the men he wanted to get at, and who reached their hearts accordingly. Its purport was of the same tenour as that to commanders on the preceding night, and we cannot therefore reproduce it here, but we trust that Captain Toynbee will permit us to help him in his really great work by reprinting them both for him. The presence and the conduct of the men was in itself the proof of their desire to avail themselves of means of rational enjoyment and self-culture. Their ready responses showed that they would eagerly avail themselves of the speaker's desire "to pull down gin-palaces and build sailors' palaces," not merely for the selfish gratification of "Jack ashore,"—not only for his own comfort when in port,—but for the safe and comfortable housing of those he must so long and so often leave ashore. Sailors will willingly enough subscribe to funds for their own advantage if the conditions of payment be made to suit their habits and circumstances. Captain Toynbee argues rightly that they will help themselves if they are put in the right way of doing it. And he showed that there are some besides himself desirous of helping them; for a merchant in this city had sent him that day a cheque for five hundred rupees, to be applied in any way for their advantage, with the assurance in his letter, which we hope many besides ourselves will re-echo, "We are proud of our sailors, and wish to help them."

Who is ready for the work? There is much to be done that money cannot supply; but Captain Toynbee's example should rouse some among us to this duty "lying nearest to them;" and, not waiting for his promised application to the Board of Trade, try what more can be done in Calcutta for seamen,—to whom England owes her greatness, and Calcutta her very existence.

These are very sensible remarks, observed the Chairman,—true to the letter,—requiring a long pull and a pull altogether to succeed.

The Secretary announced that he had just received an account of the destruction of the Lytham Lighthouse. and the discontinuance of the Wyre Screw Pile Light. It appears, he continued, that the gales of the past week have been productive of much serious damage and loss of life. The Lytham lighthouse stood on a point called the "Double Stanners," between Lytham aud Blackpool, close to the high water mark. Fears have been entertained for its safety some time

past, in consequence of the great encroachments of the sea; and workmen have recently been engaged in driving piles around its base, and more particularly in the front facing the sea. The lights were exhibited for the last time on the 20th of January.

On the 19th at night the wind was blowing hard from N.E., accompanied by snow and hail, but on the morning of the 21st it veered round to the N.W., and so continued all day. On the morning of the 22nd it moderated, and again changed to S.W., and so continued hard until the afternoon of the 23rd, when the lighthouse fell. The keepers left the building on Tuesday morning the 21st, as they found it was vibrating in the most alarming manner, and to a much greater extent than had been previously experienced. When they put out the lights that morning they found that the framework of the piling in front of the lighthouse had given way, and that a great portion of the foundation had been undermined by the waves.

In the course of Tuesday morning one of the keepers went up to Lytham, and was joined there by his son, who told him that the lighthouse was quite leaning over. Information was immediately sent up to Preston to the engineer of the Ribble Navigation Company, and soon afterwards it was discovered that the north corner of the masonry was worked out, and the foundation laid bare down to the bottom, below the concrete, there being a large hole filled with water three feet below the foundation. The keepers, with assistance, set to work to get everything out of the building, except what was absolutely necessary to keep the lights burning. They worked until the rising night's tide surrounded them, and, from the fury of the gale, had little hope that the place would stand until morning, but the lights never burnt more brightly than they did during that evening.

On Wednesday morning (28th), the wind still blowing stiffly, they extinguished the lights for the last time, the tide during the night having made greater havoc in the foundation and carried away a part of the south corner. They took out the glasses and all the remaining property—lenses, reflectors, furniture, and apparatus. By noon the waves had made a further breach into the south corner, which gave way, leaving an excavation like a man-hole in the foundation, through which they were enabled to get out the oil from the cisterns in the ground floor. Wednesday night's tide worked further under the south front of the foundation, which gradually gave way, until Thursday at noon, when the building fell. The building was erected by the Ribble Navigation Company about fifteen years ago, at a cost of £1,400.

It may, perhaps, be as well to state that the screw pile light in Morecambe Bay, at the entrance of the Wyre, about twenty miles north of the Lytham light, is also now extinguished, owing to the insecure state of the erection through the collision of a vessel with it. The authorities at the Trinity House have been communicated with on the subject, and it is probable that they will arrange for the re-erection of the edifice, as the coast is one of the most dangerous in the kingdom, three of the most dreaded banks lying immediately in the neighbourhood.

Nautical Notices.

Particulars of Lights Recently Established.

(Continued from page 51.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
1. Cape-Maysi	Cuba	20° 15·2′ N., 74° 10·4′ W.	F.	128	17	Est. 19th November, 1862.
2. El Djerda -	Algiers	37° 1·4′ N., 6° 32·4′ E.	Ffl.	78	12	Est. 24th June, 1862. A green flash every two minutes. (*a.*)

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

(a) 2.—The *fixed red* light formerly shown from the peninsula of Djerda would be removed to a lighthouse recently erected on the South point of the small bay of Collo. It is visible four miles.

South Entrance to Moreton Bay by Rous or the Amity Point Channel.

His Excellency the Governor, directs the publication of the following Notice to Mariners, respecting the South Entrance to Moreton Bay, by Lieutenant G. P. Heath, R.N., Portmaster and Marine Surveyor.

Two red beacons—visible from the Flat Rock—are now placed on the South extreme of Moreton Island, to enable vessels entering Rous or the Amity Point Channel, to pass between the outer banks and over the bar, in the deepest water, viz.:—seventeen feet at low water spring tides.

This channel is chiefly available for coasting steamers by daylight, when there is not a heavy swell on the coast.

It is not recommended for sailing vessels, except in fine weather and a commanding breeze, when they may lay four points to windward of their course.

The coast current runs two to three knots to the southward, close to the outer edge of the bar, and at a lesser speed over the outer portion of the banks; and vessels should be careful in northerly winds not to get to the southward of the line of beacons until well inside the North break. The tides set fair through this channel from three to four and a half knots, until they come within the influence of the coast current.

The sea always breaks on the North bank, but the space where it breaks on the South bank varies with the amount of swell on the coast.

Six red buoys, and six black buoys and beacons, mark the channel for crossing the bay towards Mud Island, between the inner banks.

There is not less than two fathoms, at low water spring tides, in this channel, except at a point of junction with the Cleveland Ship Channel, where the depth of water is never less than nine feet at low water spring tides.

Beacons will be erected at those points where they will prove of service as soon as, from the nature of the bottom, it is found they can be made permanent.

Directions.—Vessels from the southward for Moreton Bay by the South, or Amity Point Entrance, or Rous Channel, after passing either inside or outside of the Flat Rock, must keep the northernmost sand patch on Moreton Island on the port bow until the two red beacons on the South extreme of Moreton Island (the innermost of which is the higher of the two) are in one; then keep them so until inside the North break, when haul up to the southward gradually, keeping at about a cable's length from the edge of the North bank, which is steep to and always shows. When near the dry detached sandbank haul up for the N.W. extreme of Stradbroke Island, and round the red buoy off the shoal extending to the S.W. of the detached sandbank. On passing this, keep away West, and pass at two cables' length from the S.W. extreme of Moreton Island, which is steep to. Leave the first black buoy on the port hand at a distance of about half a cable, and haul up W.b.S. for the S.E. end of the high land on St. Helena.

After passing the second black buoy, haul up S.S.W. for Mount Cotton, passing the fourth red buoy on the extremity of a sand spit on the starboard hand, and continuing the same course until abreast the fifth red buoy, when keep away W.b.S.¼S. and pass the sixth red buoy. From thence keep away for, and pass on the port hand, the second black beacon at not more than half a cable, and steer out W.b.N.¼N. in mid-channel between the inner black and red buoys.

When the buoys are passed, a vessel is in the Ship Channel to Cleveland; across which a course must be steered for the middle of the opening between Mud and St. Helena Islands; a mid-channel course must be kept between these islands, and a vessel may from thence steer for the anchorage off the bar.

Vessels outward-bound through the South entrance should, after passing Mud Island, steer for the North extreme of high land on Stradbroke Island, until a small smooth-topped cone near the North end of Stradbroke Island bears E.b.S.¼S., when they should haul up and steer for it, passing between the inner red and black buoys, and passing the inner black beacon as previously directed.

To Correspondents.

We are indebted to a friendly hand for the *Mauritius Commercial Gazette.* Thankfully received.

The "*Sarah Ann's* Hurricane" unavoidably delayed. This, with the letter of the *Esmeralda* and Dr. King's reply to Dr. Wallich, in our next.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

MARCH, 1863.

The Eastern Route to China or Japan, *in the Western Pacific.**

Hongkong, September 1st, 1862.

Sir,—In troubling you again, I beg leave to draw your and your readers' attention to the Eastern Route to China, from the Gilolo to the Bashees, of which you speak in your Magazine of 1858, p. 199-200, and where you recommend to make Easting between 1° 30′ and 3° North, and to go out to the Pellews. But I recommend to go straight North or N.W., and not to care about making Easting for the following reason :—

From the Gilolo to 3° North is right in the equatorial calm belt, and a vessel will lose much time by making Easting here. This voyage has a great similarity to the westerly line-crossing in the North Atlantic, and where Lieutenant Maury strongly advises not to beat in the calm belts, but stand straight North or South, and if found necessary to make longitude, to do so out of the calms, and where we get the breeze to beat. And if we illustrate this case a little further, you will find my recommendation has a great advantage over the westerly line-crossing in the Atlantic, for there you have a strong current nearly against you, and here you have the current in your favour. And as all vessels in the N.E. monsoon from Hongkong to Shanghae go East of Formosa, to beat up there in the strong Japan Current, why not try as well on the East coast of the Philippines, and in the same strong current, instead of losing from eighteen to twenty days to make the Pellews. This is not a mere idea of mine, but an assertion, based on

* Our correspondent need not speak of troubling us with such useful communications as he sends us, for we consider his advice to the commanders of ships bound to the northward and eastward from any where near the Molucca Passage to be most correct, as they would then profit by the Pacific Gulf Stream as they should do at its source. We shall always be glad to hear from Captain Polack, as one of the benefactors of navigation who have appeared in our pages.—Ed.

a careful inquiry during my twenty-eight months' stay here in China. And when I came out from Hamburg to Hongkong (112 days from the Downs,) and gained the Pacific out of Gilolo, I found in Maury's Pilot Charts good chances to make Northing. I did not care about Easting, and had ten days from Gilolo to the Bashees with the undermentioned current. In the same time a British ship had thirteen, a Hamburgh barque fifteen, and an Hanoverian barque eighteen days to the Pellews only. And by my inquiry about this route, I found invariably a great loss of time from Gilolo to the Pellews. But two captains of Siam vessels who are always trading from Siam to China, told me they never cared about making Easting, but went up as straight North as possible in any month of the N.E. monsoon; they never had difficulty to reach the Bashees, and always gained here on those vessels which went out to the Pellews. I know that I myself gained ten days by it, and shall go North at once in any month of the N.E. monsoon. But of course, if a vessel should meet with a favourable wind to make Easting, I would advise to steer a North-easterly course, but not easterly, because I consider it to be our principal object to pass the calm belts as quickly as possible.

Daily Current Table from Gilolo to the Bashees.

Latitude.	*Longitude.*	*Current.*	*Rate.*
			Miles.
2 0 N.	129 40 E.	N. 50 W.	50
4 14	129 33	N. 50 W.	50
5 4	130 0	N. 35 W.	24
5 56	130 40	N. 13 E.	22
8 15	130 58	N. 59 E.	44
10 34	130 31	N. 42 W.	24
12 57	128 53	N. 60 W.	37
15 43	127 42	N. 21 W.	25
18 22	126 0	N. 39 W.	28
20 10	121 46	N. 60 W.	35

The inclosed Thermal and Current Table is only a corroboration and further illustration of what you said in your Magazine of 1859, p. 180, about the Japan or Kuro Siwo stream, and it will perhaps be interesting to some of your readers as well as benefit vessels, who are navigating here, to know the North limit of this current in the N.E. monsoon, so that by proper attention to the temperature of water, may sometimes avoid a head current, which they would find running in their favour, when thirty miles further East or West as occasion may require. From North Formosa this current takes first a N.N.E. direction to about 28½° North, and 124½° East long., and then bends to South Japan, and continues to run East to 150° East long., at the rate of twenty-five miles a day, and then turns South to 20° North, with decreasing velocity; at least I found it so when going to

Sydney last year, and which agrees nearly with your drawing in the Magazine for 1859.

This current is strongest between Samasana and Suan Bay, and 124° East, where it very often runs at the rate of ten miles a day, but to the East of 124° East long. the current gets weaker, and the thermal difference of air and water is not so great as within this space.

Should you think this letter worth acknowledging, please make known the information it contains to my brother sailors through the medium of your Magazine.

I am, &c.,

P. A. POLACK,

Master of the Hamburg barque Esmeralda.

To the Editor of the Nautical Magazine.

Date.	*Hour.*	*Lat. N.*	*Long. E.*	*Temp. Air.*	*Temp. Wtr.*	*Current.*	*Rate*	*Winds.*	*Rate*
		° ′	° ′	°	°				
Feb. 21	Noon.	21 24	121 5	72	76	N.N.W.	16	E.N.E.	5
	8 p.m.			73	73				
	4 a.m.			71	72				
,, 22	Noon.	21 50	122 16	73	73	North	20	Easterly.	4
	8 p.m.			73	73				
	4 a.m			71	72				
,, 23	Noon.	23 30	123 30	68	73	North	22	S. Easterly.	5
	8 p.m.			65	70				
	4 a.m.			64	69				
,, 24	Noon.	24 14	122 40	58	68	North	20	N.N.E.	7 & 8
	8 p.m.			56	68				
	4 a.m.			56	68				
,, 25	Noon.	24 50	122 24	58	71	N. 18° E.	26	N. Easterly	6, 7
	8 p.m.			58	66				
	4 a.m.			57	66				
,, 26	Noon.	25 50	123 42	58	70	N. 23° E.	25	N.E.	5
	8 p.m.			59	69				
	12 p.m.			60	67				
	4 a.m.			61	65				
	8 a.m.			61	64				
,, 27	Noon.	27 47	124 30*	63	64	N. 35° E.	25	N.E. to S.E.	4
	4 p.m.			64	62				
	8 p.m.			64	58				
	12 p.m.			63	57				
	4 a.m.			61	56				
	8 a.m.			60	55				
,, 28	Noon.	29 51	124 30	59	54	N. 40° E.	18	North.	5
,, 29	Noon.	29 57	123 5	59	52	S.S.W.	24	North.	6

Here you have on the 27th at noon, the temperature of water 1° above the air, and at 4 p.m. already 2° under it.

* Nearing the border of warm water current.

JOURNAL OF CAPTAIN CRACROFT, C.B., OF H.M.S. "NIGER."—*New Zealand.*

(Continued from page 70.)

Sunday, September 23rd.—I stood for the anchorage off Taranaki this afternoon, and anchored at 2 p.m. in 8½ fathoms; landed and received a warm reception from a crowd assembled on the beach. The men belonging to the naval brigade, under the command of Captain Beauchamp Seymour, are quartered in tents on the ground just behind the boat houses, called Mount Elliot, which caution or precaution has converted into a miniature Gibraltar, with palisadoes, and ramparts, and ditches; and here our fine fellows have been fooling away their time, assisting in *important* garrison duties, instead of scouring the country and making it too hot to hold the natives. It is very humiliating! Seymour, who is as brave as a lion, had, it is needless to say, no hand in these proceedings. He gave me a lamentable account of the present state of affairs, and of the miserable result of a grand expedition numbering upwards of fourteen hundred men, with heavy guns and rockets, which after destroying a few empty pahs, retired before the natives, who it is universally believed did not muster a hundred strong, leaving a private of the 40th regiment in their hands. The fettered state of the press here, which indeed only exists by sufferance, has prevented any but the most meagre account being given to the public, of this grand *promenade militaire*, but an Auckland newspaper, the *New Zealander*, made up for the deficiency. I append its account, and shall refrain from any comments of my own upon the subject.

"*From our Taranaki Correspondent.*

"'The drum it is beating, to war they incline,
Could their gen'rals but lead to the fight, like langsyne.'

"I am ever ready to join in censuring those who, from undue haste or rashness, indulge in unjust criticism, general accusations, and sweeping condemnations of all who are not immediately successful; but, on the other hand, when the public safety is concerned, I hold that there is a limit to silence, or a period when persevering in it might be culpable.

"I think, therefore, I will be pardoned for saying that the affairs of Taranaki have reached that limit now: and my proposition to begin with is, that the military operations carried on here are a disgrace to us as Englishmen, calculated to lower us sadly in the sight of the natives, and that whatever may be the issue of this unhappy strife, the great superiority of the natives in arms will be fully established, and our *prestige* is entirely lost.

"A glance at the war from its commencement to the present moment, will abundantly support my proposition. So far it has been nothing but a series of blunders and disasters. Save the one brilliant affair conducted by Captain Cracroft, of H.M. ship *Niger*, at Waireka,

all the rest has been imbecile inaction or craven defensive operations, more injurious still. In the beginning we were dissatisfied with the puerility of the first commander, because we could not be gratified with a decisive victory; but we were then full of hope of exploits to be achieved when a full blown general should assume the reins. How grievous has been our disappointment! Contrasted with the present our late Commander-in-Chief derives considerable lustre. I have said that all was at first hope,—I may now say that all is rapidly tending to despair.

"During the period that elapsed between the arrival of the General, and the first week of this month of September, we were sorely puzzled to comprehend what was passing before our eyes. On our side stood nearly 3,000 men, well armed and disciplined; against us, an enemy void of all material advantages, and never more than one-fourth of our numbers. Yet the latter ever maintained the offensive, drove us into our stockades and then out of them. As they advanced so we retired, till they had possession at one time of the whole settlement. All we had left were a few impregnable block-houses and a portion of the town, converted into a camp, and stockaded round. Everything we possessed in the fields was abandoned to the enemy. We looked on at all this with utter surprise, and could not believe our senses that it was actual incapacity. We still preferred hoping there was something behind—the unfolding of some grand design, which was to overwhelm the enemy with annihilation, until perforce, we were reluctantly convinced that as it *seemed* even so it *was;* a total want of ability to act otherwise, forcing its convictions upon the minds of the most incredulous. At length the enemy, tired of driving us about, or for some more cogent reason, did for us what we couldn't do for ourselves—relieved us from a state of siege; and then puerile *bravado* became even more ludicrous than pitiful panic. Directly we became assured that the enemy was gone, we marched out in great feather: deserted pahs were bombarded and stormed with the most serious gravity, and *brigade orders* complimented men and officers for their gallantry in the attack and capture of a deserted pah, or in the crossing of the 'rapid Waitara,' which was deemed an achievement worthy of a *brigade order.* Even that self laudation, however, was brought to a rude termination by one of the most disgraceful affairs that ever cast discredit on the British arms, for on the 10th instant, near to the *rapid Waitara,* 1,400 Englishmen retired before 120 aborigines!

"On that inglorious day the greatest force was mustered that was ever before put in motion in New Zealand, and great were the anticipations of its achievements. The general, in *propriâ personâ,* was in the field. During the first part of the day he had gallantly attacked and demolished several *deserted* pahs, and was boldly marching on that of Wi Kingi, the condition of which was doubtful. When within a short distance of it, a company of the 40th was leading the advance, and in approaching a *small patch* of bush they received a volley of musketry. What do you suppose was the command issued? To rush upon the enemy, no doubt? The men were taken by surprise,

and the commanding officer abstained from any forward movement to avenge the fallen or to carry off his slain. But what did the main force do? you will ask.—Well, they took the usual time to manœuvre, which was not short; at length they got up their great guns, their rockets, &c., and a heavy fire was opened on the *bush* where the enemy *had been*, and after knocking a great many *limbs* off the trees, they turned round and marched back to town, the enemy following in their rear, firing volleys in defiance and derision. All this might seem an ugly dream—the working of some diseased imagination—but, alas! it is too true to our rude, every day sense, and to our cost.

"After this Waitara affair, nothing more was attempted till last Wednesday, when a force, 500 strong, under Major Hutchins of the 12th, an officer who, to do him justice, is much esteemed, was ordered to proceed South to the Tataraimaka. The expedition excited no interest: indeed no expedition now could, as we know nothing will be done. On arriving, however, at their destination, they found themselves close to a pah, and proceeded to encamp, and ere long some natives appeared and approached to fire at them. Some long shots were then exchanged; after that, the enemy edified them with a war dance, brandishing their tomahawks in defiance, though they did not appear a hundred strong. It was incompatible with the Major's orders to attack, but he sent a messenger to the General for instructions, and received orders to march back to town. I need not tell you such expeditions do no good, but they can do a great deal of harm.

"We are driven to draw a very painful contrast between our commanders who imperil New Zealand, and those who saved our Indian Empire two years ago. These, though a handful in the midst of myriads of disciplined enemies, seldom condescended to act on the defensive, but sought the enemy in the bush or out of the bush, and defeated him at all points. It is with the commanders alone, I am happy to say, that this striking contrast exists; the great body of officers and soldiers are as good here as any in the service: and, I feel confident that, if the officers and men of the 65th were only let loose, they would make short work of the Maories. At present there are few, but very few natives in the settlement; in fact none have remained save Wi Kingi's, about 120 strong: there is, therefore, a splendid chance of subduing them before they become more numerous. But the General persists in acting on the defensive, and to all remonstrances he replies blandly, 'Oh, its no use following them into the bush;' and so he sits with his legs by the fire in the Masonic, quite satisfied. So is the Adjutant-General who, rightly or wrongly, is supposed to exercise unlimited control over the old man. Indeed, the latter does not appear to have any idea on the subject whatever, and the former very few correct ones.

"We have received the gratifying intelligence that two regiments are on their way out, though it seems to me we want a General rather than troops. With the past supineness, no amount of troops would be of any avail, whilst half might have accomplished all if properly led.

"There is a section of the military who throw all the blame on the Government, alleging the General's hands are tied. During the action at the Waitara the other day, the *Victoria* arrived with despatches from Auckland, and it was confidently asserted that it was in obedience to those despatches that the General retired without achieving success. But I need not tell you I never believed a word of that, and I think they must be obstinate indeed who persist in such credulity now.

"I have hitherto abstained from criticism, but I shall in future forward you, from time to time, the result of my observations. Matters have sunk to that state, that the influence of the press should be exerted, to restore by exposure the conduct of affairs to the proper standard. That is the purpose the press serves at home, and unless it abdicates its legitimate functions here, it may be instrumental in effecting the same patriotic purpose at the Antipodes."

September 24th.—I went round all the alarm posts to-day with Seymour. The marines of the squadron garrison Fort Niger, which is now a very secure position; all the others are occupied by the military. But although there is no enemy within many miles, the same precautions are still kept up, as if he were knocking at the gates. * * * * The *Fawn* arrived to-day from Wellington, and went on to the Manukau, having serious defects in her engine department, which ought to be made good immediately. In consequence of this mishap, my destination has been altered, and Seymour ordered me to Wanganui with the General's despatches.

September 26th.—I got away this forenoon under sail, but lost the wind after passing the Sugar-loaves, and was obliged to steam a couple of hours to get an offing. The water was so smooth that it appeared to me a landing might be practicable, and as the Warea pah which we shelled last March was within easy reach, I determined to pay it a visit, if possible, and told off a body of men in the evening, intending to stand in and land with them at daylight. But when daylight appeared, the surf was found to be running so heavily that it would have been madness to attempt any landing with our boats, indeed no boat in the world could have beached there without running the risk of being totally destroyed. So I reluctantly stood out again,—a sore disappointment for all hands!

September 28th.—As we opened Cook Strait we felt the full force of the South-easter, which brought us this morning to close reefed topsails and trysails, and as the ship was only knocking herself to pieces in the heavy sea, I stood in under the land, and was speedily becalmed again, drifting within a mile of the beach, too close to be pleasant; so the fires were brought forward, and in two hours we were at anchor again off Taranaki, where I intend to remain till this South-easter has blown itself out.

Saturday, September 29th.—I rode out to the Bell Block to-day with Seymour, close to the Henui bridge. The friendly natives are constructing what will one day be a formidable pah. It commands the approaches to the river, but is in its turn commanded by Fort

Niger. We galloped on without seeing any one, whereas only three weeks ago this expedition could not have been undertaken without an escort. It was melancholy to note the change that has taken place here since these troubles began; to see the smouldering ashes of what had been once comfortable homes, the plundered farms, the wasted fields, or ground remaining untilled! * * * From the top of the blockhouse the movements of the 40th regiment under the command of Colonel Leslie were plainly visible. They are out destroying rifle pits. If they were employed in destroying Maories methinks it would be more to the purpose. Returned to town by the beach, and in the evening dined with the Major-General and his staff, whose quarters are at the Masonic Hotel.

Sunday, September 30th.—The *Caroline* gunboat arrived this morning from the Manukau, with orders for me to take back the *Iris's* ship's company immediately. Sunday appears to be the favourite day here for operations of all kinds. Expeditions against the enemy, and the escort of provisions to the camp, which could be equally well sent out on any other day, generally take place on Sunday, which has also been lately made a parade day, when every one is compelled to muster at the various alarm posts to be inspected. In short, there is an ostentatious disregard of the Sabbath, as though it were wished to invoke a curse instead of a blessing upon our proceedings.

But this unrighteous war was commenced on a Sunday, well I recollect it. All the preparations for the first march to the Waitara on the Monday morning (March 5th) were made on that day—and instead of thronging the house of God to humble ourselves before Him, and to ask His blessing on our arms, Taranaki presented the appearance of a fair. The shops were kept open and the churches and chapels were empty; and this before a single shot had been fired, or the smallest desire for hostilities displayed by the natives. Many doubtless besides myself noted this as a bad beginning, and from that day to this the poor colonists have had nothing but disaster and ruin! * * *

Before three o'clock I had all the men on board, including my own marines, who were disembarked last April, and started with a fine fair wind for our destination.

Monday, October 1st.—At daylight we were in sight of Paratutai, and crossed the bar at 8 a.m. There was no one at the pilot station to take us up; so I brought the *Caroline* to with a gun (she sailed from Taranaki only four hours before us) and Marks took charge, anchored us just above the *Cordelia*, and at 10 a.m. every one was landed. All quiet at Auckland.

October 3rd.—The ship tailed yesterday at low water, so we shifted higher up to-day, and moored head and stern about half a mile below the Bluff. Least water eighteen feet all round.

Monday, October 15th.—I have been long waiting for an opportunity to pay Waiuku and the adjacent country a visit, intending if possible to get to the Waikato, a district which embraces the most extensive tracts of fertile country, grows the best wheat, and contains the most civilized and powerful tribe of natives in the colony. The

Governor having placed the *Caroline* at my disposal, I started to-day on the expedition, taking Mr. Vietch, the Master, and the Surgeon, Patrick, a most observant intelligent man, with me, as it is not improbable the ship may be stationed some day on the South side of the Manukau.

We got away with the first of the ebb, which carried us past Poponga, although we had to beat down all the way, and the flood carried us up the Waiuku Creek, daylight failing shortly after we entered it at Karaka Point. About half a mile above this point the creek divides into two channels: that on the left goes to Mauku, better known among settlers as the Moke. Here the tide runs with great velocity. A little higher up, and where the *Niger* might be stationed if necessary, our Pilot, Marks, decided to anchor, for the night was very dark, and we were still some four or five miles from our destination.

Tuesday, October 16th.—Shifted up early this morning to the Needles—remarkable cliffs, about two miles below Waiuku, and anchored, as the schooner cannot lay afloat at low water higher up; in fact, the great part of the creek above this point runs off dry at ordinary tides. Pulled up to the settlement which consists of some twenty houses, and promised to become, before these troubles broke out, a most thriving place. Here all the produce of the Waikato district is embarked for Onehunga, and several vessels, handy little cutters, have sailed regularly for years between the two places. The amount of grain and other produce brought from the Waikato, and the amount of goods, agricultural implements, &c., forwarded to that district, would form no inconsiderable items in the custom house returns, were Onehunga a port of entry. But that not being the case, no one knows, except from private information, that there is a bushel of wheat grown, or a pound of tobacco smoked in the Waikato* We found a comfortable inn at Waiuku, and a civil landlord, who did his best to assist me in the object of my visit.

Two miles from Waiuku is the landing place of the Awaroa, a small river, or fresh water stream, which after winding about seven miles through a level swampy country, partly open, partly bush, (as the forest here is called) joins the Waikato. The sinuous course of this stream, and the logs and stumps in it retard its navigation very much. The natives are however gifted with great patience. Time is to them a small object. They dam up the stream, and wait till the water accumulates sufficiently to float their canoes over the logs, and this operation they repeat every bar of logs they come to, until they work up to the landing. It seems a pity that no attempt has been made to improve the navigation of this stream. There are no rocks to blast, no cuttings to make; the country through which it flows seems, judging by the eye, as level as a table, and presents no engineering difficulties whatever. A few good bushmen armed with spades, shovels, saws and axes, and under proper direction, are all that is required, and a

* Since these lines were penned, Onehunga has been made a Port of Entry, and a custom house officer appointed.

very moderate sum would be sufficient. Until, however, this civil war is brought to a close, it cannot be expected that the Provincial Government will take any step in the matter. For the same reason the canal projected to join the Awaroa and the Manukau, which might be constructed with the greatest facility, and at very trifling expense, must remain in abeyance. The delay is much to be deplored, as nothing contributes so much to destroy the exclusiveness of the native race, and lead to their disposing of their surplus lands, as the opening up of the numerous creeks and rivers, so as to facilitate a free intercourse between the races. These are the initiatory steps towards the effectual settlement of the vexed land question; for it is evident their direct result would be the bringing of the two races into closer contact, by which only the civilization of the Maori can be effected.

The view from the landing place is magnificent: over the primeval forest in the foreground rises the South bank of the Waikato, well wooded, with an occasional clearing. Kohanga, the residence of Archdeacon Maunsell, being conspicuous from its lofty position; the river is concealed by the bush. After waiting some time, and finding there was no prospect of obtaining a canoe, I reluctantly gave up until another opportunity my intention of reaching the Waikato. But there was plenty to be seen here, and the rest of the day was fully occupied wandering over the vicinity of the settlement, which contains some beautiful farms already, and many thousand acres of valuable land lying uncultivated all round. The land may not be all equally valuable, for there is no country perhaps where the sudden change from one description of soil to another of a totally distinct nature, is so observable as in this locality. But however the varieties of soil may differ from each other, they may be all utilized, and taking all the circumstances into consideration, the vicinity of a good market, and easy water communication, if I had the choice, I would infinitely prefer four hundred acres of land here, than the same quantity in the much lauded province of Taranaki.

Wednesday, October 17th.—I sent the *Caroline* back to Onehunga this morning, and started with Dr. Patrick on my return by land. The road which is little better than a track, as no attempt to metal it has been made yet, skirts the forest here; and there clearings have been made, and their appearance testifies "in looks more eloquent than words" to the fertility of the soil, while "nature blossoms in her virgin pride" also, and we passed great quantities of that valuable plant the *Phormium tenax*, growing with great luxuriance.* I have mentioned in another part of this journal that the Kauri tree does not

* There is a flax mill established in the thriving district of Papakura, not far from here, and great progress has been made in the development of this useful and, to New Zealand, most important product. The stimulating effect of the rewards lately offered by Government has doubtless something to do with the accomplishment of the object. But the *Phormium tenax* is far too valuable a plant to be permitted to disappear with the cultivation of the country, and I do not despair of seeing this valuable fibre rendered fit for the manufacture of paper and cloth, as well as of rope, and other articles.

grow South of the Manukau, there are still, however, some stray ones to be seen in this neighbourhood.

A pleasant walk of about eight miles brought us to Mauku, a very scattered settlement, which we found in a state of great excitement, owing to a native having been found shot dead in the bush not far off, and an investigation which commenced last Saturday was still going on in a native pah, at Patumahoe, about two miles distant. We called on the resident magistrate, Major Speedy, but he was absent attending it; so after an hour's rest, and some refreshment at the newly established Mauku Bridge Hotel, which is well situated at the head of the creek, I left Dr. Patrick to hear the result of the inquest, and went on to Drury the next settlement, distant about thirteen miles, in a storm of rain which lasted the whole way, the most pitiless I was ever caught in. Nor do I know a drearier road, if road it can be called, for there is not a single settler's hut in the whole distance.

(To be continued.)

SHIPS' EQUIPMENTS, FISHING VESSELS, AND LIFE BOATS. *Jury Report. International Exhibition*, 1862.

(Concluded from p. 81.)

Life-Boats.

The progress made in the improvement of the form and equipment of lifeboats, and in the establishment of them around the coasts of the United Kingdom since the Exhibition of 1851, has been marked and successful. At that period numerous models were exhibited, and several boats which had done good service in saving life were stationed on our coasts, but not a single boat combining all the qualities that are now generally acknowledged to be essential to a good lifeboat had then been built. There are at present 120 such boats, completely and efficiently equipped, stationed at all the prominent and most exposed points of the shores of Great Britain and Ireland.

Before proceeding to describe the models of lifeboats that have been sent to the International Exhibition of 1862, the awards that the Jury have made, and the grounds of those awards, it may be useful and not without interest briefly to give an account of the rise and progress of lifeboats in this country, to point out what are considered to be the essential properties of a lifeboat, and to say a few words on the organization of the National Life-Boat Institution, in order that any other nation that may wish to adopt a similar system may have the means of information at hand to enable it to do so.

In a country bounded on all sides by the sea, with extensive fisheries, with a large coasting and foreign trade, and whose shores in every winter's storm, notwithstanding the precaution of well placed lights, buoys, and beacons, are strewn with the wrecks of ships caused

by rapid tides, outlying sandbanks, and stress of weather, we may naturally expect to find that every means that may aid to save our sailors from the risk incident to navigation under such circumstances has been attended to, and accordingly we learn that the earliest lifeboats in Europe were placed on the shores of the United Kingdom, and that the county of Northumberland may claim the honour of having established the first.

The more immediate circumstance that led to this result was a very disastrous wreck of a ship at the entrance of the River Tyne, in September, 1789, when the crew were seen to drop from the rigging and perish in the presence of thousands of spectators, who watched them from the shore but could render no assistanee. A subscription was forthwith entered into by several gentlemen, and a reward offered for the best model of a lifeboat. The premium was awarded to Henry Greathead, boat builder, South Shields, and the boat was launched on the 30th of January, 1790. This boat was 30 feet long, had great camber or curvature of keel, very raking stem and stern, alike at both ends, 30 inches sheer of gunwale, a cork lining, and a cork fender outside 16 inches deep, had 10 feet beam, and pulled 10 oars double banked, and was not unlike a steamer's paddlebox-boat in form. The utility of this boat being proved, she was soon followed by others, the second one being built for North Shields at the expence of the then Duke of Northumberland. In the course of the next thirteen years, Greathead had built 31 lifeboats, which were placed at the chief ports on the east coast of Scotland and England, and at seven ports in the Baltic; and were maintained by funds collected as a small voluntary tax on shipping entering the several ports.

From the year 1803 until 1824 no alteration appears to have been made in the form or fittings of the lifeboat, except, perhaps, in the sailing boats adopted on the coasts of Norfolk and Suffolk. Yet as far back as the year 1792, the Rev. James Bremner of Walls, Orkney, demonstrated that a boat could be made to self-right.* In 1806 Christopher Wilson exhibited before the Society of Arts the model of a lifeboat with a double side, a foot wide, forming an air case, as indeed had also been proposed by one Lionel Lukin, a coachmaker in London, in the year 1785, or four years prior to Greathead's first boat; but we have not been able to trace that any full-sized boats on these latter plans were ever built.

In the year 1824 the National Institution for the Preservation of Lives from Shipwreck (now the Royal National Life-boat Institution) was established in London by influential city merchants, Mr. Thomas Wilson, then M.P. for the city of London, and the late Sir W. Hillary, Bart., taking a leading part in it. The institution granted rewards for services in saving life from shipwreck and assisted local bodies in placing lifeboats on the coasts, and so far did good service, and doubtless they were animated with the best intentions: but no trouble appears to have been taken to search out the best form of life-

* *Transactions of the Society of Arts*, vol. xxviii. p. 135.

boat, no superintendence was maintained over the boats, no efficient system of control was established, and in progress of time there were not more than a dozen tolerably efficient lifeboat stations in the United Kingdom. Meanwhile the number of wrecks did not diminish, for the winter's storms raged as of yore, and the increase of trade and of competition almost necessarily brought with them an increased number of casualties amongst shipping and a greatly increased loss of life.

Such was the state of things when, in December, 1849, a fatal accident occurred to the South Shields lifeboat, by which twenty of the best and bravest of the pilots of the Tyne lost their lives.

It is happily ordered that disasters in this world are not unfrequently overruled for good; the cry of the widow and the orphan fell not unheeded on one who had both the will and the power to alleviate their sufferings, and the determination to try and devise a remedy, as far as human means could do so, against the recurrence of such an event. In the spring of the following year the Duke of Northumberland offered a reward of 100 guineas for the model of a boat that should combine all the essential properties of a lifeboat. This offer was liberally responded by to boat-builders and others from all parts of this kingdom, and from France, Holland, Germany, and the United States of America; and the large number of 280 models and plans were sent in. Some fifty of the best of them were seen in the Exhibition of 1851, and the prize boat, by Beeching of Yarmouth, formed the foundation of the lifeboat now in use by the Lifeboat Institution.

At the same time the institution aroused itself fram its slumber; its managing committee was invigorated by some new and younger blood and by some professional advisers; the Duke of Northumberland accepted the office of President; one of the most experienced boat-building firms in London, that of the Messrs. Forrestt of Limehouse, was selected to build its boats; an intelligent surveyor of lifeboats, Mr. Joseph Prowse, was appointed, and the services engaged of an inspector of lifeboats, Captain J. R. Ward, R.N., who is constantly employed in visiting the lifeboat stations, and conferring with the local committees all round the coasts. In conjunction with the Board of Trade, who liberally contribute towards the cost, and entirely support the rocket and mortar stations, a fixed scale of salaries was established for the coxswains, and of payments to the crews of the lifeboats, both for services to wrecked persons and for a quarterly exercise of its boats.

It is in this manner, and by the voluntary contributions of the public, that the institution has been enabled, within the last ten years, to place 120 lifeboats on the coasts, to provide them with transporting carriages, boat-houses, the crews with lifebelts, and every requisite for saving life, at an aggregate expense of nearly £60,000; the cost of the first establishment of a station being £450, and its average maintenance about £40 a year. It is a cause of thankfulness that we are enabled to add that these boats have already been the means, under Providence, of saving about 1,000 lives.

Despite, however, of this fleet of lifeboats, and of fifty others locally

provided and supported, making a total of 170 lifeboats; and despite the numerous rocket and mortar stations on our coasts, there remains the melancholy fact that on an average 800 lives are lost annually on and around our shores alone, proclaiming solemnly, though silently, that for humanity's sake, and for the national credit, no exertions should be spared in providing every possible means for the conveyance of succour to the shipwrecked from the shore; and also that some attempt should be made towards providing for the greater safety of the seamen in our home and coasting trade by giving them more seaworthy vessels, by providing refuge-harbours, and by means to be used on board our merchant vessels themselves for communicating with the shore in case of wreck.

The essential properties of a lifeboat as generally acknowledged, and to which we have already referred, may be enumerated in the order of their importance; they are as follows:—Extra buoyancy, lateral stability, self-discharge of water, power of self-righting, small internal capacity for water, yet sufficient space for wrecked persons and for the crew to use their oars; speed; moderate, yet sufficient weight, with facility of transport along shore. It would occupy too much space to enter into details as to how these properties are obtained, nor is it necessary, as on inspection of the model which is exhibited by the National Life-Boat Institution [No. 2,756] it may be seen from its form, dimensions, and fittings that they are all combined in it; as a rowing lifeboat we believe it to be unequalled, and it is the lifeboat generally adopted by the institution. A full sized boat, 32 feet long, with all its fittings complete, is placed in the gardens of the Horticultural Society, as the Royal Commissioners could not make room for the boat either in the building or in the annexe, although repeatedly appealed to to do so.

The Jury have awarded a prize medal to the Royal National Life-Boat Institution for the above models, with all their fittings, as life-belts, boat's liquid compass, life-buoys, heaving lines, &c., for models of two plans of a transporting and launching carriage, and for the very complete organization of the lifeboat service around the coasts of the United Kingdom.

Twyman, H., Ramsgate, [No. 2,760,] exhibits a lugger lifeboat, apparently a fine vessel; it would be a great improvement over the ordinary decked fishing lugger or hovelling boat; has a water-tight deck placed high, and water-tight cases at stem and stern; two tight hatches in the deck, eight relieving tubes, an iron keel, and is rigged with a fore and mizen lug-sail. Such a boat is much wanted, combining most of the safety properties of a lifeboat with those of a vessel able to keep to sea for several days, and, if necessary, to weather out a gale; the builder appears to have shown much skill in the arrangement, and the jury consider him to be worthy of Honourable Mention for his endeavour to introduce so valuable a description of vessel for coast service.

Hawkesworth, A., and Annesley, G., 65, Lincoln's Inn Fields, [No. 2,749,] exhibit a model of the Hartlepool Seamen's Association's

life-boat that has been in use since the year 1853, and has saved many lives. This is the model of a fine powerful boat, great stability, good speed against a high sea, self-righting obtained by partial filling with water of the side air cases, self-discharge of water through an open tank with two open holes and large valves below, and would weigh between four and five tons. This boat is only suitable for a harbour where it could be launched down a slip into four or five feet depth of water, as it is too heavy to be got off a beach, or to be transported along shore; it is very popular among the seamen to whom it belongs, and has done some good service.

Richardson, H. T., Aberhirnant, Bala, North Wales [No. 2,755]. This is an unusual form of boat, if boat it may be termed, consisting of two parallel iron tubes or pontoons, two feet in diameter, connected by a grating or open work deck, and thwarts above for the rowers to sit upon. It only draws ten inches of water, and therefore is well adapted for a very flat beach. It would probably be an improvement to make the cross section of the tubes oval, to build them of stouter iron plate, or perhaps of wood. The objection to them is the uncertainty of the iron plate lasting, its liability to damage by striking heavily on the beach, and the difficulty of transporting it or launching it from a carriage. A boat of this sort is placed at Rhyl, on the North coast of Wales, is much liked by her crew, and has done good service; it is very safe, would be very difficult to upset, and is well adapted for being towed out astern of a steamer. On these grounds the Jury consider this tubular boat deserving of Honourable Mention.

Lieut. P. Halkett, R.N., [No. 2,747] exhibits the model of a portable boat made of waterproof canvas, which is unique of its kind and well known as having been used in the several Arctic expeditions, where it rendered good service; the Jury have awarded a medal to it as the best portable boat, whose good qualities have been tested by experience.

In the British Colonies, there are three lifeboats at the Cape of Good Hope on the plan of the Life-Boat Institution, one at Mauritius, one at Ceylon, two at Sydney, New South Wales, two in South Australia, and it is understood six are stationed on the coast of Victoria, (each station being also supplied with rocket and mortar apparatus,) built at the marine yard of the province, Melbourne, from drawings sent out by the National Life-Boat Institution; one of these boats was instrumental, on the 13th of August, 1859, in saving nineteen persons from the steamship *Admella*, wrecked on that coast. Captain Ferguson, we believe, the active and intelligent harbour-master at Melbourne, exhibits the model of one of these lifeboats, [Victoria No. 250,] for which the Jury have awarded Honourable Mention to mark their appreciation of colonial efforts in this good cause.

Of foreign nations. At Copenhagen the Home Department exhibits a model of the lifeboat used on the coast of Denmark and Jutland [116]. This boat is light, her general form good, has moderate extra buoyancy in the sides and at the ends, and probably is well adapted to the flat beach on which she is placed. Between Fanö and

the Skaw on the west coast of Jutland, a distance of 200 miles, the Danish government has twenty-five lifeboat, mortar, and rocket stations, in addition to five stations on the island of Bornholm under the able superintendence of M. Claudi, which have been the means of saving many lives. The Jury awarded a prize medal to the Danish government to mark its appreciation of its praiseworthy efforts to save life from shipwreck.

On the coast of Sweden, at the entrance of the Kattegat, there is a rocket station at Arildslage, on the south shore of Skeldon Bay; a lifeboat and rocket station at Wiken, eight miles north of Helsingborg; a lifeboat and rocket station at Malarhusen, near Sandhammar, the S.E. point of Sweden, which has been the scene of many wrecks, and a rocket station at the fishing village of Brantevig, at two miles south of Cimbritshama. On the coasts of Prussia there are three lifeboats after the model of the Life-boat Institution of London, stationed, we believe, at Memel, Dantzic, and Stettin. In the gulf of Finland Russia has four lifeboats, built after the English model, and stationed at the island of Hogland, at Filsand to the west of Osel, at the lightvessel off Domesness at the south point of entrance of the gulf of Riga, and a fourth one at Revel, but destined for Swalferort, the north point of the entrance of Riga Gulf; it is understood that another is proposed for the neighbourhood of Dagerort to guard the dangerous Nekmans Ground, on which wrecks constantly occur.

On the coasts of Portugal there are eight lifeboats built after the English model, and in Spain ten, besides eight ships' lifeboats, which are supplied to Spanish gunboats for the Philippine Islands. Lifeboats on the system of White of Cowes, who has built more good ships' lifeboats than any firm in England, are also now supplied to H.M.'s ships on the west coast of Africa. The English model of the shore lifeboat has likewise extended to Brazil, Mexico,,Chile, and even to the Chilian settlement on the shores of Patagonia in Magellan Strait.

In the United States the New York Life Saving Benevolent Association, liberally supported by Congress, has twenty-seven lifeboat stations on the coast of Long Island, New York, and of New Jersey, in an extent of about 300 miles. Each station is provided with a rocket and mortar apparatus for effecting communication with stranded ships, and with a life-car for drawing wrecked persons by a line through the surf, which appears to be very efficacious. By the last report we have seen, that of 1854, as many as 1,500 persons had been saved by the Association, two thirds of whom had been brought on shore in the life-car. A somewhat similar car, in addition to his anchor cradle, appears to form a portion of the Wreck Escape of W. R. Vail of Melbourne, [Victoria, No. 254,] a model of which forms part of the Australian contribution to the International Exhibition.

On the coasts of Holland there are six lifeboat stations, or three on each side of the entrance of the river leading to Rotterdam, within a distance of twenty miles on either side. A. E. Maas of Sheveningen [Holland, No. 171] exhibits a model of one of these lifeboats, to which

the Jury have awarded Honourable Mention. In Belgium there is a lifeboat at Ostend.

In France there are lifeboat stations at Dunkirk, Calais, Boulogne, Havre, and at this latter port the well known gallant Durécu, who has been personally present at the saving of fifty lives, and deservedly bears on his breast the cross of *la Légion d'honneur*, is coxswain or *patron* of one of the lifeboats. The boats, however, do not appear to be of the best form, and are wanting in some of the essential properties of a lifeboat, nor is there any organized system which requires the crews to be exercised periodically, without which it is in vain to hope that the boats should be efficient in time of need. More lifeboats, too, are wanting on the coast, and especially at Ouessant, in the bay of Douarnenez, near Brest, and at the Embouchure de la Somme, the scene of many disastrous wrecks, a spot, as M. Monnier has pointed out in his *Mémoire sur les Courants de la Manche* as well as in *Le Pilote Français*, at which the streams of both ebb and flood tide at certain periods tend to carry vessels into the bight between Le Tréport and Etaples, and which therefore ought to be especially protected by every means for saving life from shipwreck. It may be hoped that the recent decree dividing the coast into three sections, and placing each under an officer of rank of the Imperial Marine, may lead to establishing some new lifeboats. Should this occur, the National Life-Boat Institution of London would gladly cooperate and give any aid in its power by working drawings of the forms of boats and of transporting carriages which ten years' experience has proved to be the best adapted for the service.

The use of rockets and mortars around the coasts of the United Kingdom to communicate with a stranded vessel is becoming very general, as there are many exposed points at which a lifeboat could not be placed. It appears that the Society of Arts,* as far back as the year 1791, awarded a prize to Serjeant Bell, of the Artillery, for his proposal of a mortar for this purpose; but the credit of bringing it into practical use for saving life around our coasts is unquestionably due to the late Captain Manby. In the present Exhibition Mr. H. G. Delvigne [France, No. 1,363] shows a model of (we trust) a further improvement, by the use of a rifled mortar to throw a cylindrical projectile of wood, in which about one half of the line to be carried out is coiled; for this model the Jury have awarded Mr. Delvigne a Prize Medal, to mark their sense of his endeavours to attain so desirable an object. Experiments with this apparatus are about to be made at Woolwich, and should the wooden projectile prove too light to attain a long range, or too fragile to bear the explosion, possibly a metal case might be substituted, retaining the principle of coiling part of the line in the projectile, and thus prevent the frequent breaking of the line caused by the initial velocity of the shot.

Trengrouse of Cornwall, Dennet of the isle of Wight, and Carte of Hull, have used the Congreve rocket for this purpose, and have attained a range of 350 yards in fine weather, and about 300 yards

* *Transactions*, vol. xxv.. p. 135.

against a strong wiud. The use of Manila hemp for the line might probably add to the flight. The supply of rockets and mortars around the coasts of the United Kingdom is undertaken by the Board of Trade, and they are placed under the management of the Coast Guard, who work them admirably. There are at present 169 stations in England and Wales, 41 in Ireland, and 25 in Scotland, making a total of 233 stations in the United Kingdom; and it is gratifying to add that on an average about 300 lives are annually saved through their instrumentality. J. Birt of London [No. 2,776] exhibits a good illustrative model of this mode of saving life from shipwreck, to which the Jury have awarded Honourable Mention.

A simple and more ready means of communicating with the coast would be from the stranded ship, which is generally on a lee shore, but vessels cannot be got to carry the necessary apparatus. Lieutenant Nares, R.N., was, we believe, the first who successfully worked out the problem of communicating by means of a kite. W. Rich of London [No. 2,798] exhibits a well made kite for this purpose, which seems well balanced and adapted for use. The anchor cradle of W. R. Vail of Melbourne, has been already mentioned. The Iron Boat and Buoy Company of Hamburg, exhibits two small cylinders connected by a cross bar, with a square sail to carry a line ashore before the wind, and so effect communication.

In connexion with lifeboats one important means of saving life is by the use of a lifebelt, and no station can be considered complete without a set of lifebelts for the crew. Several sorts of lifebelts have been proposed, as inflated air belts, cork shavings, horse hair, but there seems to be no doubt now that good cork in small pieces strung together so as to be easily flexible, is the best. Captain J. R. Ward, R.N., exhibits a cork life jacket of this description, [No. 2,810,] which has extra buoyancy equal to about 25 lbs., or sufficient to support a man with his clothes on, with the shoulders and chest above the water. It has great flexibility so as readily to conform to the shape of the wearer, and is so fastened on round the waist as not to hinder him while rowing in a boat. This lifebelt is made by J. Birt of Wellclose Square, and costs 14s. It has been adopted by the National Life-Boat Institution for all their boats' crews, and about 4,000 of them have been issued. The Jury have unanimously awarded Captain Ward, R.N., a Prize Medal for his efficient cork life jacket.

The Royal Humane Society [No. 2,801] exhibits models of the apparatus, as ice ladders, drags, &c., used for rescuing persons from drowning, chiefly in lakes, harbours, and rivers, and an account of the means used in restoring suspended animation. The earliest society instituted for this humane purpose was at Amsterdam, about the year 1767, and some years later, chiefly through the efforts of the late Dr. Hawes, M.D., and Dr. Cogan, a similar society was established in London. It is wholly supported by voluntary contributons, has 260 stations, chiefly in and about London, the principal of which is near the Serpentine in Hyde Park, and it has branches at Brighton, Liverpool, Dover, Portsmouth, Bath and Boulogne.

The report of the society states that it has been the means of restoring life to 30,000 persons since its establishment, of which 222 cases occurred during the past year. The Jury have awarded very Honourable Mention to the Royal Humane Society as an acknowledgment of its benevolent efforts in the cause of humanity.

Among other contributions to the Nautical Class the Lords Commissioners of the Admiralty exhibit specimens of charts [No. 2,813]. The coast surveys now in course of execution under the orders of the Admiralty are conducted by twenty different surveying parties, one half of which are employed on portions of the coasts of the United Kingdom, the remainder in the colonies of Australia, Cape of Good Hope, West Indies, Nova Scotia, Newfoundland, and British Columbia, also in the Mediterranean, on the shores of Syria and the Greek Archipelago, in Banka Strait, and on the coasts of Korea, China, and Japan. The specimens of the charts exhibited are portions of the west coasts of Scotland, Lough Swilly in Ireland, and Plymouth Sound; of the colonial and foreign surveys, Haro and Rosario Strait, near Vancouver Island, Grenada in the West Indies, and the island of Crete, and Valetta Harbour in Malta, in the Mediterranean. About one hundred new or very greatly corrected charts are issued from the Hydrographic Office annually, and the number of charts printed and circulated during the past year was 132,000. The Jury awarded a Medal to the Admiralty for the progressive improvement and extensive diffusion of their charts.

Although not falling within the limits of Class XII., the Jury must be permitted to express its gratification at the sight of the charts and other results, the fruits of the voyage round the world of the Austrian frigate *Novara*, which are exhibited by the Commander-in-Chief of the Imperial Austrian marine [No. 1,174]. The track chart of the voyage, and the plan and model of the island of St. Paul in the South Indian Ocean, and of the Nicobar Islands in the bay of Bengal are well worthy of notice, and deserve very honourable mention.

In concluding the Report of the Jury of Sections B and C of Class XII, the reporter considers it incumbent upon him to acknowledge the assistance he has received in the several branches of inquiry. To Adm. Pâris, C.B., of the French Imperial Marine, he is indebted for a description of the forms and peculiarities of the vessels and boats of the Eastern Seas and Pacific Ocean, and to Rear-Admiral Washington for some account of fishing vessels and lifeboats of the United Kingdom; Sir W. Snow Harris has contributed the result of his investigatious and practical experience of electricity as applied to the preservation of ships from the effects of lightning, and Mr. H. D. P. Cunningham, R.N., has traced the progress of improvements in connexion with the rigging and equipments of ships, and in the various mechanical appliances that have lately been introduced in the mercantile marine of this and all other countries. The Report also has been much aided by the opinions of the Jurors as expressed at their several meetings, where all the points were amply discussed.

FRED. J. EVANS, *Reporter.*

The "Porcupine's Soundings," or Professor William King's Reply to Dr. Wallich's Statements.

Belmont, near Galway, Jan. 9th, 1863.

Dear Sir,—In the last number of your valuable periodical, Dr. Wallich unhesitatingly accuses me of "wholesale plagiarism." This is a grave charge,—expressed in strong language. Permit me to answer Dr. Wallich; and in the end, I feel assured, you will see that it will be unnecessary for me to take any further notice of "statements" made by this gentleman.

Dr. Wallich "feels himself imperatively called upon to put the public in possession of a few facts and extracts upon which our respective claims to originality of thought and correctness of reasoning may readily be estimated." I am quite willing to bow to the decision of the public.

Yours, &c.,
William King.

To the Editor of the Nautical Magazine.

I beg in the first place to correct a misstatement made by Dr. Wallich in the beginning of his paper! I totally deny having "set forth any of the propositions as original," which he has noticed; though I strongly suspected that one, at least, might prove to be such.

Dr. Wallich extracts from my papers thirteen passages, which principally treat of the following ten propositions or subjects:—

First.—Corals and Foraminifers abstract the lime composing their skeletons from calcareous solutions occurring in the ocean. See first portion of No. 3 extract.*

Second.—Oceanic calcareous matter is derived from limestones and other rocks on land, and conveyed into the sea by rivers. See No. 9 extract, and second portion of No. 3.

Third.—Limestones, generally, are of organic origin. See No. 6 extract.

Dr. Wallich wishes it to be understood that he has "discussed in detail" these and the other propositions, in his *North-Atlantic Sea-bed*, and two previously published pamphlets. Be this as it may, any one conversant with geology must be well aware that Dr. Wallich, notwithstanding his implied pretensions, can have no "claims to originality of thought" with regard to the three propositions just adduced.

Dr. Wallich sent a copy of his paper to the Editor of the *Galway Express*, who necessarily felt himself bound to publish the following observations with reference to the above stated propositions.

"No doubt Professor King will give a satisfactory reply to Dr.

* I beg of the reader to number consecutively the extracts from my papers in the order given by Dr. Wallich.

Wallich's remarks; and it is therefore unnecessary for us to do more than express an opinion, that as to many of the matters in dispute, neither Dr. Wallich nor Mr. King can have any claim to originality. They have long since been made public property, and identified with the names of Bischof, Maury, Berryman, Bailey, Pourtales, Dayman, Huxley, and others, and have all been admirably condensed in the new edition of Professor Juke's *Manual of Geography*."

It is unnecessary for me to add a single word to the foregoing, except to supplement the names of Phillips, Lyell, De la Beche, and Dana (others might be added), who, in their several writings, have treated of some or all of the subjects named.

It would have reflected little credit on me had I not expatiated on these propositions in my class lectures. Indeed, there would be no difficulty in obtaining ample testimony to this effect from my students; but my doing so is rendered quite unnecessary after the publication of the following statement by the authority already cited:—

"With reference to the four propositions—that the mud of the Atlantic Sea bottom consists essentially of dead and living Foraminifera; that these organisms obtain by vital action their calcareous matter from the ocean, while it in turn derives it from the limestones of the land through the agency of rivers; and that limestones are of organic origin;—we have before us a course of lectures delivered under the auspices of the Board of Trade, at Bandon, by Professor King, early in September, 1861, in which these propositions are enlarged upon, in *almost the same terms as those* employed by him in his *Preliminary Notice*, and in which, so far from claiming any originality of discovery, he distinctly attributes them to the distinguished authorities whose names we have mentioned above. We may also mention that more than twelve months ago these lectures were in our hands, and we then strongly advised Professor King to publish them, a step which we still hope he may be induced to take."

Dr. Wallich entirely disregards the fact that my *Preliminary Notice* is descriptive of phenomena which I was bound to notice. The subjects which it has fallen to our lot to bring before the public are kindred; it was therefore to be expected that our respective writings would occasionally contain coincidencies of "thought" and "identity of terms;" especially as both of us must have read some or many of the writers who have been named.

Now that I have reperused the various papers written by the late Professor Bailey, (whose name must ever remain associated with pelagic soundings) particularly the one in *Silliman's American Journal*, of March, 1854, I must candidly confess that the discoveries of this distinguished microscopist in deep sea Foraminifera, made such a lasting impression on my mind, at the time of their publication, that much of what I have written on the subject has taken a colouring from his language. The testimony already adduced shows that in my Bandon lectures, delivered in August and September, 1861, I have acknowledged Bailey as one of my authorities in regard to the foraminiferous character of Atlantic soundings. I have also made a

similar acknowledgment, *even mentioning Dr. Wallich's name at the same time*, on the very earliest occasion in my *Preliminary Notice*. But it is a remarkable and no very creditable fact, that Dr. Wallich himself has no where in any of his writings noticed Professor Bailey's name in connection with this subject!

Reverting to the first proposition, that "Corals and Foraminifers abstract the lime composing their skeletons from calcareous solutions occurring in the ocean," Dr. Wallich's view is different from mine. He ignores altogether the presence of sulphate of lime in sea water as far as the point in question is concerned; for, according to his opinion, these organisms form their solid structures directly from *carbonate* of lime. I am quite willing for the public to decide as to "our respective claims to correctness of reasoning" on this point. Dr. Wallich indulges largely in "originality of thought." The South and North Atlantic respectively possesses organic and inorganic features unknown to others. He has imagined having found at the bottom of the one what no one else could have conceived—a microcopic Mammal, while in the depths of the other he has discovered, besides *Buss' "sunken land" at* 748 *fathoms*, a salt of which no one has ever detected a trace.

Fourth.—Atlantic deep-sea mud consists of living and dead Foraminifera. See No. 1 extract.

What resemblance is there between our respective passages on this subject? Truly Dr. Wallich must have got a remarkable vision to detect in such passages a case of "wholesale plagiarism" on my part. But will it be believed? Instead of our views, as regards the proposition involved in the passages noticed, being identical, they are not so. I have not hesitated to declare, with Ehrenberg, that the "surface of the deep-sea-bed of the Atlantic is one vast sheet of *living* Foraminifera;" whereas Dr. Wallich, albeit the advantages he had while attached to the *Bulldog*, and his "reasoning" for upwards of two years, has not got much beyond the dawning conclusion of Bailey (*Am. Jour., cit.*, p. 178) and the favoured view of Huxley (Dayman's *Report*, p. 67); inasmuch as it cannot be said he *latterly* maintains otherwise than that there is a considerable "degree of probability attached to the opinion that Foraminifera live and multiply at the depths from which the sounding machine occasionally brings them"† (*North-Atlantic Sea-bed*, p. 82). Here is what Huxley says!—"I confess, though, as yet, far from regarding it proved that the *Globigerinæ* live at these depths, the balance of probabilities seems to me to incline in that direction."*

* I may be permitted to ask if Dr. Wallich's "reasoning" in the bottom paragraph, p. 187, *North-Atlantic Sea-bed*, is not "borrowed without acknowledgement" from Huxley's sixth paragraph, p. 66, Dayman's *Report?!* Accusers, before going into court, ought to see if their own hands are clean! Again, why has the author of the *North-Atlantic Sea-bed* never noticed Colonel Schaffner's deep-sea soundings, taken between Labrador and Greenland, also between Greenland and Iceland in 1859, and in nearly the same places, which yielded much of the "*Globigerina* mud" described in this work.

Fifth.—Rate at which Atlantic mud is forming. See Nos. 2 and 10 extracts.

Another case of "wholesale plagiarism," which it will be impossible for any one to detect except my accuser. Dr. Wallich ought to have remained silent on this subject, for notwithstanding the time he has expended in "discussing" it, his writings show that he is behindhand as regards facts long since made known by Darwin (see my *Supplementary Note* in *Nautical Magazine*, December, p. 654) and Dana relating to the "rate of growth of coral-reefs."

Sixth.—Balance of Nature. See Nos. 8 and 9 extracts.

This subject reveals another attempt on the part of Dr. Wallich to lay "claims to originality of thought," which must be conceded to others. Some of the most beautiful passages in Maury's *Physical Geography of the Sea* (pp. 182 to 184, 195 to 204, likewise 258 and 259, sixth edition), also others in Bischof's *Chemical and Physical Geology* (p. 172, par. 2, and p. 182, par. 3) treat of this subject in much the same terms as we find in the *North-Atlantic Sea-bed;* yet Dr. Wallich has not made the slightest acknowledgement of having borrowed from these prior authorities! The reader will be amply repaid by consulting the passages to which I have referred.

Seventh.—Consistency of Atlantic mud with reference to submarine telegraphy. See last passage of No. 12 extract.

Again, what resemblance, &c., &c.?!

Eighth.—Oolitic character of Atlantic deep-sea mud. See No. 5 extract.

I must now admit that Dr. Wallich has anticipated me in having detected the resemblance between "pure Globigerina-deposit" and "fine Oolite." It is unfortunate, however, for Dr. Wallich's case that I have not seen, until within the last two or three days, his *Lecture* containing the passage he has adduced; nor was I aware that he had written or published anything on the subject before I read his charges!

I may here take the opportunity to state that my *Preliminary No-*

These soundings, were communicated to the "Submarine Telegraph Committee" upwards of three months before Dr. Wallich left England on board the *Bulldog*. It is a remarkable circumstance, too, that Ehrenberg discovered in Co'onel Schaffner's soundings abundant evidence supporting his "biotic" views (see *Report*, p. 223): consequently, contrary to Dr. Wallich's assertion (*Notes, &c.*, p. 9), the "long mooted question as to the occurrence of certain species of Foraminifera in a living state at vast depths" *was "solved"* (and probably to the extent it ever will be) before he detected "sarcodic contents" within the chambers of *Globigerinæ*, forming "North-Atlantic" ooze. (Nay, his "startling" and presumed "discovery of highly organized animals at great depths was anticipated more than forty years ago by Sir John Ross!" This correction, made by Jeffreys, (*Annal. Nat. Hist.*, April, 1861,) *still remains unacknowledged* by the author of the *North-Atlantic Sea-bed!*) Colonel Schaffner's depths are also ignored in Dr. Wallich's map; though they are very properly inserted in the map appended to Captain Sir F. L. M'Clintock's *Survey of the "Bulldog,"* read before the Royal Geographical Society in January, 1861.

tice, with the exception of the fourth, fifth, and sixth paragraphs, likewise a few sentences and verbal alterations in other parts, was written and forwarded to the Cambridge meeting of the British Association, at which Dr. Wallich himself was present, before I had an opportunity of reading the *North-Atlantic Sea-bed!* Indeed, I have good reason for believing that my paper was drawn up before this work was in the hands of the booksellers. When the additional paragraphs were written I certainly had a copy by me; but their subject matters have nothing to do with Dr. Wallich's "originality of thought." Next, with reference to my *Supplementary Note*, although it was written after I had cursorily read portions of the *North-Atlantic Sea-bed*, there is nothing contained in the former, as will have been seen, to justify Dr. Wallich in bolstering up his charges against me. It may also be stated that I had neither read, nor seen Dr. Wallich's *Notes on the Presence of Animal Life at Vast Depths, &c.*, until within the last three weeks! All I knew of his researches at the time of drawing up my *Preliminary Notice* was gathered from stray notices and an advertisement in the *Athenæum*, announcing that his last work was on the eve of publication.*

Ninth.—Oolites have originated from *Orbulinæ*. See No. 13 extract. Dr. Wallich admits, in this case, that our respective views are "at direct variance." Why then has he introduced the subject in his paper? Such an ineffectual attempt to overthrow the proposition!

Tenth.—Calcareous constituents of the ocean. See No. 3 extract. Having expressed in my *Preliminary Notice* that "there is little chance of a telegraph cable getting injured if laid down on foraminiferous bottoms," I was requested by a friend, deeply interested in Atlantic telegraphy, to state to him briefly, for publication, my reasons in support of this opinion. To do so, it was necessary for me to allude to the calcareous salts of the ocean; but not being able to consult, at the moment, Bischof's *Chemical and Physical Geology*, well known as the latest authority on the subject, I referred to the *North-Atlantic Sea-bed* (which was at hand at the time) and found in it a copy of the learned chemist's table of the average composition of sea water, founded on the analyses of Von Bibra. Necessitated to be brief, I simply quoted the name of the latter, he being, though not the latest, the *principal* authority. But in doing this, and in the hurry of the moment, I misunderstood the application of a parenthetical passage, and misconceived the authority for it. I also cited a calcareous constituent (often present in sea water) *erroneously* given by Dr. Wallich in his *copy* of Bischof's table. Now, instead of unblushingly and ecstatically charging me with having "appropriated his error," it would have been more resonant to the good taste of this

* I feel it necessary to mention that it is only within the last three weeks that I have seen or read Dayman's *Report on Deep Sea Soundings* and Huxley's addition to it. I have avoided, as much as possible, consulting any work on the subject until after I had published my *Preliminary Notice*, wishing to form independent conclusions from *data in my own hands*. If I have been anticipated in anything I am quite ready to make the admission.

gentleman had he written me a letter calling my attention to the mistake I had made, and apologising for having been the means of causing me to commit another. It will now, I trust, be evident, notwithstanding Dr. Wallich's imposing array of "extracts" and italicisms, that his charge against me of "wholesale plagiarism"—both in its general nature and particulars—is a gratuitous imputation. As to the "original thoughts" for which Dr. Wallich claims to be "protected," the reader will have seen that other writers have far more reason to claim the like protection against Dr. Wallich himself!

[This controversy must now stop. Our limited space is wanted for its legitimate matter.—ED.]

SHORT SAILING DIRECTIONS.

If brevity really be the "soul of wit," as agreed on long ago, then must brevity be the first principle of good writing, and perspicuity the spirit of it. But brevity has another charm also very well known. Who, for instance, does not turn away almost in despair on meeting with an unbroken page of long drawn out, scarcely ever ending, sentences, and wish the writer all kind of questionable blessings. Would he not rather take one of at least a few paragraphs of well considered periods, where every word fits its place and is left to do its duty unmistakably. To leave a correct impression of his meaning on the mind of his reader is of course the first intention of a writer; but how often does he fall short of this by going a round about way to his point? Innumerable arguments might be advanced in favour of perspicuity and brevity in plain honest writing, the fair selection of what may be considered John Bull's vulgar tongue in contradistinction (possibly so expressed) to that mealy mode of expression considered by some as fine writing.

Now if there be any part of our literature that demands attention to those qualities, it is that which is intended for the use of our seamen. That which they generally employ is plain and straightforward to the point; their expressions are full of meaning not to be mistaken. Then why not copy them,—not always perhaps in the choice of words, but in terseness and vigour of expression. It would be doing them a service in reducing the sailing directions to which they are obliged to refer for every day use. Every one, for instance, who knows Horsburgh's *East India Directory* knows well that it is an invaluable work, in fact, the seaman's Vade Mecum, indispensable to his safety. But Horsburgh is not free from the common objection of the ponderous size to which such works have grown. And as nautical discovery is being daily extended in all parts of the world, (for it may be said that as yet we do not know half that we have to know,)

to what a size must Horsburgh's two volumes be continuing to expand for many years to come.

But now the question naturally arises, is Horsburgh, full of information as he is with his two volumes, is he as concise and yet as expressive as he might be? Might not Horsburgh, in fact any of our nautical works, not excepting the similar works of Mr. Laurie and other publishers, be reduced at least by one third of their bulk? However, to leave other works, although they are all much of the same composition, let us take our newest book at hand and select an illustration of the foregoing. Here is the *New Zealand Pilot*, and the first page that opens shall be taken. For instance, here are the directions for entering Wangari Harbour in New Zealand taken as a sample of what the seaman has to follow.

It is stated that—

To enter Wangari from the northward or eastward, and after rounding or passing Bream head extreme, the mountain (Bream head) should be brought to bear N. by W., keeping half a mile off the shore; when this bearing is on, steer W. by S., or parallel with the coast, for 2 miles: the Sugar loaf off the west point of Busby head will then bear N.W. by W ½ W. and the western sandy entrance point will be just open of it; observing that in approaching Wangari on this course, the Sugar loaf will not appear as detached from Busby head until the above marks are nearly on.

When the above marks are on, steer immediately W. by N. ¾ N. for nearly a mile, which will lead abreast the Sugar loaf, and 2 cables' lengths from it; when abreast it at this distance, alter course to N.N.W. ½ W., or for the left extreme of the high islet on the north shore of Calliope bay; little more than half a mile on this course will be abreast and 2 cables' lengths from Home point. If the first anchorage is desired, haul close round this point, proceeding to the eastward a quarter of a mile, and anchor in 4 fathoms, 1½ cables' lengths or less from the shore: here a vessel will be almost out of the tide and in safety.

If the second anchorage is preferred, (and which is recommended for vessels of large size,) when abreast Home point and about two cables' lengths off it, steer N.W. by N., or one point to the left of high islet on the north side of Calliope bay, for one mile; or until the sand hillock on the western sandy entrance point bears W. by S. ½ S., or High islet centre N. ½ W.; then alter course to W. by N., to pass one cable's length to the southward, or on the port hand of Channel islet in 13 fathoms;—anchor N.W. by W. from the centre of the islet 4 cables' lengths distant from it in 5½ fathoms; a vessel will then be a quarter of a mile from the shore, and the same distance from the nearest part of the Snake bank, or Middle ground.

By following the above directions a patch of 4½ fathoms will be passed over, E.S.E. one mile from Busby head, from thence midchannel to abreast the Sugar loaf, from 6 to 9 fathoms will be carried. From the Sugar loaf to abreast Sandy point, 10, 12, and in some

places 14 fathoms. From thence to Channel islet from 8 to 9, and close to the islet 13, when it immediately shoals towards the anchorage to 7 and 5 fathoms over sand and mud.

The banks of the channel are rather steep; and if a vessel gets into 4 fathoms on either side, she is too close.

Now all this occupies the best part of a page, and most important it is. But for mere directions to the seaman as to what he is to do, even the page is much space considering how little is conveyed. Might it not be reduced? Perhaps so. A mode of abbreviation of words might effect this. Let us try.

To entr Wangari from ' Nd or Ed, and aftr rndg Bream hd, ' mntn (Bream hd) shd be brgt N.b.W., kpg ½ mle off shre: whn ths brng is on steer W.b.S., or parll to ' cst 2 mls; ' Sugar lf off ' W. pt of Busby hd wl thn br N.W.b.W. ½ W. and ' Wn sndy entr pt wl be jst opn of it: obsvng tht in aprchg Wangari on ths crse, ' Sugar lf wl nt apr as dtchd frm Busby hd til ' abv mrks are nrly on.

Whn ' abv mks are on steer W.b.N. ¾ N. for nrly 1 mle, whh wl ld abrst ' Sugar lf, and 2 cls frm it: whn abrst it at ths dstnc, altr crse to N.N.W. ¼ W., or fr ' lft ex of ' hgst islt on N. shre of Calliope bay; ltle mre thn ½ mle on ths crs wl be abrst and 2 cbls frm Home pt. If ' 1st anchrge is dsrd, haul clse rnd ths pt, prcdng to ' Ed ¼ mle and anchr in 4 fms, 1½ cbls or lss frm ' shre: hre a vsl wl be almst out of ' tde and in sfty.

If ' 2nd anchrge is prfd, (whh is rcomdd fr lrge vsls,) whn abrst Home pt and abt 2 cbls off it, steer N.W.b.N., or 1 pt to lf of high islt on N. sde of Calliope bay, fr 1 mle; or til ' snd hilk on ' Wn sndy entr pt brs W.b.S. ½ S., or high islt cntre N. ¼ W.; thn altr crse to W.b.N. to ps 1 cble to Sd, or on prt hnd of Chanl islt in 13 fms:— anchr N.W.b.W. frm cntre of ' islt, 4 cbls frm it in 5½ fms: a vsl wl thn be ¼ mle frm ' shre, and ' sme dstnce frm ' nrst prt of ' Snake bk, or Middle grnd.

By flwng ' abv dretns a ptch of 4½ fms wl be psd ovr, E.S.E. 1 mle frm Busby hd, frm thnce md-chl to abrst ' Sugar lf, frm 6 to 9 fms wl be carrd. Frm ' Sugar lf to abrst Sndy pt, 10, 12, and in sme plces 14 fms. Frm thnce to Chnl islt from 8 to 9, and clse to ' islt 13, whn it imdy shls twrds ' anchrge to 7 and 5 fms ovr snd and md. ' bks of ' chnl are rthr stp; and if a vsl gts into 4 fms on eithr sde, she is too clse.

Not much space saved certainly, and the system would not suit all seamen. It would have to be learned, and even then would be open to the charge of ambiguity. Therefore we will dismiss it, although there are certain words which are continually recurring, such as the points of the compass, cape, point, &c., that might be abbreviated and kept so always.

But let us look into the extract. It has been taken as it is at random, and let us see if a recast of the information conveyed in it can-

not be made without the rabble of small words about it. The meaning must be identical in both, and a New Zealand pilot on being asked how he would take a ship into Wangari Harbour, might answer in something like the following terms.

To enter Wangari from northwd.

Bring Bream Hd mountain to bear N.b.W. ½ mile: steer W.b.S. 2 m.: then Sugar loaf will bear W.N.W. ½ N. and West Sandy Pt be just open of it:—but Sugar loaf will not seem detached from Busby Hd till these marks are on.

Now steer W.N.W. ¼ W. a small mile from abreast Sugar loaf (2 cabl off): then steer N.N.W. ¼ W. ½ mile to abreast Home Pt, for left extr of high islet on N. shore of Calliope Bay.

If for first anchorage, round Home Pt closely—run eastwd ¼ mile, then anchor in 4 fms, 1½ cable off shore, safe out of tide.

If for second anchorage (best for large vessels): From Home Pt (2 cables off) steer 1 mile N.W.b.N., or a point left of high islet: then Sand hill on Westn Sandy entrance pt will bear W.S.W. ½ W., and High islet N. ¼ W.: steer then W.b.N, passing 1 cable southd of Channel I. and anchor in 5½ fms with islet S.E.b.E., 4 cables: ¼ mile off shore; Snake Bk or Middle Grnd the same distance.

By these directions a 4½ fms patch is crossed E.S.E. 1 mile from Busby Hd: thence to abreast Sugar loaf ship is in 6 to 9 fms mid-channel; from Sugar loaf to Sandy Pt in 10, 12, and 14 fms; thence to Channel Islet in 8, 9, and 13, shoaling to anchorage in 7 and 5 fms sand and mud.

The banks being steep, shoaling to 4 fms on either side is too close.

Now, had the Wangari pilot answered in the foregoing words, he would have saved both time and space, and thereby have accomplished his purpose by short sailing directions.

THE STRAIT OF GIBRALTAR: *Its Winds, Tides, and Navigation.*

(Continued from page 63.)

Tides and Currents.

Tidal Streams.—Independently of the current which is always running through the Strait of Gibraltar from West to East, others are experienced arising from the flowing and ebbing of the tide. Various observations have been made at various places in the Strait, with the view of finding the tidal establishment or precise time of high water on full and change days; but they have only been successful in the bays of *Algeciras* and *Gibraltar*, *Ceuta* and *Tangier*, and another or two, without enabling us to determine the same for the different

points of the coasts which form the Strait. Of these establishments as no different data have been obtained from the observations so assiduously carried on, we shall transcribe the principal accounts we have received from the most experienced pilot of the Strait, Sen. Don V. J. Urquero. In an account he gave in 1825, he says,—

"The pilots agree that at spring tides a vessel of any size can pass the Strait from East to West, if she be a good sailer, by availing herself of the tide when the wind is from the westward. I can assert that I have seen the American ship *Franklin*, of 74 guns, do this, and I have no doubt that any other vessel which sails as well would do it at spring tides, availing herself of the flood to get to the westward of the meridian of Tarifa, for from thence to the westward the strength of the easterly current is much lessened.

"*The Coast of Spain.*—The stream of flood to the westward begins on the first day of the moon at 5h. in the morning, the westerly set being then evident in a belt of water which extends out to the following distances from the shore:—

Off Cape Trafalgar	1 mile
Off the low point of Cape de Plata	0¼ ,,
Off Point Paloma and Point Pena, inside the shoals	1 ,,
Off the southernmost point of Isle Tarifa	1 nearly
Off Point de Canales	1 ,,
Off Point Guadalmesi	0½ ,,
Off Point Acebuche	1 cable
Off Point Fraile and its Tower	0½ mile
Off Point Europa	0¼ mile

Off these points runs a line which we shall call the line of the *shore counter-current.*

"On the same first day of the moon the following phenomena always occur outside of the above line.

"From the meridian of Cape Trafalgar to Pena Tower the commencement may be observed of a cessation in the easterly current an hour after the beginning of the flood tide running to the westward, that is, at 6h. in the morning; and half an hour after, the water generally, as far as the middle of the Strait, runs westward.

"From the meridian of Pena tower as far as Point *Camorro* the suspension of the easterly current begins at three hours of the flood tide running westward, or rather about 8h. a.m.; the stream remaining, as termed by the pilots of the coast, checked or suspended during the whole tide. But during the three hours the shore counter-current widens to about one mile from the outermost or most projecting points.

"From the meridian of Point Camorro to the eastward the waters run constantly East in the fairway of the Strait. But at three hours of the flood running westward the above shore counter-current widens so as to form a decided belt of waters running past the following points to the westward.

"*Outer Line of Shore Counter-Current.*—This is only observed between the meridians of Point Camorro and Point Europa.

From	Point Guadalmesi	at	2 Miles
„	Point Acebuche	scarcely	2 „
„	Point and Tower Fraile	„	2 „
„	Point Europa	at	2 „

It must be remembered that all these phenomena are only observed in days of spring tides, as in ordinary tides only a single counter-current is observed, which extends to a short distance from the coast, following its sinuosities, and passing inside the *Cabezos;* and even in this same counter-current the stream runs very weak to the westward, not being sufficient for large vessels to work westward in, excepting in some special case, at the cost of much labour even to small vessels when the wind is from N.W. to S.W.

African Coast.—The flood to the westward begins on the day of full moon at 6h. a.m., an hour later than on the coast of Spain, and the line of counter-current extends off the shore to the distances marked against the following principal points of the coast:—

From	Cape Espartel	at	1 Mile
„	Point Malabata	„	1 „
„	Point Alcazar	„	1 „
„	Point Cires	„	0½ „
„	Point Leona	„	0½ „
„	Point Almina	„	0½ „

One hour after the flood commences, or at 6h. a.m., on the first day of the moon, from Point Alcazar to the westward a suspension of the waters in their usual easterly course is observed, and at an hour and a half of the flood they change their direction and run to the westward throughout the breadth of the Strait, differences being observed which form a second line of counter-current, as on the Spanish coast, only from this meridian to the eastward in the following manner.

At three hours after the commencement of the flood to the westward, or at 9h. a m., the counter-current separates, extending itself in the offing, as above observed, from Point Alcazar to the eastward as follows:—

From	Point Cires	to	3 Miles
„	Point Leona	„	1½ „
„	Point Almina	„	1½ „

These differences are only observed, as already noted off the Spanish coast, at spring tides; for in ordinary tides the counter-current only extends to the lesser distance which we have mentioned for the line of counter-current for the same coast.

Apart from the theories of some philosophers and geologists, who assert the existence of a counter-current in the Strait of Gibraltar more or less deep from the surface to meet the doubts and opinions against it with the view of accounting for the huge mass of water which the ocean is continually giving to the Mediterranean, we shall confine ourselves to treating on the current which is evident and known to all navigators, commonly called the *general current.* This always runs from West to East, with the exception of those narrow

strips of the sea close to the coasts, the surfaces of which set to the westward during the flood tide. Of these counter-currents or reverse streams of tide we have already made full mention.

According to Major Rennel there is a tendency in the waters of the ocean between the parallels of 30° and 45° of North latitude and from 100 to 130 leagues from the coasts of Europe and Africa, to run into the Mediterranean through the Strait of Gibraltar. Even when this action is not sufficiently proved to be the case, it is nevertheless beyond a doubt that the waters of the bend of the coast comprehended between Cape St. Vincent on the Portuguese coast and Cantin on the African coast run as if by a funnel through the Strait with a velocity of ten to twenty miles in the twenty-four hours,—with greater velocity near the Capes of Trafalgar and Espartel, more rapidly in the middle, than on either coast, and with increasing strength in proportion as they advance into the channel;—acquiring their greatest strength in the meridians of *Tarifa* and Point *Cires*, and continue their rapid course until losing themselves in the Mediterranean, where they take different directions as they approach either shore.

On the coast of Spain inside the Strait the waters of the general current incline to the S.E., whilst on that of Africa they take the direction of N.E., those in the middle following an East course. From the neighbourhood of Tarifa, where the current attains its greatest velocity, the waters advance E.S.E., as if they would keep the direction which they had acquired on the coast of Spain, while those of the opposite coast incline to E.N.E., these two currents combined producing a current of greater strength on the African coast than on that of Spain. They continue in this last direction until dividing in the bays of Algeciras and Ceuta and entering the Mediterranean, where they incline to the N.E. on the Spanish coast and to the S.E. towards that of Africa. When to this general current is added the ebb of spring tides, its strength is considerably increased, attaining the velocity of five miles an hour in the narrow of Tarifa and Cires.

The general current only remains checked with spring tides and the duration of easterly winds; but it preserves its easterly direction always with more or less strength in the middle of the channel comprised between the meridians of Tarifa and Europa. And if at any time it has been seen stopped in the middle, or inverted, it has been momentary, and when a great equinoctial spring tide has been combined with the force of the wind, or from some physical cause that the waters of the ocean have suffered some considerable but momentary depression.

Velocity of the General Current.—With the exception of these very rare cases the current runs into the Mediterranean with a velocity which as yet has not been exactly determined, nor would it be easy to do so considering the impossibility of anchoring a vessel mid-channel in it, from the increased depth found there (455 fathoms in the narrow off Tarifa and 100 between Gibraltar and Ceuta). Nevertheless, from various observations made at different times, it has been found that the general current in the strait of Tarifa in the middle of the channel is two to three miles per hour in its normal condition, or

rather with fine weather and no tide, reducing it to a little more than one in the vicinity of Tarifa and two on the African coast.

At a cable's length from Tarifa and when the ebb to the eastward at spring tides is running with the general current, it attains a velocity of more than four miles an hour in a S.E. direction, and reaching five and a half and four miles North of Point Alcazar, where they run from West to East.

Inside of the above distance from Tarifa, the flood acquires a velocity of two to three miles at springs, which becomes little more than one at neaps. Outside of the limit a (cable's length), the course of the general current is from West to East.

At springs the stream of tide near the coast and in the bays runs at the rate of one and a half to two miles per hour, there being places where it is nearly ceased at neaps. These currents always run much faster on the ebb than on the flood, thus showing the effect of the general current.

Streams of Current.—The streams of current which are so frequent and numerous in the Strait of Gibraltar generally occur in the vicinity of the outermost points of both coasts and near their offlying banks. They are formed instantaneously and without any previous symptoms, even when the sea is in its most quiet condition. An ebullition suddenly appears in the water and a ripple is formed which is repeatedly breaking. If to this phenomenon is added the force of the wind and that of the sea produced by it, the streams of current then become very formidable, not only for small boats but even for larger craft. Sometimes they acquire an eddying movement, which deprives vessels of the power of steering, and obliges them to make a detour unless there be wind sufficient to enable them to stem the stream. The case of a vessel may be quoted when steering with a light wind aft from the westward and a heavy sea running against her, which was caught by one of these streams of current off Point Leona. Losing her steering, she drifted to seaward and became dismasted. Instances also are frequent of small craft, fishermen and feluccas, having been capsized in these streams.

No rules can be given for avoiding so insidious an enemy, for sometimes it is formed by the vessel's side, and after accompanying her for some distance then leaves her.

The strongest streams are those which are formed off the sharpest points, and those with which the coast suddenly changes its direction. They mostly attain their greatest strength at half tide, when the current of flood and ebb is strongest. They are common on the West of Spain, and it may be said they take their rise at Cape Trafalgar, the Cabezos Rocks, Isle Tarifa, Point Fraile, the Pearl Rock, and Europa Point. On the opposite coast they are Cape Spartel, Points Malabata, Altares, Al-Boussa, Cires, Leona, and Point Santa Catalina in Almina de Ceuta. They are also met more commonly East of the meridian of Europa Point and well into the Mediterranean, although there they may not be so considerable.

Stream off Cape Trafalgar.—The most violent are experienced off

Cape Trafalgar, without ceasing, on every tide with more or less strength according as it may be spring or neap tides. They acquire their greatest strength at half tide of springs, and are more extensive than all the rest of the Strait, reaching out in a S.W. to W.S.W. direction, passing over the Aceitera and other rocky banks near it. When a lifting sea joins with these streams of current, the proximity of these places is doubly dangerous to a vessel, on which account they keep wide of the cape when entering or leaving the Strait in a heavy sea, proving the value of the mariner's adage,—"*Off Cape Trafalgar pass either far inside or far outside.*"

Currents on the North Coast of the Strait.—Nor are these currents less constant over the Cabezos every tide, accompanied by eddies of greater or less extent according to their strength. They extend outside and across the Bajas frequently crossing the Strait and running over the banks which are off Points Malabata and Al-Boassà, a fact that has obtained for them among the pilots of the Strait the name of Streams of the Bajas. In their normal condition they are not very strong, and in a smooth sea only produce a ripple of little consequence. But in bad weather they cause considerable breaking in the sea.

Off the island of Tarifa every half tide produces its stream of current, however small its extent. The ebb runs to the S.E. and the flood to the S.W.; the stream on the ebb always being the strongest. They vanish in proportion to the distance from the place where they commence, and appear afresh.

Those which are observed off Points Fraile, Carnero, and Europa, are similar to these already described, but of less extent, and disappearing in proportion as the Mediterranean is entered.

Currents on the South Shore of the Strait.—The streams of current off Cape Espartel, Point Judios, and off Tanger, are of no great importance, but all forming at the period of half tide.

The strongest on the coast of Africa commence between Points Malabata and Al-Boassa. They appear to be the result of the current striking against the Phœnix and Jaseur Banks on each tide, extending their effect over the great bank or Bajos, which from the coast of Africa reaches over towards the Cabezos. It may be truly said that these streams meeting with those of the Cabezos are the only ones which cross the Strait, forming at every half tide a rip from North to South.

The streams of Points Cires, Leona, and Santa Catalina extend but to a short distance from the coast, but they are strong on the spring ebbs, receiving then the strength of the general current. They are never so strong on the flood.

(To be continued.)

Weather Warnings and a Great "Day Auroral" Storm.

H.M.S. "Devonshire," Sheerness, February 1863.

Sir,—Although so much has occurred since my last letter to you of the 18th November to severely try any weather theory (and mine in particular, because its "warnings" are totally irrespective of any visible or sensible prognostics), I have the pleasure of appearing again in your pages, encouraged to renew, with your kind permission, the advocacy of a "weather system" which really has, thus far, stood the test of one of those severe seasons with which we are of necessity occasionally visited. The gales and tides of the last three months have exceeded in violence and height any which, during the five years of my residence in this ship, had previously come under my observation, or perhaps that of others.

The enormous correspondence which my special coast warnings since September have caused (principally with the readers of this magazine, and from the general warning for the next half year, as published in the *Standard* of 1st January last) having somewhat abated, it is my duty to the public, whose curiosity has been excited and whose approbation is so flattering, to make some statement relative to what has occurred, either as calculated to substantiate or to refute my views with regard to lunar influences on weather.

Before entering upon some necessary details which cannot be otherwise than acceptable to nautical readers, it must be remembered that for three years (and since you allowed me to first announce certain opinions, which were then *novel*, upon the causes of atmospheric disturbance) there has been the "dead wall" of prejudice to surmount and the "solid rock" of settled opinions to perforate: that so far from the friendly tender of help having been made by men who had the power, and whose countenance would have cheered me onward to an earlier success, the "door of science" has been not only *shut* but *slammed* against me.

I should be unworthy of the kind consideration (and this is the only reception) which has been received by me from you, in having been permitted such ready access to all the nautical interests of the kingdom through your time-honoured pages, were I to omit first to return thanks for such liberality, which we always find distinguishes genuine men of science from mere pretenders. But occasion to complain no longer exists. Thanks to your appreciation of the "clear stage" and "fair play" which British sailors at all times demand and patronize, truth and integrity of purpose have in my feeble hands proved a very "crowbar;" and through hard work with it, neither "stone walls" nor "solid rock," nor bolts nor bars, could at length exclude me.

I had, moreover, a great incentive in the occasional sneer,—in the often perceptible reliance upon the convenient aphorism as to "giving rope enough," &c., and even in the ominous long *silence* of oppo-

nents,—as much, perhaps, as generally falls to the lot of a determined investigator. I think it right, however, in thus divesting my mind of all vexations and even *regrets*, to mention this, because I am about to prove to the public that mine were not mere pretensions, or shallow, crude "suspicions." I had weighed them before I ventured to announce them in the *Nautical;* but, such as they are, they might have been suppressed altogether (if only through offensive anonymous annoyances alone) had I been less self-reliant.

I am at length happy to be able to record in the *Nautical* that the term "Lunarist" is no longer one of reproach:—that henceforward one may speculate on the agency of the moon in causing what we call "weather" without meeting with that derisive sarcasm which, even from the mouth of well meaning friends, could only be a pang or a regret.

When I enter upon independent professional investigations, the opinions of others concern me little; yet in the present case there *is* some satisfaction in believing that Admiral Fitzroy is a convert to my theory, and is now, in fact, a "Lunarist." I am not, however, aware of his having acknowledged that such is the *consequence of my researches*. In the next edition of his very interesting work, called his *Weather Book*, he will doubtless embrace with pleasure the opportunity of gratifying my very excusable vanity in having taught so distinguished an officer.

I promised, Sir, in my last letter to honestly acknowledge in your pages if it should be found that any one of my "predictions" had been unsupported by *fulfilment;* and specially mentioned the then approaching period of the 21st and 22nd November, against which (among others) I had extensively warned in the August preceding. Now I can only, as it were, acquaint the hare beforehand as to the time when the "hounds will be out," puss must then take her chance of the direction they may take. It is certain the hounds will not cover the face of the whole country. It is so with weather; the *changes* I positively predict at defined periods may develope themselves in various ways. It is enough for me at present that I can furnish these periods.

Probabilities were in favour of storm on the 22nd November; but the great atmospheric disturbance of that period was felt rather in the North Atlantic Ocean than in Europe. These changes are upon a great scale of magnitude, and affect whole continents at a time. Our proofs of such disturbance were quite as satisfactory as, and infinitely more agreeable than if the burden of the storm had passed over us. We in England and Ireland were only on the outskirts of it; but it passed westward or raged westward of us, and this is stated upon twofold authority. First, the barometer at Sheerness fell *at such period precisely* from 30·20 to 29·72 in.; while at the West coast of Ireland the barometer at the same time went to as low as 29·52 in. The weather at Sheerness undergoing the characteristic fall of temperature which I mention in all my printed lists. The scud also flew

rapidly overhead, while on the earth's surface the weather was still and summerlike. At the same period further North, viz., at Unst, in Shetland, an intense frost set in on this very same "lunar day." Secondly, the newspapers informed us that a heavy gale was blowing not far West of Scilly.

If necessary I could add more, but such is enough to convince even the unwilling; perhaps, however, I may as well add that the fineness of the day of Lunar Colure was succeeded on the "second day after," according to what I always expect and for three years have called attention to, viz, on the 24th November, by a gale. A more conclusive fulfilment could not be desired. I beg your readers to distinguish between positive *changes* and positive gales.

The next marked day in my list was 29th November, only marked as of ordinary disturbance; yet even this was an equally well attested period of change. There was the usual uneasy changing, shifting of the wind and the well marked depresssion of the barometer, the wind during the day flying all round the compass.

On December 6th (the next lunar day) we had the similar change of wind, &c., with fresh gale and rain.

13th and 14th (next lunar days).—Heavy gale in the channel, with driving rain. Barometer fell ·46 in. Fine aurora borealis at 9h. p.m.

20th and 21st (next lunar days).—Terrific storms, with thunder, hail, &c. At 3h. p.m. of 21st velocity of wind seventy miles per hour. The greatest depression of barometer during the gale was ·97 in. Extraordinary high tide on 21st. (I had for weeks beforehand warned publicly both against storm and high tide on these very days.)

26th (next lunar day).—Gale and characteristic barometric depression.

On the 1st January, 1863, the *Standard*, newspaper, published days of expected change up to 1st July next. Of those for January and February have already occurred the following fulfilments at Sheerness:—

January 2nd.—Heavy gale, with much rain.

10th.—Moderate gale. Fall of barometer was ·25 in. Lower temperature set in.

18th and 19th.—Most destructive and terrible gale, with *very high tide* on the 20th everywhere. From noon to 7h. p.m. of the 20th the velocity of the wind was above seventy miles an hour. Between noon of 17th and 9h. a.m. of the 18th the barometer fell ·86 in.; and from 4h. 30m. of 19th to 6h. a.m. of the 20th it fell ·55 in., the lowest point of borometer during the gale having been 28·87 in. (corrected for temperature and sea level). An extraordinary "luminosity" at 10h. a.m. of 20th in the N.N.W. part of the heavens.

(N.B.—So strongly did I expect this serious weather that during weeks beforehand I distributed five hundred special warnings as to 18th, 19th, and 20th, particularly cautioning against the high tide of the 20th. I also warned through several local papers.)

30th.—Very heavy gale. Velocity of wind at least sixty miles per

hour. Fall of barometer between 11h. 30m. of 29th and 1h. p.m. of 31st was ·51 in.

February 6th.—Disturbance aloft, indicated by very rapid scud from westward, while on the earth's surface it was a perfect summer's day. From 11h. p.m. it blew hard outside the Thames. Two "parhelia" visible in the afternoon (see *Standard* of 9th February). Barometer attained its maximum height at 3h. p.m., it being 30·34.

N.B.—At Unst "deluge of rain; almost a hurricane from West."

13th.—Wind all round the compass on 12th. Very strong scud from westward on 13th, although little wind at Sheerness and fine weather. During the day the wind changed from N.E., at 9h. a.m., to E.b.S., at 10h. 30m. a.m., which continued several days.

18th and 19th.—On 18th, after four cloudless days and calm weather, clouds began to form at early a.m.; by 3h. p.m. cloudy. Wind on 17th and 18th very variable; a most gorgeous sunset on the 18th.

On 19th (the actual day of lunar equinox) the change of weather was remarkable. Instead of the fine weather which set in on the 13th (the previous lunar day) the weather on the 19th *totally changed*, with a light wind from N.W. and a high, slightly falling, barometer. Heavy rain set in at 4h. a.m., with thick haze and continued drizzle, and a dead calm lasted all day. (Nothing could be more marked.) Sunshine returned on the 20th; barometer singularly high and steady.

The above details of each occurring "Lunar Period," &c., are given as data for comparisons to those who are closely watching my theory in different parts of England. I need not ask you, Sir, if my absolute "predictions" were justifiable, their fulfilment through the whole period having been strictly and literally indisputable. I will not condescend to call them "forecasts," since they are founded on a law which, though newly discovered and only as yet imperfectly developed, is now established and unassailable.

As regards the unusually high tides of this winter, they are the natural consequence of the moon and sun both being in perigee; the former being also at its position of new moon. In December last such happened; moreover, almost precisely at the time of Lunar Stitial Colure (within a few hours): hence the greater rise of the high December tide (irrespective of winds and local direction); and also the diminished rise in January, when the new moon in perigee fell between the corresponding Colure and the Lunar Equinox, although the atmospheric disturbance seems to have been nearly equal in each case.

Your readers will please to observe that I specially cautioned the coast, both by letters and precise advertisement, against the storms and high tides of December and January, but not against the corresponding period in the present month, because, in the first place, the sun is now, in February, rapidly receding (so to speak) from the earth, and his disturbing power is therefore rapidly diminishing, inversely as the cube of his distance; and in the second place because the new moon of the day before the Lunar Equinox of the 19th would, on the

day of such Equinox, be some 50° of her orbit distant from her place of perigee. But still I considered it ought to be marked at least as a "black letter" day in my printed list of warnings.

As the *Nautical Magazine* is the most valuable, as it is the most authentic means of recording such events, I will mention that so unusually high was the tide at Sheerness on the 23rd December last, that the northern end of the dockyard wharf (by Garrison Point) was fairly under water, and the waves rolled along it into the "lower Camber;" while I saw the seas make a clean sweep over the Sheerness pier. The low lands of Sheppy, &c., were all under water; some near Chatham had nearly six feet water upon them. The same, with slight diminution, occurred also on the 20th January.

So great has been the astonishment of the public (as evidenced in scores of letters) at the extent of my supposed calculations which could lead to such accuracy in predicting to the very day, that I feel it incumbent on me to plainly disavow anything of the sort. Perhaps the mind has no less fatiguing exercise in the vigilance (by day and night) and forethought and consideration which is necessary in order to support a man when introducing a not very prepossessing theory (in its early aspect) to public notice. But, unlike astronomy, meteorology has in its present speculations to deal principally with vague, unponderable, and incommensurable elements of disturbance, such as heat and electricity. Whence, then, the need of much "calculation?" I would not have my name, humble as it is, coupled with the *charlatanerie* of assumptions. My avocation, through life nearly, has been to assist in the development of truths, and not to retard their advance by professional maskings and mystifications.

Now, Sir, were I to announce to the world that the sun would rise on the 12th December next, no one would accuse me of credulity, because the rising of the sun is a recognised law of nature. But when, at the end of January last, I read in the *Times* that the high tides of the 21st had materially damaged certain sea walls in some parts of the Medway near Chatham, I thought it no more than a duty to send to one of the most respected of the daily papers my advice, attested by name, &c., that proprietors (by being deluded into a notion that because tides had been destructive in the present there was a chance of immunity therefrom in the next winter) should not neglect the necessary repairs in the coming summer, because a *very dangerous gale and another fearful tide would certainly occur on the 12th December next.* Insertion, however, was tacitly refused,—nor can we wonder. But what the editor would most likely consider to be an absurd presumption on the part of any mortal, may be really based solely (as in the case of the sun's rising) on *another*, although newly discovered, *law of nature*,—for such it is.

In order that my confiding friends among your readers may not deem such a prediction or statement presumptuous, permit me to explain.

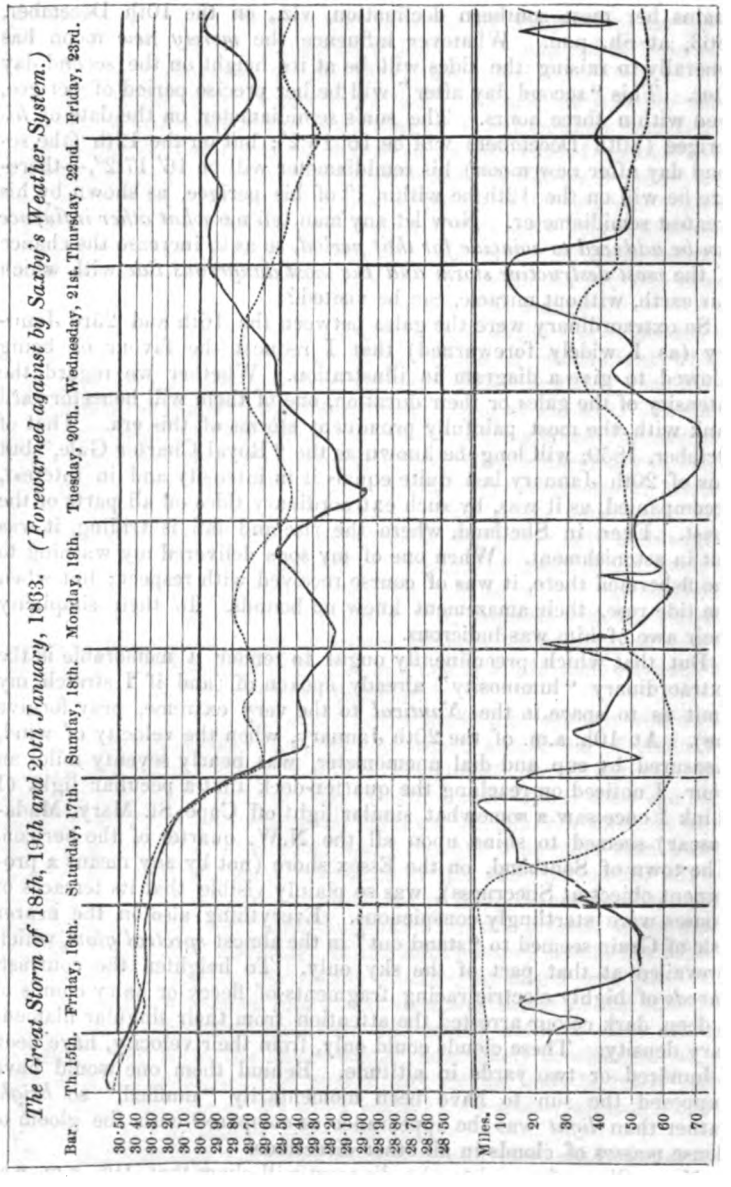
The new moon will happen in the precise hour in which the moon

attains her most southern declination, viz., on the 10th December, 1863, at 8h. p.m. Whatever influence the *merely new* moon has generally in raising the tides will be at its height on the second day after. This "second day after" will be her precise period of perigee, even within three hours. The sun's semidiameter on the date of *his* perigee (30th December) will be 16′ 18·2′; but on the 12th (the second day after new moon) his semidiameter will be 16′ 17·2″,—therefore he will on the 12th be within 1″ of his perigee, as shown by his greatest semidiameter. Now let any man tell me *what other influence can be adduced to coincide for that period*, so as to increase the chance of the *most destructive storm and the most dangerous tide* with which this earth, without miracle, can be visited?

So extraordinary were the gales between the 16th and 23rd January (as I widely forewarned) that I request the favour of being allowed to give a diagram in illustration. Whether we regard the intensity of the gales or their duration, one of them will henceforward rank with the most painfully prominent storms of this era. That of October, 1859, will long be known as the "Royal Charter Gale," but this of 20th January last quite equals it in intensity and in interest, accompanied, as it was, by such extraordinary tides on all parts of the coast. Even in Shetland, where the rise and fall is trifling, it was felt in astonishment. When one of my sons delivered my warning to the fishermen there, it was of course received with respect; but when the tide rose, their amazement knew no bounds. In their simplicity their awe of him was ludicrous.

But that which preeminently ought to render it memorable is the extraordinary "luminosity" already spoken of (and if I stretch my limit as to space in the *Nautical* to the very extreme, pray forgive me). At 10h. a.m. of the 20th January, when the velocity of wind, measured by cup and dial anemometer, was nearly seventy miles an hour. I noticed on reaching the quarter-deck that a peculiar light (I think I once saw a somewhat similar light off Cape St. Mary, Madagascar) seemed to shine upon all the N.W. quarter of the horizon. The town of Southend, on the Essex shore (not by any means a prominent object at Sheerness), was so plainly visible that its terraces of houses were startlingly conspicuous. Everything also on the nearer Isle of Grain seemed to "stand out" in the almost *spectral glow*, which prevailed at that part of the sky only. To heighten the contrast, *shreds* of highly electric racing fragments of fleecy or hairy clouds of a deep, dark colour arrested the attention from their singular filamentary density. These clouds could only, from their velocity, have been a hundred or two yards in altitude. Behind them one would have supposed the sun to have been momentarily "muffled," so *bright* rather than *light* was the appearance as compared with the gloom of dense masses of clouds in all other directions.

Now, Sir, reference to the diagram will show that 10h. a.m. was just before or at the very moment of the height of the fury of the storm (this height lasting for nine hours! for it was not till seven p.m. that the wind abated).



Much perplexed during the day at the singular luminosity referred to, and striving to reconcile it with any previous experiences, I recalled to mind again and again the fact of one part alone of the heavens being then so free from clouds, excepting the electric scud referred to. But during my musings in the evening of the same day, it occurred to me that it must have been an aurora borealis of such brilliancy as to have been plainly visible by daylight. Once satisfied as to this there was little difficulty in tracing the connexion between Sir John Herschel's "polar currents" and their occasional "downrushes," as quoted by Admiral Fitzroy. If ever the eyes of man beheld such a "polar downrush" mine did on the 20th January last, and therefore I call that tremendous gale an "auroral storm."

That the worst of a gale is generally felt an hour or two after the barometer has passed its greatest depression is an accepted rule among sailors. In this case it will be seen that the lowest barometer of the gale happened at 6h. a.m. of the 20th, when it had fallen to 28·87 in. (accurately corrected). By ten o'clock it had risen to 29·05 in.

The given diagram further illustrates certain points which tell weightily as to the value of my lunar system (as I am getting the habit of calling it). For, if your readers will kindly notice, the heavy gale of the 16th January occurred on one of my "lunar days;" and its distinctness in character is worthy of remark, for in it the wind was N.E.: in the gale of the 18th, 19th, and 20th, and part of 21st, the wind throughout was W.N.W.: while in the succeeding gale of the 22nd (the next lunar day) the wind was from S.W. Such distinct corroborations of a theory cannot be expected in every month; but the past three months have been of so peculiar a nature that all the energies of accessories to atmospheric disturbance have been noted under advantageous circumstances, and their attributes stored for future use. The season has, I have truly said, been a *trying one.*

It would have been a triumph if a careful and elaborate collation of reports from a whole continent had resulted in the detection of a lunar weather system. But a still greater triumph is it for one unaided observer at a single station to have accomplished what I submit is now proved to be so great a discovery.

Allow me, Sir, to congratulate your readers (and myself too?) upon the great success I have achieved,—an advantage not merely to the present generation, but one which, when I am in my grave, will be acknowledged by posterity.

I have, &c.,

S. M. Saxby, R.N.

To the Editor of the Nautical Magazine.

Explanation of the Table recording the Barometer and Anemometer readings of the Great Storm of the 18th, 19th, and 20th January, 1863.

The upper table records the barometer readings.

The lower table records the anemometer readings, the figures representing miles per hour.

The continuous line signifies readings at Sheerness. The dotted line, readings at Dingle in Ireland.

On the 16th, at 10h. p.m., the lunar stitial colure. Wind N.E. at Dingle.
" 17th—Wind N.E., N.N.E., and West.
" 18th—Wind W.N.W., 5h. a.m., moon in perigee.
" 19th—Wind N.N.W. to North. New moon 4h. p.m.
" 20th—Wind N.N.W. to W.N.W., at 10h. a.m. aurora. Very high tide.
" 21st—Wind N.N.W.
" 22nd—Wind S.W. Lunar Equinox.
" 23rd—Wind S.W.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*The Great Eastern's Rock—Loch Lomond Tourists—Condition of Naval Construction—The Alabama and Hatteras—Federal and Confederal Supplies—Reminiscences of Charleston, &c.*

Have any of us (asked the Chairman in opening proceedings) received any account of the precise position of the rock on which the *Great Eastern* grounded when entering Long Island Sound. Nothing like it appears in the American survey. The N.E. rips are mentioned, which show nothing. But a single bearing and distance of Montauk Lighthouse when the *Great Eastern* was on shore, would be all that is wanted. The Chairman's remarks elicited nothing but a hope that some information for his own sake would have been sent to the *Nautical* by the commander of the big ship.

In the way of charts, observed the Commodore, he was glad to see those of the British Admiralty leading the way of all other governments both in the number and importance of their publications, but he hoped never to see them printed on worse paper that at present. Not only are foreign shores cared for, but even those of our inland lakes, and the northern tourist may now enjoy his voyage even through Loch Lomond free from the sunken dangers with which it is infested, for the government survey of this most interesting of Scottish lakes is published, wherein all sunken rocks, shoals, and banks, are accurately delineated. It is, moreover, stated that Robert Hunter, Esq., sheriff of the counties of Dumbarton and Bute, at whose instance the survey by Captain Otter, R.N., was made, has also since the preparation of the chart, with the most praiseworthy liberality subscribed himself, and has induced Sir James Colquhoun, of Luss; Mr. Smollett, of Bonhill; Mr. Brown, of Balloch; Mr. A. Orr Ewen, of Levenbank, the Dumbartonshire and Edinburgh and Glasgow Railways, and the Loch Lomond Steamboat Companies, likewise to subscribe for the erection of beacons and buoys on the various sunken rocks, shoals, and banks dangerous to the navigation. These beacons and buoys, which were executed and laid down by Messrs. Bell and Campbell, of Bon-

hill, under the superintendence of Mr. Young, the Loch Lomond Steamboat Company's manager, have now stood the severe gales of this winter in the most satisfactory manner; and as each of the captains of the steamers has been furnished with a copy of the chart showing all their bearings, configurations, and colours, the public may now consider the navigation of the lake as quite free from danger.

Much is expected, continued the Chairman, from the leading maritime power of Europe, and certainly the most sanguine expectations of England's contribution to the knowledge of hydrography have been satisfied. Charts are essential to a navy, and England must therefore have both.

At the present moment her position in this respect is unprecedented. The question between iron and wood may be looked on as settled, each taking that portion of our naval construction to which it is best adapted,—keeping in mind the qualities required by a ship of war. Our wooden walls must become iron, and we had begun in earnest with the rudiments of the art of applying these materials with the best effect, and some years will be required to bring the art to a normal condition of perfection. Our iron plated ships are well spoken of,—their behaviour at sea is as good as a first trial could be expected to give us, for we must be going on improving one after another as they are produced. Then the turrets of Captain Coles, copied by the Americans in their *Monitor*, and now in their *Montauk*, which is said to have resisted shore batteries marvellously, and come off from an engagement with them merely losing her "smoke stack." The application of these turrets of Captain Coles to seagoing ships has yet to be shown, for at present they seem to be either destined for guarda costas or to be navigated mostly by steam.

[We are obliged to omit the further remarks of the Chairman on this vast subject to make room for the following.]

He believed the following letter contained the best account that had yet been given of the action between the *Alabama* and *Hatteras*.

On the afternoon of Sunday the 11th, the *Alabama* was cruizing off Galveston, Texas, when she descried *seven* Federal men-of-war standing in for the anchorage. She followed them boldly in, but on finding she was considered "suspicious" and ordered to be examined by signals, which they made out (having the Federal books), she stood out, followed by the *Hatteras*. Semmes's object being to decoy her away from her consorts, he kept under sail only, but with fires banked and screw triced up; but directly it was dark he furled his sails, and put his vessel under steam.

About 7h. p.m. the *Hatteras* ranged up nearly alongside, stopped, lowered a boat, and hailed,—What ship is that? to which the *Alabama* replied,—*H.B.M. ship Petrel*, and inquired in her turn,—What ship is that? The answer was,—"United States ship," but *what* ship was never made out, for before the word "States" was well pronounced, a broadside from the *Alabama* drowned the voice of the speaker. The fire was duly returned, but so well were her guns plied,

so accurate the aim, that in *thirteen* minutes the *Hatteras* hoisted a light in token of surrender, and hailed to say she was sinking; and in thirty-two minutes from the time the first shot was fired, she disappeared. As soon as the prisoners had been secured (they only saved what they had on) a course was shaped for Jamaica, from whence, unless the boat which was lowered before the action commenced reached the land in safety, the Federals will obtain the first tidings of the defeat they have sustained.

Besides landing his prisoners Captain Semmes was anxious to complete coals and provisions and give his men, who had been cooped up on board more than five months, a run on shore; and I am happy to say that no obstacle has been thrown in his way by the governor.

I went on board yesterday; they were busy repairing damages; five shot had passed through the side very low down, one of these through both bows, and one only about two feet above the frame-work of the propeller. Two live shells were picked up in the coal bunkers; but, on examination, lo and behold they only contained *sand!* These had been supplied by *contract*, and it is another illustration of the terrible peculation that is sapping the very vitals of the FEDERAL STATES.

One shot struck the after part of the chimney, and was the cause of the only casualty to the crew of the *Alabama*.

The Federal loss amounted to two killed, or supposed to be killed, they went down in the vessel, and three wounded, one badly, he has been sent to the civil hospital at Kingston.

I append a statement of the comparative force of the two ships, and shall only add that the Blakeley's 100-pounder was the cause of the action being brought to so speedy a termination; it was one of this gun's missiles that *drove in* the *Hatteras's side*. The chief engineer described its effects thus:—"I thought the wheel was coming into the engine room!" Verily it is a most formidable weapon.

Alabama's Armament, &c.	*Hatteras's Armament, &c.*
1 100-pr, Blakeley's, rifled muzzle-loader.	2 rifled 30-pr.
1 68-pr, 95 cwt., smooth bore.	1 rifled 20-pr.
6 32-pr, 45 cwt.	4 32-pr, 27 cwt.
	1 12-pr, howitzer.
8 guns, with 27 officers and 111 men. Tonnage 1,023, built of wood.	8 guns, with 17 officers and 108 men. Built of iron, tonnage 1,200.

P.S. Among other things I saw, in Captain Semmes's cabin, ranged round the stern, *twenty-seven* chronometers, each representing a prize!

Well, observed the Commodore, the disparity in force robs Captain Semmes of all credit in the action. And no doubt his 100-pounder rendered it a piece of temerity on the part of the *Hatteras* to attack him.

But what of the shells of sand? inquired the Chairman.

Alas, an earnest proof of the disgraceful manner in which the Federals have been served by parties no doubt in the interest of the pe-

culiar institution, and it should be commended to the special attention of the Federal authorities.

As to the mode of being served, said Albert, I have prepared for the Club a paper of a curious kind that shows how the Confederates have been served by their well-wishers, he might at least perhaps term them, in this country, if not partizans, and it would show with how much faith her Majesty's proclamation had been observed on this side of the Atlantic. He did not mean to say that the Federals had not also obtained some materials contraband of war, but at all events the paper in question was a curiosity in itself, and shows how the sinews of war can be employed in a neutral country. We had taken their cotton, and the gold which our capitalists had paid for it was returned for the contraband of war. The writer first naively asks the question,—Does anybody outside of a lunatic asylum believe that the Emperor of China is in immediate want of a fleet of war steamers? And then he adds the following startling assertions:—which are taken from the *Daily News*.

On the premises belonging to Messrs. Laird, of Birkenhead, in a covered shed or "annexe" to the main yard, two powerful war steamers are in course of construction "for the Emperor of China." Their burden is about 2,200 tons. They are of the ram class, are partially iron-plated, and measure, say 200 feet long by thirty-six beam and eighteen deep. Their engines, now nearly ready, are ranked nominally at 300 horse-power, but each will work up to 1,000 which will give them a very high rate of speed.

In the main yard of the same premises another steam ram is being built, also "for the Emperor of China." Her length is about 150 feet, by twenty-eight beam, and depth from sixteen to eighteen feet. She is to be partially iron-plated, like the two others in the annexe, and the three are expected to be ready for sea in about two months from the present time, perhaps sooner. Captain Bullock, who commanded the "290," is daily in attendance superintending their progress. Does this gentleman hold his commission from his Celestial Majesty or from Jefferson Davis?

In the yard of Messrs. W. C. Miller and Son, Liverpool, there is nearly completed a wooden screw-propelled vessel, of about 450 to 500 tons. She has been constructed upon the plan of the American coasters, being nearly flat-bottomed. She is built for fast sailing under canvas, and under steam is expected to run fifteen knots an hour. She is to be armed with 9-pounder guns, and is expected to be ready for sea in the course of four weeks. It is commonly reported that she belongs to the Confederates.

Messrs. Lawrence and Son's yard is the highest up the Mersey. A large screw steamer is being built there "for the Emperor of China."

Messrs. Fraser, Trenholm, and Co., of Liverpool, the "depositaries" as they are styled, of the Confederate government, have contracted for a large vessel of 3,000 tons, which is to be built at Stockton.

Messrs. Thompson Brothers are building, on the Clyde, a powerful

armour-clad steam-ram, "for the Emperor of China," to be ready for sea on the 9th of April next. She is about 250 feet long, by 45 beam, and 35 in depth. Her armour plates are from 4½ to 5 inches thick. Her engines will be 500 horse-power each.

Mr. Peter Denny, of Dumbarton, has constructed two fine screw steamers. They are lying in the Clyde. Report of a somewhat authentic kind says one of them is partly owned by "the Chinese," and partly by individuals at Nassau, New Providence. It is publicly announced that she is soon to be employed on the line between Nassau and Charleston. Her name is the *Virginia*. The term "Chinese" is in general use in the building-yards of the Clyde and the Mersey to designate the Confederates, and the "Emperor of China" has no other signification in that connexion than to personify Jefferson Davis. The "Chinese" have been striving very hard to purchase the sister vessel to the *Virginia*, through one of their agents in Liverpool; but Mr. Denny built and lost the *Memphis*, and therefore the "Celestials" should pay cash down before he parts with his property.

The Messrs. Scott, of Greenock, are completing a very fine iron screw steamer, which is alleged to be intended for the trade between Charleston and Savannah.

Two weeks ago, a fine vessel of the same class as the *Virginia*, was launched from Messrs. Blackwood's yard at Port Glasgow, and common report says she is intended for "the Chinese."

Upwards of fifty steam-vessels, of various descriptions, in different stages of completeness, might be enumerated in this "Chinese" category.

The slaveholders' conspiracy is largely, nay mainly, indebted for its success up to the present time to the material aid which has been extended to it by British capitalists. Two years before it broke out, their cooperation had been secured through the instrumentality of the highest diplomatic agents of the United States then in this country. Large advances were promised upon mortgages of enormous quantities of cotton, tobacco, and rice; nor was the fact concealed by the democratic party, that in the event of secession and war almost any amount of pecuniary aid would be procured from this quarter. These powerful combinations in support of the slaveholders' conspiracy comprised the monetary, shipping and mercantile interests. As much as £16,000 and even £20,000 have since been subscribed by individual members of these associations; and in one instance a sum of £5,000,000 sterling can be directly traced as the financial result of a single operation. Not many days ago lists were exhibited by a Confederate agent in which figured the names of Manchester men of high standing for large sums which they had just recently subscribed in aid of the Confederates.

Another of these emissaries is now in this country, whose name can be furnished if needful. He is duly accredited by Jefferson Davis, and his credentials are endorsed by Mr. Matson, the diplomatic though officially unrecognised envoy of the Confederate States. His object is to negociate a loan for the Confederacy of slaveholders, and to con-

clude arrangements for the supply to them of all kinds of commodities, especially munitions of war. The factors who have agreed to carry out these arrangements are accountants, men of standing in the city of London. Their contract is signed and sealed by Jefferson Davis, and endorsed by Mr. Matson. The conditions of the contract are as follows:—Parties undertaking to run the blockade with vessels laden with material and munitions of war are guaranteed cargoes of cotton in exchange at 7 cents. a pound, for the value (greatly exaggerated) of the ship and cargo. They also receive Confederate bonds to cover the amount. These vessels, chiefly steamers of light draught, are insured at high risk premiums—say 40, 50, 60—at Lloyd's. If they run the blockade out and home, the enormous profits on the sale of the cotton are an ample remuneration for the venture, and the bonds are cancelled. If they are captured, the bonds, bearing a high rate of interest, are retained as security. The option is given to the owners of selling their ships to the Confederate government—such of them as reach their destination and do not care to risk a return voyage—and they go to form the nucleus of a navy. Thus British capital, and it alone, furnishes the Confederacy with the means of carrying on the war.

Some ideamay be formed of the large number of vessels engaged, and of the vast capital risked in this contraband trade, from the fact that the Federal cruisers have captured nearly 600, chiefly British, while attempting to run the blockade, and confiscated property to the amount of £8,000,000 sterling. So great, however, are the profits arising from this traffic, that it is daily increasing.

The proofs exist, it is said, that this contraband traffic in arms and munitions of war is openly carried on by the aid of British capital, under the British flag, by British seamen, and in British vessels, to sustain a Confederacy and rebellion of slaveowners which, without such aid, could not maintain itself. It is carried on to blockaded ports recognised as such by the British government, and is, therefore, a violation of the Queen's proclamation of the 59th George III. and of international law. Such transactions lower the character of the British merchant, dishonour the nation, engender unfriendly feelings between the American and the British peolpe, and jeopardise the amicable relations of their respective governments.

Numbers of vessels laden with material and munitions of war constantly leave the chief ports of the United Kingdom, notably London, Liverpool, Bristol, Hull, Glasgow, and Belfast. They clear outwards for neutral ports, but many of them are again heard of as having been captured by Federal cruizers while attempting to run the blockade, or as having succeeded in doing so. A few cases for the year 1862 are submitted, all from the port of London.

On the 29th of January, the steamer *Economist*, Captain Barge, cleared outwards for Melbourne. Her broker was W. S. Hotchkin. The chief shippers of her cargo were Isaacs, Campbell, and Co., and G. Spellman. Besides a miscellaneous assortment of articles suitable only for an army engaged in active warfare, she took out 330 pistols,

500 cases ball cartridges, 1,000,000 percussion caps, 2,980 muskets, 12,440 rifles, and 30,000lbs. gunpowder. She ran the blockade and has since done so again. She is now called the *Boneta*. On the 8th of February cleared out for Nassau, the steamer *Southwick*, Captain Stark; brokers, Messrs. Isaacs, Campbell and Co.; chief shippers, Messrs. Moreton and Co., Campbell and Co., Bumsted and Co., G. Spellman, Vavasseur, and W. Roberts. Her miscellaneous cargo also consisted of articles for an army on active service, and the same fact is common to all the other vessels mentioned in the present category. Besides these goods she conveyed away two cases swords, six cannon, 680 muskets, 2,800 cast-iron shells and 60 cases of the same, 19,940 rifles, 9,000,000 percussion caps, and 104,600lbs. of gunpowder. She dropped down to Greenhithe, and there took on board her powder and rifles.

On the 23d May the steamer *Merrimac*, 537 tons, Captain Ramsay, owners C. Z. Pearson and Co., of Hull, cleared out for Tampico and Bermuda; chief shippers, J. G. Baskerville and S. D. Chippingdale. Her war cargo consisted of 280 rifles, 713 cases and 33 boxes of shells, one package of percussion fusees, three 170-pounder cannon, four 18-pounders, and one 18-pounder rifled. She is reported to have taken on board at Greenhithe a large quantity of gunpowder.

On the 28th July cleared out for Demerara, the steamer *Agrippina* 275 tons; M'Queen, master; A. W. Fitch, broker; chief shippers, Messrs. J. W. Baldwin and S. J. Campbell and Co. This vessel took away 160 pistols, one case cutlasses, 26 cannon with their carriages, 120 rifles with bayonets, 128 cases of the same weapon, 15,000 and one case of cartridges, 20,000 percussion caps, and 10,080lbs. gunpowder. She went out direct to Terceira, and there transhipped her cargo on board the "290," *alias* the *Alabama*.

On the 6th of August the *Harriet Pinckney*, steamer 511 tons, Halkin, commander, Raydon and Reed, brokers, cleared out for Nassau; chief shippers, Messrs. Spyer and Haywood, Campbell and Co., Sinclair, Hamilton, and Co., Raydon and Reed, and Ely, Brothers. She had on board 16 cannon with their carriages and two howitzers, 260 iron shrapnel shells, 409 swords, 20 carbines, 540 muskets, 11,300 rifles, 2,800,000 percussion caps, and 1,360,000 ball cartridges.

On the 9th November the steamer *Gladiator*, Ware, master, Baker and Co., brokers, cleared out for Teneriffe, Nassau, and Honduras. Her cargo was shipped chiefly by Messrs. Spyer and Haywood. It comprised five packages shrapnels, one box and 100 pistols, one ton lead shot, 50 swords, 17,320 muskets, 1,000 boxes and 122,000 cartridges, 4,650,000 percussion caps, and 143,300lbs. gunpowder. This vessel succeeded in running the blockade.

On the 11th November the *Justitia* steamer, 615 tons, Barroughs, commander, brokers, Spyer and Haywood, chief shippers Richardson, Ross, and Co., cleared out for Demerara. Her cargo of munitions of war comprised 10 cases shells, 400 barrels saltpetre, 20,000 linen bandages, 1,000,000 cartridges, and 179,200lbs. gunpowder. She also ran the blockade.

On the 8th December, the *Princess Royal* steamer, 494 tons, Lawson, master, cleared out for Halifax and Vancouver Island. Her brokers and chief shippers were Messrs. W. S. Lindsay and Co. She was laden principally with hardware, iron and steel, machinery for six propellers, and soldiers' clothing; but she also took out 60,000 pounds of gunpowder.

On the 3rd of January last, the *Miriam*, a new and fast steamer, sailed from London. The chief shippers of her cargo were Messrs. Spyer and Haywood. It consisted of a large quantity of army stores, 25,000 rifles, 60 tons gunpowder, 3,012,000 cartridges, and 3,000,000 percussion caps. Up to within the last few days, her clearance papers were not entered at the Custom-house. She is supposed to be a Confederate vessel.

On the same day the *Peterhof*, another steamer, also sailed from London, laden with army stores and necessaries, and her clearance papers were not to be found entered only a few days ago. The customs' lists teem with cases similar to those enumerated.

So much for the neutrality of England, and so much for her Majesty's proclamation, and all for the benefit of seeing another Federal government established the corner stone of which is to be slavery—and its capital continued the Commodere to be that port at which when British trading vessels in former days arrived, they were subject to the degrading process of seeing part of their crews that had any nigger blood in their veins forcibly taken out of the ships, locked up until they were ready for sailing, and then returned on board. Thus, in addition to the insulting nature of the deed itself, they lost the services of those men!

And had they no redress? asked the Chairman.

None, returned the Commodore. When the degrading measure was complained of in the House of Commons, the answer was, it was the "custom," and knowing it they must put up with it when they go there!

A custom, grand custom like his Majesty's of Dahoma—not to be dispensed with. But they say that the Commodore on the station is gone to his Majesty perhaps to feel his pulse on that subject.

So much for the Slave Emporium of the Western world as it would be with British assistance, said the Chairman. Let us turn to the assistance of another kind sent to our unfortunate Lancashire operatives from the land of freedom. The *George Griswold* has arrived at Liverpool, and has been received as she should be. He had not heard of the distribution of the good things brought by her, but he doubted not they would be disposed of properly. And he heard that another ship load was on its way from the same part of the world.

But in reference to the contrast between these matters, so much to the discredit of our country, observed Albert, he was of opinion, that our part had been taken by a few adventurers whose ill success in the cause of slavery would be matter for rejoicing among the *people* of

this country—for *they* had spoken *out* on this subject, and that pretty plainly. And as they were then at Liverpool, he would point to the chairman's address of a large meeting that had taken place there since the arrival of the *George Griswold.*

[We regret being compelled to reserve this for our next.—ED.]

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 111.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
3. Swiatoi Noss	White Sea	68° 9·9′ N., 39° 47·7′ E.	F.	298	20	Est. August, 1863.
Sosnovot Isl.	Ditto.	66° 29·3′ N., 40° 43·5′ E.	F.	139	13	Est. August, 1863.
S. Jovetski Isl.	Gulf of Onega	65° 7′ N., 35° 37·5′ E	F.	..	..	Est. —. Temporary, at the church.
4. Buoys on the coast of Belgium	.....	.....	..	..	..	(*a.*)

F. Fixed. Fl. Fixed and Flashing. R. Revolving. I. Intermitting. Est. Established.

(a.) 4.—The Belgian Government has recently placed two beacon buoys on the banks off the coast of Belgium, as follows:—

East Dyck Bank.—A large red buoy, in eight fathoms, with staff, carrying a black inverted cone with the word "Dyck" on it in white letters, at the N.E. end of the East Dyck or Cliff-d' Islande Bank, Dunkerque light bearing S.W.¼ S. twenty miles; and Ostende light S.E. sixteen miles.

West Hinder Bank.—A large black buoy, in twelve fathoms, with staff, also carrying a red ball with the letters "W. H." in white on it, at the S.W. end of the West Hinder, with Ostende light bearing S.E. distant twenty miles; and Dunkerque light S.S.W.½ W. twenty-one miles.

These two buoys are in line with Ostende light, and four miles apart. They *mark the deep water channel to and from the Schelde*, and are visible distant three miles. A pilot boat cruises off Ostende.

Bearings magnetic. Variation 19° 25′ West in 1863.

THE LIGHTNING ROCKS—*at the Entrance of Port Phillip.*

The discovery of these rocks is thus related in a letter from Melbourne of the 25th December:—

I must not close without distinctly calling the attention of your mercantile and marine readers especially to a very curious and late discovery respecting our port—a discovery which yet might not have been made for many years to come but for an accident. The clipper ship *Lightning*, while passing between Port Phillip Heads a few days

back on her voyage homeward to England (the pilot still being on board), experienced a smart shock, as if she had touched ground. This, however, was deemed impossible; the vessel proceeded to sea, and all sorts of theories were started among us to explain the phenomenon, among them an earthquake being rather a favourite. On a careful survey of the spot, however, being made, two patches of rocks were discovered (close to which during the last twenty years some thousands of large vessels must have passed), one of which, it is now certain, the *Lightning* touched. I therefore append our *Government Gazette* report, giving the precise position of the rocks, and sailing directions, which as yet cannot have appeared in any English paper:—

Department of Ports and Harbours, Williamstown, December 20th, 1862.

Masters of vessels, pilots, and others navigating the entrance of Port Phillip are hereby informed that two patches of sunken rocks have been found outside of Point Nepean; the positions of which have been accurately defined, their neighbourhood and the entrance thoroughly sounded over, by Commander Cox, R.N., Admiralty Surveyor.

These rocky patches are nearly 170 fathoms apart, about N.W.b.W. and S.E.b.E. from each other: a line passing through the tidal flagstaff and the Point Lonsdale red ball beacon leads over the middle of both patches. The eastern patch is about fifteen fathoms in extent, with only twenty-nine feet over its shoalest part and seven and eight fathoms close to. It is eight-tenths of a mile S.W.b.W. from the red beacon on Nepean dry rock, and about one mile and four-tenths S.E.b.E. from Point Lonsdale flagstaff.

The western patch is about one-third larger than the other, and is the most dangerous, being nearer the fairway, and having only sixteen feet on the shoalest rock, which rises abruptly in eight fathoms. At about twenty fathoms to the southward of it there is another rock, with only twenty-four feet over it. The western patch lies about nine-tenths of a mile W.S.W. from the red beacon on Nepean dry rock, and about one mile and one-tenth S.E.b.E. from the Lonsdale flagstaff.

To avoid these dangers, vessels going in or out should endeavour to keep to the westward of them both.

Directions to Clear both Patches.—Keep the new high lighthouse just open to the westward of the old low lighthouse until you open Point Lonsdale telegraph station well out to the northward of the tidal flagstaff, when going in, and well out to the southward of the tidal flagstaff when going out.

Note.—When the lights of the new lighthouses are doing duty, of which notice will be given, a stone obelisk, coloured red, will be erected in the place of the old low lighthouse, and will then become one clearing mark for these dangers and the Corsair Rock. All bearings are magnetic, and depths at low water, spring tides.

CHARLES FERGUSON, *Chief Harbour-Master.*

Corrections for "Australian Directory."

The following corrections to be applied to the Admiralty *Australian Directory*, Vol. II., 1859, have been drawn up by Lieutenant G. P. Heath, R.N., Portmaster and Marine Surveyor, and approved by the Marine Board of Queensland.

Page 45, par. S.W. Banks.—Fifth line, *after* "Banks" *insert* "on which a red buoy is now placed."

Page 45, par. Yules Roads.—Last line, *after* "the shore" *add* "a red buoy is placed on its eastern extremity."

Page 47, par. Brisbane Bar.—First line, *for* "3 feet" *read* "4 feet."

Page 47, third line, *after* "Uniacke Point," *read* "to cross the bar, keep Mount Gravatt on with a small dip in the near bushes to the westward of the entrance of the river, until within half a cable's length of the line of red buoys marking the eastern limit of the channel to be dredged, when haul up to the southward and pass between the red buoys and the East beacon, and at a distance of half a cable to the eastward of the lightship. The channel then lies between a red and a white beacon half a mile to the southward."

Page 48, par. Quarantine Ground.—Second line, *for* "St. Helena," *read* "Peel;" erase from thence as far as paragraph headed "Soundings."

Page 49, line 7, *for* S.W. ½ W. distant 1½ miles, *read* S.W. ½ a mile.

Page 49, erase line 10 and read instead "Vessels coming from the southward, requiring pilots, should haul up round the North point of Moreton Island, and keep a good look out for the pilot vessel or boat, as the case may be; the arrival of any vessel off the port, requiring a pilot, being signalled from the lighthouse to the pilot station. Should the wind be to the southward of E.S.E., or the westward of N.N.W., vessels may anchor under Moreton Island in safety (with the yellow patch bearing about S.E.) from 1 to 1½ miles from the beach."

Page 50, line 1, after "Fathoms," erase to end of paragraph, and read instead, "Buoys are placed, showing the position of both these banks."

Page 50, erase 2nd par., headed "Caution," and read instead, "N.B. Strangers making the port of Moreton Bay, would do well to pay attention to any signals made from the lighthouse for their guidance."

Page 50, erase last par. but one, commencing "When Cape Moreton."

Australia,—*North-East Coast.*

Port Curtis.—In entering this port by the North channel it is difficult to distinguish Settlement Point from Gatcombe Head, about three-quarters of a mile S.W. of it. Beacons should be erected as leading marks.

Port Molle.—A bold detached rock above water, named Pioneer, and supposed to cover at high water springs, is found in the North entrance to Port Molle. It is in the way of navigation, apparently a long mile from the western main shore, bearing W.S.W. two miles from the North extreme of the Molle Isles. Vessels frequenting Port Molle by the North entrance, not seeing it, should give the West shore a wide berth before or after clearing the western or smaller Molle Islet.

Tides.—From Cape Melville to Cape Sidmouth. The tides between Flinders Group and the Claremont Isles appear to be strong and irregular. H.M.S. *Pioneer* found it so, especially in the vicinity of Pelican Isle, d, e, f, and g reefs. The mariner must be cautious, either in the day or night track recommended here, to look out and well verify his position frequently.—*Remarks of H.M.S. Pioneer, September and October*, 1862.

GEERKEN SHOALS,—*Reported to be nearly midway between the Falkland Islands and the River La Plata.*

The following is an extract from the *Friend*, of Honolulu, 1st April, 1862:—

Barque *R. W. Wood*, Geerken, reports,—December 19th, passed two spots of very discoloured water (sunken reefs) which was slightly breaking on these places, about four fathoms deep. No observations could be taken at the time, as the weather was thick and rainy The positions of these spots were lat. 42° 14′ S., long. 54° 38′ W.; and lat. 42° 16′, long. 54° 42′.

We preserve the foregoing report, although it is one of those that have very slender claim to attention. The want of soundings, the imagined break and supposed depth of four fathoms, in so frequented a part as that reported—in which also ice is not uncommon,—seem to throw little probability on the existence of shoals in that part; or to show that if shoals they were they would have found a place in the charts long ago.

INDIAN SHOALS,—*Atlantic Ocean.—West of Cape Verd Islands.*

We have received the following report, which appears to concern an old *vigia*, called the Indian Shoals. While we do not doubt the account given of something having been seen in the position reported, we have no authenticated proof of *terra firma* that would be required to form the reported shoal. There are various things which at night might be taken for such a danger,—such as a drifting wreck, huge logs of timber,—such as have formed the Devil Rock, swept off the chart. But we record the report, and cannot consider it more than one of these until a deep cast of the lead shall set the question at rest.

Newcastle on Tyne, January 5th, 1863.

Sir,—By a vessel arrived at Bristol a letter has been received from ship *Collingwood*, on her passage to Calcutta; and from the importance of the communication I think it highly desirable to forward you the annexed extract for insertion in that interesting maritime publication, the *Nautical Magazine*. The authenticity of the letter you can rely upon, as I have it from the owners.

Your old Subscriber,

NAUTICUS.

To the Editor of the Nautical Magazine.

The following is the report made:—

December 3rd, lat. 5° 40′ *N., long.* 24° 20′ *W.*

Gentlemen,—We had a near escape on 29th November last. Just before daylight breakers were reported close ahead. I had just time to shift the helm and so clear a reef of rocks which is not laid down in the chart. Their position I ascertained to be in lat. 16° 44′ N., long. 26° 49′ W., by two chronometers, both true. By other observations the island of St. Antonio (Cape de Verde) bore by compass E.¼S., distant about seventy-five miles. The reef of rocks called the Indian Shoals are situated, by chart, about seventy miles S.W. of those named above.

WM. NUNN, *Commander ship "Collingwood."*

We leave it in its present state, notwithstanding the *Atlantic Memoir* says,—"This shoal is laid down from the chart of M. la Rochette, 1777, seventy leagues W.b.N. (true) from St. Jago. It is more than doubtful."—*Atl. Mem.* p. 688.

CHINESE HYDROGRAPHY.

The following account of sunken rocks recently discovered on the coast of China has been communicated to the Admiralty by Admiral Kuper, as reported by Mr. A. F. Boxer, commanding H.M.S. *Hesper*. They are severally noted on the charts published by the Admiralty of the coast to which they apply.

HESPER ROCK, 10 feet (In sheet 3, No. 1963), with Plat Island, S. 73° W.; Dome Island, N. 52° E.; Three Chimney Bluff, N. 12° E.

EURYALUS ROCK (In sheet 4, No. 1760—*Approaches to Amoy, Southern Side*).—A rocky patch of 8 feet, with Chan-chat Rocks N. 75° W., 4½ cables; extremes of Woosen Island, S. 58° W. to N. 67° W.; extreme (? outer) point of Taetan Island, N. 2° E.

BOXER BANK (In sheet 5, No. 1761—*Approaches to Hungwa Sound*).—Sea breaks with Reef Island, at entrance of Hungwa Channel (North side) N. 9° E. 1½ cables (? miles and what part of it). The extremes of Reef Island N. 32° W. to N. 9° E.

BOXER ROCK, 12 feet (*Amoy Harbour*).—In fairway, by western entrance, with Han-sen Island beacon (? on what part of the island) N. 39° W.; Kulangsen Island, N.W. point, S. 21° W.; Kulangsen

Island, North point, S. 11° E.; Dock Island (? what part) S. 78° E., and nearly in line with church.

Very great caution is required from the navigator in these Chinese waters, especially when threading the dangers of the inshore navigation, of which we have as yet but a very imperfect acquaintance,—for instance, the numerous group of the Yit Islands and the Hungwa Channel, abounding in rocks and shoals.

Emmanuel Reef,—*Gulf of Siam.*

The following is the substance of a report by the commander of the ship *Emmanuel*, of Havre, to the French consul at Bangkok:—

The *Emmanuel* discovered a reef of sunken rocks at 7h. a.m. on the 10th November, when crossing the Gulf of Siam. It extends about thirty fathoms N.E. and S.W. It is never uncovered, and breaks near its southern end. Its position, determined by three chronometers (well regulated and agreeing with the bearings of the mountains of Chong Samet, then in sight) was found to be in lat. 11° 49′ N., long. 101° 19′ E. Bearing N. 3° E. of the high land of Chong Samet. It is named the "Emmanuel Reef."

Hermes Bank,—*Coast of Brazil.*

The shoal on which the *Hermes* was recently lost has been examined by Lieutenant M. A. V. de Oliviera. It is a pointed rock rising nearly vertically from the sea, and completely detached from the St. Anne Islands. It is six fathoms long from N.N.W. to S.S.E., and about two across in its greatest breadth. It forms three peaks or heads, that to the S.S.E. being the highest and most pointed. The lead gives scarcely four feet of water on this at low water, and one foot and fourteen feet on the others. The heads are connected by ridges, with from thirteen to twenty-two feet over them. The depths on the bank on which it stands vary from five to six and a half fathoms.

In a N.E. direction from it is a coral rock of four fathoms and a quarter. In a fresh breeze this danger does not show. The sea is somewhat smoother over it and a slight ripple only is seen.

Good observations place it in 22° 21′ 10″ S., long. 41° 47′ 9″ W. of Greenwich. The church of St. Anne bears S. 70° W. from it, and the North extreme of the St. Anne Isles S. 25° E. 3·5 miles distant; the Morro of St. Domingo (near to Point Tabua and entirely isolated) N. 5° E. The summit of Morro Imburo is N. 40° W.; in which direction the beach is a mile and a half distant. *True bearings.—Moniteur de la Flotte.*

Reef off the S.E. End of Puerto Rico.

The commander of the *Pizarro*, steam-vessel, discovered a reef off the S.E. end of Puerto Rico, extending thirteen miles E.N.E. and W.S.W. It is divided into three parts: the eastern named Ola

Grande, the middle Algarrobo, and the western Media Luna. It takes the direction of the coast, distant from it three miles and a half. The western part is on the meridian of Guayama, and the eastern with Cape Mala Pascua bearing N.E.b.N. easterly. *Magnetic.*

The Late Mr. Richard Green.

The decease of Mr. Richard Green, the late eminent shipowner, may be considered a public calamity, as he was one of the very few men who carried on an immense business in the shipping line not solely for the purpose of heaping up riches, but for the laudable ambition to excel every one else in the sailing quality of his ships, and in their superior manning and equipment; by which means he did all he could to keep up the character and respectability of the mercantile marine, and with it the naval character of his country.

Though subject for some years to the grinding competition of free trade, for which he himself continued a strenuous advocate, no change of times could induce him to reduce the emoluments or good English fare of his officers and seamen. And a well known anecdote is told of him, that when pressed by another owner of ships to reduce the seamen's allowance of meat and other provisions to suit the hardness of the times, he stopped the subject at once by saying,—"When I find I can make no profit out of the ships without starving the sailors who work them, I shall give up business and turn the ships over to you!"

Being a bachelor, and having no domestic ties, he had more leisure than most people to carry on his immense business, and his ships seemed to be his sole pride and delight. But his zeal in everything he undertook completely wore out his constitution, never very strong, and he died of premature old age, scarcely having completed his 59th year.

To show the superior manner in which his ships were managed in every way, it is a fact that for thirty years that he has had an average of from twenty to thirty ships afloat, only four have been lost in that time, viz., the *Conqueror*, *City of Poonah*, *Madagascar*, and *Sutlej*, the latter by fire in the Bengal river. The losses therefore in his service have been as rare as in the late E.I.C. service, where ten men were carried to every 100 tons, and in his own only five; though few owners carry anything like that proportion in their vessels. From January 1810 to January 1834, when the E.I.C. trading charter expired, out of fifty-two ships afloat, four were lost, viz., the *Cabalva*, *Duke of York*, *Regent*, and *Kent*, the latter by fire at sea.

Although the will of the late Mr. Green is not yet published, yet it is well known that it has given general satisfaction. The ships are to be kept on in the present state, and no one loses employment; legacies to maritime charities have been most liberal, among which are £5,000 to the Seamen's Orphan Asylum and £2,000 to the Dreadnought Hospital ship.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

APRIL, 1863.

Voyage of H.M.S. "Melville," *Commander H. Trollope,— From Singapore to Hong-Kong.*

[The letter (in our last number) of Captain Polack, of the Hanoverian barque ***Esmeralda***, throws considerable light on the subject of making a northern passage against the N.E. monsoon of the China Sea, by the Gilolo route. He informs us that Siamese traders to China invariably take it at that time. We follow up Captain Polack's communication by the voyage of H.M.S. ***Melville***, Captain Trollope, who had previously called our attention to his passage from Singapore to Hong-Kong by that route. The ***Esmeralda*** made her run from Gilolo to the Bashees in ten days, but the ***Melville*** took thirteen to do it in, which appears to have been the result of going so far East as the ***Melville*** did, the Siamese traders considering this quite unnecessary. It is evident, however, that the favourable current is the main source of the advantage of this route over the China Sea, besides the wear and tear of a foul wind.—Ed.]

On Friday, 18th December, at 6h. 20m. a.m., left Singapore with a moderate breeze from the northward. The flood tide setting to the S.W. at 2h. p.m., obliged us to tack to the northward to avoid being set down on the Bintang shore. The beautiful revolving light named after the celebrated Horsburgh, on Piedra Branca, is most admirably situated. There is no danger to the northward of this rock, there being sixteen fathoms close to it, but in other directions it must be approached with caution. The lighthouse is a noble granite tower, ninety-five feet above the sea, and visible fifteen miles distant.

We were obliged to make several tacks to clear the shoals of Bintang, but at 8h. p.m. took a departure from the light, bearing West six miles, and stood to the eastward, with a fresh breeze from the northward hauling round gradually to N.W. All the information and advice I could obtain led me to prefer the eastern passage through the Java Sea, &c., to the more direct one by the China Sea, and at this advanced period of the monsoon I would strongly recommend this route. We were very much favoured in our passage across the China Sea and through the Carimata Channel, with steady breezes from N.W. and W.N.W.

19*th*.—At 4h. 55m. p.m. made St. Barbe Island, bearing E.N.E. to E.b.S. It appears like two islands, the centre being lower than the extremes. This island can be seen seven or eight leagues off. Passing to the southward of it we steered for Souronton Island, which we passed on the 20th. This island is 1,400 feet high, but adjoining and larger island, Carimata, is 2,900 feet high, and may be seen forty miles off. We saw it when thirty-five miles distant. In crossing the China Sea we were set eighteen miles to the S.W. in two days. Leaving Souronto to the northward and standing S.E., the wind still continuing to favour us, hauling round to the westward steady and strong, the ship frequently going nine and ten knots. We sounded every two hours, varying from twenty to twenty-seven fathoms. Steering for Little Pulo Laut, sometimes called Laurot Islands, and the Aventes, both of which we sighted on the fifth day after leaving Singapore. Passing to the southward of these islands and also of Sibbalds Bank without striking soundings, we ran between Talinaf or Laars Island, a low wooded island or group of islands visible about four leagues, and the dangerous Brill Shoal, neither of which however we saw, and sighted Point Layken, the S.E. extreme of Celebes, at 4h. 40m. p.m., on the 24th. We did not approach the coast within seventeen or eighteen miles, but stood to the eastward to pass through the Salayer Passage.

25*th*.—Hitherto we had done extremely well, but the favourable breeze was about to fail. At 2h. 30m. a.m. observed the land, E.N.E. to S.S.E., the island of Salayer. As it was very dark we hove to for an hour on the starboard tack, with the wind at W.b.N. Head S.W.b.S. The wind was very variable, varying from W.b.N. to N.N.E., and in the afternoon it was calm for three or four hours, but at 6h. p.m., a breeze sprung up from S.b.W., with which we stood E. ¼ N., passing between the middle and South islands, a passage upwards of four miles broad, and free from any dangers. Salayer Strait, or the Boegeroens of the Dutch, is thirteen miles broad, but divided into four channels by three islands; it lies between the S.E. point of the S.W. peninsula of Celebes, and the North point of Salayer Island. The former presents beautiful prospects, and is, I believe, the most favoured of all tropical islands I have ever read of. Although on the Equator it is not oppressively hot, its peculiar double horse shoe shape perhaps tends to this, in rendering it accessible to the sea in all parts, as well as its lakes and mountains, one of which is 7,000 feet

high. It produces everything necessary for man, and has the singular advantage of not having any of the larger beasts of prey. Tigers, elephants, and the rhinoceros are unknown. It has been little visited, but its history is full of interest, pointing to races and dominions connected with both Hindoo and Mahometan worship.

Salayer is from thirty-five to thirty-six miles long, N.b.W. and S.b.E., and about eight broad. It is said to contain 60,000 people, living in comparative comfort. They produce millet and cotton in abundance, and manufacture coarse cotton cloth for their own use. We fell in with some proas, with triangular sails, but not near enough to communicate with them.

26th.—The middle island is in 120° 30′ East, and 5° 40′ South. Leaving Salayer we stood through the Bouton Passage, between the island of that name and the Wangi Wangi Isles. Bouton Island (ninety miles long N.b.E. and S.b.W. and from twenty to forty broad,) borders the S.E. peninsula of Celebes. In former days vessels used to go through Bouton Strait between that island and Pajasang or Moera, but it is now rarely used; it is tolerably safe but tedious, in the narrowest part it is less than a mile broad. There is a very respectable town in the northern part of the strait, in 4° 36′ South. Bouton is hilly, well wooded and very fruitful, all kinds of tropical fruits, vegetables, &c. The inhabitants manufacture a coarse kind of cotton cloth for their own use. With the neighbouring island of Moera or Pajasani they are said to amount to 300,000. I am always struck with astonishment when I hear and see these vast populations, in islands I never heard or thought of before. How little we know of the world and its countless myriads, their joys and sorrows, their means of subsistence and mode of life. In this island, about seventy years ago, the Dutch had by treaty a right to send an officer called an "extirpator," whose duty it was to destroy all the clove and nutmeg trees, for the preposterous purpose of enhancing the value of their own plantations. This selfish and disgraceful rule is now at an end.

27th.—The wind being from N.N.E. we had to work through the Bouton Passage, and on the following morning the wind changed to N.N.W., and enabled us to lay up N.E. ½ E., standing for Pitt Passage, between Xulla Bessey and Bouro Islands. The latter is a beautiful island abounding in every thing; it is ninety-two miles long E.b.N. and W.b.S., and fifty-eight broad. It is very mountainous, the dome being 10,400 feet high. The Xulla Bessey Islands are also high, and may be seen twelve or thirteen leagues off. In many of these islands the Dutch have forts, and more or less influence in all of them. Their rule is more harsh and strict than that of the English, but more uniform, and has been I am told more productive of peace and order. I am rather inclined to doubt the justice of this opinion, however, although it was told me by one who had been for five and thirty years a civil servant and resident of the English East India Company.

After clearing the Bouton Passage, we stood with light breezes

from N.W. varying to S.W. past Oby-Major and Look-i-Song, or Landscape Island, a very pleasing spot as may be gathered from its name.

With very light winds and calms, one of which continued for nearly thirty-six hours, passed to the eastward of Look-i-Song, Kekik, and Pisang. The last named island is a very good mark, it forms in two hills when seen from the southward, and is the highest of the Kekik or Lawn Islands.

1st January, 1858.—In five days we had made by observation 370 miles, E.N.E., but of this 140 miles was an easterly current on one day (December 31), during which it was almost a perfect calm, with her head often round the compass. The current was N. 45° E. 42 miles! Latitude 2° 11′ S. and 2° 9′ S., longitude 127° 44′ E., 128° 38′ E. Very light winds and calms prevailed until we cleared the islands in the Pitt and Gilolo Passages. The breeze was chiefly from S.b.W. and S.S.W., but airs and flaws came from all quarters, and the greatest attention was necessary to take advantage of them.

2nd.—Latitude 1° 10′ South, longitude 129° 15′ East. Horsburgh mentions a shoal in this passage, which is not marked upon the chart, as follows:—"A dangerous coral bank, having 3¼ fathoms upon it, and extending East and West two miles, is said to exist in Gilolo Passage. From the bank the Boo Islands bear E.b.S. about twenty-four miles, and Pulo Pisang S.S.W."*

At noon Pulo Pisang bore S. 40° W., the Boo Islands East. I paid particular attention to the lead, and got casts with 100 fathoms of line, but could perceive no signs of it.

Pulo Pisang has two small wooded islets off it, at either extreme North and South. This island at a westerly and South-westerly bearing, is not so strongly marked and formed into two pyramidal hills, as it is on a North bearing.

3rd.—Passed between Geby and Gilolo, and entered the Pacific Ocean; on the following day crossed the Equator in 129° 25′ East.

Gilolo in its form has a singular resemblance to Celebes, both probably arising from the action of volcanoes. It has one, "Gammacanove," 6,800 feet high, of which an eruption is recorded in 1673. Although a beautiful and fertile island, and by far the largest of the Moluccas, it is not so populous as many smaller ones. Malays inhabit the coast, but the original Alfoory race still occupy the interior of the island.

Geby, twenty-one miles long N.W. and S.E., is hilly, and at the South end terminating in a bluff headland. It has nothing particular to distinguish it, except that it is, in some sense, the entrance to the Pacific Ocean by the Gilolo Passage.

4th.—We were still detained by calm and light airs from all points of the compass. We should have preferred making northing, but were unable to do it, until the current set generally to the N.E. about thirty miles; but for the three following days (January 7th to 10th,) were set seventy miles to the S.W.

* Seventh Edition Horsburgh, vol. ii, p. 718.

At noon on the 7th, the Asia Islands were in sight, E. ½ S., fifteen or sixteen miles distant. These island are three in number, they are N.E. and S.W.. The two southernmost ones are close together, but the northern one is five miles N.E.b.N. of the middle. They are low and level and covered with trees. The Asia Islands were still in sight on the 8th. Stood to the N.N.W. with wind from N.E.

11th.—Latitude 8° 28′ North, longitude 129° 24′ East. Current N. 38° W. twenty-two miles. Wind N.b.E., N.N.E. Tacked and stood to the eastward passing to the northward of Lord North Island and St. Helen Shoal. Stood along the third parallel until the 15th, in latitude 2° 58′ North, and longitude 135° 50′ East, when we worked to the northward until the 17th, in 5° 6′ North and 135° 40′ East. The wind then changing to East and E.b.S., we stood to the northward so as to pass the Pellew Islands, about 100 miles to the eastward. A current set the ship in forty-eight hours, from the 15th to the 17th, N. 60° W. twenty-six miles.

18th.—We had the misfortune to lose a very fine young lad, Thomas Cousins, seventeen years of age, by falling from the mizen, which so seriously injured the spine and lungs that he died four hours afterwards. I as well as the ship's company were truly grieved at his loss. He was one of the most promising boys in the ship. Latitude 8° 17′ North, longitude 136° 34′ East. North extreme Pellew Islands, S. 85° W. 104 miles

26th.—We were now 1,180 miles from the Bashee Islands, and carrying the fresh and steady trade from East and E.N.E., gradually altered course until we sighted them on bearing West and W. ½ N., ten or eleven leagues distant. The North Bashee Islands are three in number, the southernmost of which is much the highest, it bears S.S.W. from the two northernmost, three and half miles distant.

28th.—The breeze continued very fresh. The ship went twelve knots and more for several hours. Sounded every two hours, thirty-five, thirty, and twenty-eight fathoms, sand; and at 5h. a.m., twenty-one fathoms, mud. At 6h. a.m. observed Pedra Blanco, the Ty-Sing Cham of the Chinese, bearing W.b.S. nine or ten miles.

At noon, in 22° 11′ North, 114° 26′ East. During the last twenty-four hours the ship had been set S. 67° W. twenty-eight miles. Easternmost Nine-pin Rock, N. 37° W.; N.E. head of Lema Island, S. 39° W.; peak of Pontoy Island, S. 80° W.: seventeen fathoms sand, At 5h. p.m. it fell calm, and we anchored for the night with the stream in six fathoms, sand, veered to thirty. Bearings at anchorage West Lamma Channel: West extreme Green Island, N.N.E., North extreme Lamma Island, East. 9h. 40m. p.m., ship swung to the ebb tide, running to the S.S.E. about half a knot an hour.

29th.—Ship swung to the flood, running to the N.E. about a third of a knot an hour. Daylight, weighed and made all plain sail, working up for the anchorage of Hong Kong. Wind moderate, N.E. and E.N.E. 9h. a.m., made our number to the *Calcutta*, bearing the flag of Rear-Admiral Sir Michael Seymour, K.C.B., Commander in Chief. Winds very variable, E.S.E. to E.N.E. The ship touched

once or twice in stays on either shore, but only stirred the mud up. The harbour crowded with shipping. At 11h. 30m. a.m., anchored with best bower in seven and a quarter fathoms, mud; veered to eighteen fathoms. Bearings of anchorage: Government flagstaff S. ¼ W., West point of Hong-Kong W.b.S. ½ S., Cowloon Point N.N.E. ½ E.

In harbour, H.M. ships *Calcutta*, *Princess Charlotte*, *Belleisle*, *Fury*, and *Volcano*; gun boats, *Leven* and *Firm*; steam yacht, *Emperor*. French, steam store ship *Durance*, 4, gun boat *Dragonne*. Dutch, frigate *Princess Amalie*. United States, steam frigate *Minnesota*, 50; *Mississippi*, 12; corvette *Portsmouth*, 16.

We were forty-two days from Singapore, and had fine weather during the passage. I do not think we should have made the voyage in less time had we beat up through the China Sea, and the ship would most probably have suffered considerably.

The *Princess Charlotte* and *Belleisle* arrived on the 3rd of January, they pursued nearly the same route that we did through the Pitt and Gilolo Passages, but were not so favoured as we were in the Java Sea. They were fifty-one days from Singapore to Hong-Kong.

The *Melville* has dismantled, her masts and bowsprit cut off eighteen feet from the deck, to form a security for the housing in when made a hospital ship, and was paid off on March 31st, 1858.

HENRY TROLLOPE, *Commander*.

A TRIP TO TANANARIVO:—*Madagascar*.

(Continued from page 95.)

19th.—After breakfasting as well as we could with my new acquaintances at the residence of M. Laborde, I set out in company with MM. Soumagne and Marius. We had a journey of eight hours to perform before reaching Tananarivo, on a road nearly everywhere fit for a carriage. The celebrity which Soatsimanapiavana had gained, in spite of the disagreeable length of its name, had given rise to this palpable deviation from the general construction of the roads of this country. And thus my bearers, stimulated by this and the small distance to complete the journey trudged onward with an hilarity which it was difficult to restrain.

As we approached the capital the population became, in proportion, more numerous. Cultivation was more abundant, rice was seen where ever water was to be found; and in some parts, at greater elevations surrounding the villages, fields of manioc, pulse, country peas, and fruits; the fields separated by hedges of cactus, a sloping parapet, and often by a ditch. But what most attracted my attention was finding two bridges of stone over two small rivers which crossed our road. With the exception of what I had seen at Soatsimanapiavana, these were the first stone buildings that I had met with in the coun-

try. At the first sight of them they excited my curiosity and stimulated me to look into their origin. Like many others which I have not seen, they have been most ingeniously constructed by Rakoto and his friends, who some twelve or fifteen years ago, like M. Laborde, were bent on introducing the arts and sciences into this island.

They consist of a single arch six or eight yards in diameter, mounted on mullions and radiating towards the centre as arches in brick. They are not more than a yard wide at most, and as they have no parapets and their pavement is irregular, to cross them is by no means an easy matter. The bearers have some difficulty in crossing them abreast, and a skittish horse would rather pass on either side of them than over them.

In the morning I had addressed a letter to Radama through M. Laborde, in which I announced my approaching arrival and had required of the latter to be informed where I should proceed for a habitation on my arrival at Tananarivo. This precaution, which in my case was no more than a measure of policy, was for some months indispensable for a stranger entering the capital; for under the reign of Ranavalona nothing was done without first consulting the oracles. The arrival of a stranger on any day which had not been announced as a propitious augury, would bring terrible calamity on the whole country. It was necessary, therefore, under such circumstances, to wait at some distance from the capital for the day when there was no malicious influence to be feared. This day was often a long time coming, especially when the decrees of the oracles were not mollified with money.

At present there is no such delay to be feared, and if I did not enter Tananarivo on the same day it was only because I chose to submit to the complimentary arrangements which were making for my formal entry on the next morning.

Scarcely had I travelled over half the distance we had to go, when we were met by aides-de-camp, who came in groups to salute me on the part of their chiefs. At three leagues from the capital a party of the chiefs themselves came to meet me. Then, shortly after, officers from the king, with his musicians, a guard of honour, and a horse richly caparisoned. A deputation from Radama was composed of two officers of his guard and two more of the palace,—of which two last, one was his cousin and the other a son of his minister of foreign affairs. The musicians struck up the air of La Reine Hortense the moment they joined us, then soon after the national air, Malgache, and after a few moments longer we proceeded on our route.

The escort which I had now was very different from that which I had had at Tamatave. The uniform of the soldiers was composed of a red coat, white trowsers, shako, &c. They had a good military air and manœuvred on receiving me with remarkable precision. The band had at all times, even when Radama was only a prince, the reputation of producing the best music in the island. The officers, as usual, had all kinds of fantastic uniforms, and it was evident from their manner that they were accustomed to them. As a mark of

distinction in their position the officers of the palace wore a red satin riband over their uniform, like a cordon of the grand cross. They are all pretty good horsemen, but their horses were the most pitiable of animals in the whole world. They knew not how to manage them and mounted against all principle, making them gallop about in narrow roads among rocks, where occasionally the horses and their riders would be seen rolling over each other.

It was in the evening when I arrived at the town of Andraisory, which is only about a mile from Tananarivo; and I was lodged in the quarters which had been occupied by the English mission. The musicians played part of the evening, when I dismissed them until the morning, as well as the officers under my orders; and MM. Soumagne and Marius proceeded to the capital, where M. Laborde was soon with them with some impatience to obtain news of me.

The following day (20th January) all the arrangements for my formal entrance being completed, the procession was formed at ten in the morning. The officers, in full uniform and on horseback, attended me, the first before and the others behind. A strong guard of soldiers attended on each side of the road. Two special guards of Radama, two Menamasos, dressed in great coats of silk of brilliant colours and turbans, carrying their carbines *a la brigand*, led the way on horseback. They were followed by the king's band, playing alternately French and Malgache music. The bearers, all in festive costume, completed the procession; and the population of the place, scattered over the banks of the river, assembled in our route, left no space available on either side that was not occupied by groups of lookers on, dressed in their holiday clothes.

As soon as we were able to distinguish the royal residence from a piece of high ground near Tananarivo—resembling from a distance an immense wooden house of the most simple construction—we halted to play the national Malgache air and to make the *tarente*, a salute in honour of the king. The guns of the capital were then fired at nearly equal intervals until we entered the gates of the town. Two general officers, who attended there to receive me, then joined my procession.

We entered Tananarivo by a covered way more than ten feet thick, which seemed to indicate fortifications without doubt, but of which I have not been able to find any trace since.

The town proper seems to occupy one of many hills on an extensive plain; in the midst of which flows the river Emirne. On the highest part of this hill stand the palaces of the king and queen. That which was occupied by Ranavalona is the most extensive of all. It is the royal residence, but has to remain closed until the termination of the public mourning for the death of the queen, and I was unable to visit it. Like the rest, it is entirely constructed of wood, with verandahs all round it, and its centre is said to be supported by a single spar 120 feet high. Until he can reside in this palace Radama occupies the Silver Palace, where he had previously lived under the reign of his mother.

The sides of the hill are cut in steps and covered with houses of wood and clay, having one story and very high roofs covered with thatch, the ends of which extend about two yards beyond the sides, and thus form two kinds of large forks, to the ends of which are often fixed figures of birds carved in wood. Each house besides is furnished with a lightning conductor, sometimes fixed to the end of a mast and the chain led into pits of several yards wide, filled with water and charcoal. This plan, which is due to the instruction of M. Laborde, no doubt has prevented many accidents in a country so subject to severe storms, where it is stated that one person falls a victim to lightning every day.

The houses being on different levels are sustained by walls of stone or clay, which often sink during the rains of winter. The spaces between them, of course very unequal, will only admit one person at a time, and are the only means of communication, excepting the route which, coming from the East, ascends directly to the palace, and descends to the West by the most gradual declivity of the hill, terminating in the plain which contains the suburbs of the town.

It was by this last road that I entered Tananarivo, but it was soon necessary for us to get on foot and follow each other to gain the residence which had been prepared for me. This was perfectly well chosen, having a pure air, with a beautiful and extensive view. The interior had been provided with luxuries which I could not have hoped for,—a table covered with glasses, a number of wooden chairs, the paper on the walls representing incidents in the war of the Crimea ornamented the parlour, from the ceiling of which hung a chandelier. The sleeping apartment, though not so gay, had nevertheless a large bed *à bladaquin* fixed to the wall, ornamented with white and rose coloured muslin curtains; but a simple mat covering the whole surface of it was intended alone to serve as mattrass, sheets, and coverlet. My travelling mattrass, which I soon had deposited on it, seemed to protest by its scantiness against this apparent but comfortless luxury.

After having dismissed officers, musicians, and soldiers, I thought to have made an end of the journey and to be entitled to some repose; but I had reckoned without allowing for the custom of the country, which obliged me to receive in person the presents of welcome from the aristocratic Hovas. Radama, Rabodo, the chief wife of the king, Rainivoninahitrisiniony, commandant in chief, Marie, principal lady of Radama—every one, in fact, hastened to send me oxen, sheep, fruit, vegetables, with all of which my court was well filled. Happily, I had at hand a very simple means of remedying this plethora, and at the risk of having to reproach myself with above five hundred cases of indigestion, I made a distribution, without losing in importance, of the greater part of these provisions among my servants, being quite certain that we should be at least forty-eight hours without hearing anything about them. A large part of the remainder went to the larder of M. Laborde.

When the heat of the day was over I made acquaintance with this

gentleman, who excused himself at first on account of a recent fire having rendered it impossible for him to offer me his hospitality; but nevertheless, in the most obliging manner, he placed his table at my service. The liberality and frankness of his offers, his extremely obliging manner, and, more than this, the thorough French feelings which he has preserved in the midst of the splendour and changes which have followed him in this land of his adoption, won all my sympathy in his favour. I have had ample opportunity more recently to appreciate in him a man who knew in an instant all the avenues to business with the king himself, who has for him as much affection as a son has for his father. Notwithstanding the influence which he might command with his personal fortune, he lives with the utmost simplicity, and by his example makes every one respect those who bear the name of a Frenchman.

My reception by the king being fixed for the 22nd of January, I had a whole day to initiate myself in the novelties of my position.

Rakoto, the present Radama II, as all the world knows, was born nearly two years after the death of Radama I. His mother, Ranavalona, to justify thus being out of her time, pretended to have descended to the tomb of her husband, and to have received a supernatural visit. This explanation, incredible as it may be, has received an official stamp. But men of strong minds, who look for a motive in all things, maintain to this day, some that Rakoto is the son of a European come recently to the court of Emirne, and others, which is perhaps more likely, that a favourite of Ranavalona was his father, since assassinated by the father of the present commander in chief.

However it may be, Ranavalona, in spite of her character for cruelty and superstition, has always had the most tender affection for her son, and would never oppose him in his generous and conciliating ways. Rakoto was always by nature more than by his political position the friend of those who were sufferers by his mother's severity, and many a time has snatched from the jaws of death the intended victims of her despotic power without her showing the slightest irritation. Hence the people for the many long years of cruelty to which they have been subject, have been accustomed to look on him as their only comfort and the future solace of the ills which they have endured.

His mother always considered him as her natural successor in power, and with this anticipation gave him for *vadi-be*, that is for his principal wife, her niece Rabodo, the daughter of one of her sisters, Rafaramanzuka.

Rabodo, older than her husband by some years, has not, and probably will not have, any children. Radama has a great respect for her, treating her always with the utmost attention, and with good reason follows the advice which she gives him. Sometimes she occupies herself with state affairs, and evinces then all the natural tact of the woman.

Ranavalona had another sister, named Ramasandvazana, who had two sons. The youngest, Ramoza, is imbecile and sickly, and lives

in retirement at Tananarivo with his wife and son, to whom he is tenderly attached. The other, Ramboasalam, has occupied a political position far too important not to receive some consideration in this narrative. Older by some years than Rakoto, and having over him the advantage of regular birth, he managed to form a party sufficiently powerful to give him some chance of succeeding his aunt Ranavalona and leaving his cousin entirely at liberty to follow the bent of his generous and peaceable disposition. He won over all those who from interest or conviction desired to see perpetuated the old system of terror and superstition. His warmest partizan was Rainizohary, first the lover and then the favourite of Ranavalona. It is to these two men that may be attributed the calamities of the last reign. They had acquired of late years a complete ascendancy over the old woman, who dared not carry out the least wish of her own without having first consulted the *skidy* (oracles, entirely at their service); and they succeeded in persuading her that her death would be the immediate consequence of her renouncement of power. Thus they prevented her abdication in favour of her son, with the hope that they would be sufficiently powerful to seize the reins of government; which, in spite of the despotism of which she herself was the victim, she never intended to relinquish except in favour of her natural heir.

Those who felt how prejudicial it was to the interests of their country to perpetuate a policy which isolated them from all the benefits of civilization, had for some years resolved to bring Rakoto into power and oblige his old mother to finish her days, under pretext of the troubles to which she succumbed. But one of the principal persons concerned in this hazardous enterprize, finding out rather late that he had no personal interest in carrying out the scheme, caused it to miscarry. Ramboasalam's party naturally took a signal revenge on this failure, and in the name of the queen ordered the execution of all the native Christians, obliging them, under penalties of the most atrocious torments, to denounce any that they knew to be concealed. In those dreadful days mothers were seen frantically giving up their children to execution, and whole villages of people exposing themselves to death rather than betray their companions before a merciless tribunal. Some had recourse to Rakoto, who found for them the means of escape, while others fell martyrs to their faith.

Ranavalona at length died, about seventy-six years old, on the 15th of August, 1861, surrounded, happily, by persons devoted to her son. The commander in chief soon repaired to the public square and announced to the people that the queen, feeling her end approaching, had nominated Rakoto to succeed her—intelligence which was joyfully received everywhere; and at the same time he made all the military arrangements to secure the persons of Ramboasalam, Ramizohary, and their principal partizans.

Rakoto thus came into power, with the name of Radama the Second, without a drop of blood being shed. And after his accession, against the advice of those of his friends who feared a reaction, he

was constantly opposed to all acts of violence against his cousin, who was simply removed some leagues from the capital under the *surveillance* of a score of menamasos, who are sufficiently interested not to lose sight of him.

Rainizohary, as his part, has been charged with the care of the tomb of his old mistress; and thus these two men are now expiating their past crimes. They are living in the constant fear of falling some day under the vengeance of the relations of one of their numerous victims, and endeavour by means of drunkenness to get rid of remorse, in waiting but for the one end, which cannot be long in coming, to permit those who dreaded them to follow without fear the new order of things so happily inaugurated by Radama.

The liberty of the Hovas admits a plurality of wives, but they do not abuse the privilege. It is very rare that they contract low alliances, for in this point of view they are a highly susceptible race; thus they look in preference for their alliances in their own families, and sometimes of a degree very closely related. One of their wives, who has the title of *vadi beh*, represents the husband in the same acceptation of the word as among ourselves, and she has all the prerogatives if, as among Mussulmen, the husband is not bound to devote to each of his other wives the day which they would have the right to claim.

Radama has two legitimate wives. Rabodo, of whom we have spoken, is his *vade beh*. She is queen in the full meaning of the word, and is always treated as such; while his second wife, Ramona, although also his cousin germain, as sister of Ramboasalam, lives without any distinction with other ladies of the court.

Radama has besides an acknowledged mistress, Marie, formerly a servant of Rabodo, with whom he cannot be regularly allied on account of her low birth; but of whom he is very fond, and who has a considerable influence over him. This lady has two children; one of whom, a son ten years old, is named *John*.

Rabodo, on her part, and perhaps as a set off against this, which is naturally not satisfactory to her, has publicly adopted the two children of Raitsimaimanga, nephew of Radama the First. They are considered by her as her own, and are present officially at all the fetes and public ceremonies, although the eldest, named Sataniry, is only six years old and his sister scarcely four.

To finish with the known descendants of Dianamponine, we must say a word about Jomby-fatomby, the daughter of a cousin germain of Radama the First, who was obliged to fly from Madagascar to save her head on the accession of Ranavalona. The father of this lady was fortunate in getting to Mohely, one of the Comoro Isles, and to be acknowledged as sovereign of the island. She succeeded him at his death, but was obliged to marry an Arab, and has a son six or seven years old.

The excellent and amiable character of this intelligent young queen, as well as her conduct, has secured her the protection of France. In all the neighbouring islands the "little queen" of Mohely is never

mentioned but in terms of affectionate sympathy; and this title, although she is more than twenty-five years old, will probably be that by which she will be known to posterity.

Jomby-fatomby, an exile like her father in the reign of Ranavalona, has lately received from Radama the Second letters inviting her in pressing terms to come to him, and it is possible that she may assist at the coronation of her relative. The amiable qualities which distinguish this cousin of Radama have often given rise to the hope that she might be united to him to assist in regenerating his country. Such an idea is probably not abandoned, for Jomby-fatomby cares little for her crown and still less for her husband, from whom a divorce would easily separate her.

THE STRAIT OF GIBRALTAR: *Its Winds, Tides, and Navigation.*

(Continued from page 145.)

Precautions and Rules for Entering and Passing the Strait.

Points of Land to Make at the Western Entrance.—The points to use as landfalls at the western entrance of the strait, for vessels from the Atlantic, are Capes Trafalgar and Espartel. With respect to the first, and whilst its light* is in course of construction, at night it is a bad point to make, Cape Espartel being always preferable, being a high and remarkable land. By day and with the wind from N.W. round by the North to East, when there is a clear atmosphere, it is preferable to make Cape Trafalgar. But with the opposite winds Cape Espartel should be preferred.

Making Cape Trafalgar.—Cape Trafalgar, although foul and dangerous, has an approach which renders it easy to make with the lead. If a vessel nears it by night and in fine weather, she may assure herself of her distance from the shore by consulting her chart with the result of her lead, with a certainty of running no risk, while she does not get into less than thirty fathoms. Keeping in this depth and standing E.N.E., she will not be long in making Tarifa light, from which she can shape a fresh course.

Making Cape Espartel.—Cape Espartel having a clean shore and being a remarkable headland, offers no difficulty either by night or day, to a vessel with a good reckoning. But if this be out it may occasion an error in making the strait, as to the South of the high land which forms Cape Espartel, the land is low and formed by an extensive valley. This appears to the navigator at a distance to be the mouth of the strait, a mistake which has led to the loss of vessels that have committed it. Hence in dark, lowering weather and at

* Since completed to a revolving light.—See p. 446, vol. 1862.

night, vessels should be very cautious how they stand in shore, unless they are perfectly sure of their position, keeping off the Cape until daylight. When the light of Cape Trafalgar is completed much of these inconveniences will be removed, and they would entirely vanish were another established on Cape Espartel, the proposals for which were even made to the Government by the Commissioners of Lights.

Course for the Strait from West to East.—To pass the Strait from West to East, with a fair wind, it will be enough to keep mid-channel, where a vessel will be clear of all risk, and will profit by the general current. If it be attempted with foul winds, a sailing vessel should work also mid channel, when the flood is running, extending her boards to either shore on the ebb, by which means she will derive more benefit from the current, and the favourable slants of wind produced by the bays.

If the foul wind be from the eastward, and blowing fresh, provided the vessel can carry her topsails, although close reefed, and she keeps mid-channel, she may also pass the Strait, especially if she has been able to gain the meridians of Cape Plata, or Point Malabata. And as the narrow of Tarifa is passed, the wind will be found sensibly less, and an attempt should be made to beat against it, in the hope that by small boards the rest of the Strait may be cleared, and that the wind already available will enable the vessel to reach Gibraltar, should that have been the destination, or to enter the Mediterranean.

If the easterly wind be so strong as not to admit of a vessel carrying sail to it, the best plan to adopt would be to take shelter under Cape Spartel, keeping under sail for what may turn up, and the moment it slackens to take the Strait. A navigator somewhat accustomed to the Strait, and having gained ground in it, instead of seeking shelter under Cape Spartel, would find it off Tangier Viejo, in Bolonia Bay. Coasting vessels which keep the coast of Spain on board, reach Tarifa easily, availing themselves of the counter streams of tide, and anchor off Los Lances if the easterly wind is so strong as not to admit of keeping under sail. But the moment they can do so they get away, standing to the southward, managing with a few boards to pass the narrows of the Strait.

While the easterly wind inclines to the northward, it is best to keep on the Spanish coast, as much from having more shelter from the sea, as from profiting by the heavy gusts from the coves and bays. But if the easterly wind has any tendency to the southward, the opposite coast is preferable.

The places for making in the eastern entrance of the Strait, for vessels from the Mediterranean, are the Rock of Gibraltar, and Mount Almina de Ceuta. If the weather be clear the Rock will be seen forty miles off, appearing isolated, and higher to the northward than the southward, and at the same time will be seen, also isolated, the Sierra Bullones. As they are approached they will appear more distinct, and the mouth of the Strait will be seen; the towers of the Rock will

appear, also its white cliffs on the eastern part of it, and finally its light tower. The Monas Mountain, Apes Hill, (Sierra Bullones) will show its two conical peaks, the northern being higher than the southern, and lastly Mount Almina de Ceuta will be seen less elevated than the other heights, and remarkable for the large castle of Hacho which crowns it.

The land which forms the isthmus of Gibraltar is low. From this the ground rises as far as the ruined tower of the look-out of La Pedrera. Continuing still to rise it forms a high mountain called Carbonera, on the summit of which is a watch tower 1,062 feet above the level of the sea, and three miles distant from the Rock.

In misty weather the error is made of mistaking the Rock for the Sierra Bullones, and that of Carbonera for the Rock, and with East and S.E. winds vessels thus become embayed, and are wrecked on the beach of Mala Bay, which they have supposed to be the Strait. It has also happened in similar weather, that the Sierra Bullones has been mistaken for the Rock, and as to the South of the former the land is low, the bay of Tetuan has been considered the mouth of the Strait, and vessels by getting down into it with East and N.E. winds, have run the same risk of being wrecked.

In order to avoid such mistakes as these, the navigator who is making for the Strait with easterly winds, should if possible, keep the coast of Spain in sight, until he has made out for certain the Sierra of Estepona. Once having hold of this he may look out for the Rock, keeping in mind that from the highest part of the Sierra, the eastern part of the Rock bears S. 17½° W. Should it be night, and the weather not very obscure, in a short time he will discover the light of point Europa, with the bearing of which he may shape his course for the Strait. But should the night be very dark, and the weather bad, when it will be difficult to make out the light, it will be most prudent to wait for daylight by heaving to, in the confidence that the general current will set the vessel to windward; or perhaps to wait until a clear admits of the light being seen. The greatest care must be taken not to get embayed down in Mala Bay, for if the wind hauls to the S.E. it will be most difficult to get out of it, as the current then sets on shore. In this part, being completely out of the general current, the counter current is only experienced, which with the rising tide sets to the S.S.E. or along the coast, and the contrary with the ebb.

Navigators in easterly winds and dirty weather running for the Strait by night along the African coast, should also take great care, and get early on the parallel of Ceuta, to avoid the deep bend which the coast forms to the southward, and should not attempt to take the Strait without having first made sure of Ceuta light, which from the quality of it cannot be mistaken for that of Point Europa.

As the generality of vessels make one coast or the other, with the view of avoiding the general current of the mid-channel, they should be very careful to satisfy themselves most scrupulously of their position on approaching the Strait, when running in bad weather with N.E. or S.E. winds, the principle to be observed being to abandon the

coast of Spain on nearing the meridian of Estepona, and that of Africa from the meridian of Point Pescadores.

With westerly winds, it is mostly common with vessels making the eastern entrance of the Strait, to work either on the Spanish coast between Point Europa and Estepona, or on the African between Ceuta and Tetuan, to await the return of the Levanter. But if this delays long they resort to anchoring off Tunara, Carbonera, or Sabinilla, on the Spanish coast, generally avoiding to do so on that of the African where they might find excellent shelter to the southward of Ceuta. Nevertheless, it is not well to anchor, especially in winter, at either of the above places, to be exposed to a *rebolsada* in the night, one of those sudden changes of wind frequently occurring in the vicinity of the Strait, in which a merchant vessel would rather be saved the trouble of veering cable. To avoid these things, it would always be more prudent either to wait under sail, for which both coasts afford sufficient shelter, or perhaps to make some attempt with the assistance of the tide, and if possible gain the bay of Algeciras, the only secure shelter in the whole strait.

Route from East to West.—In passing the Strait from East to West with a fair wind, there is nothing to do but to attend to the tides and current, whether in a sailing vessel or a steamer, making either one coast or the other, and following it, as well for avoiding the influence of the general current, as for making use of the favourable tides. But unless the wind is sufficiently strong to enable a vessel to run over the current and its different streams, it would be wrong to get too near the projecting points, such as Carnaro, Acebuche, Tarifa, Cires, &c. In such a case it would be prudent to drop an anchor in some convenient part, and wait for a favourable tide to pass them. The steamers which do the coasting trade on the Spanish coast, always pass them near the shore, going inside the Cabezos and Acetera, although it may be blowing hard from the westward or S.W.

If the passage of the Strait from East to West be somewhat difficult for sailing vessels with fair winds, much more so must it be when they are foul, and it would be impossible to make it in a large one when the wind keeps steady at West. There are instances of vessels of war having achieved it, but these cases, favoured by circumstances, are rare, as the constant flow of the ocean water into the Mediterranean must show. It is only the navigator who has a small handy vessel, with sufficient knowledge of the Strait, who can get to windward by working with the assistance of the tides. We will explain some of the practical rules of which Spanish coasters avail themselves, to get through the Strait against foul winds, established by experience.

Working through the Strait from East to West.—Point Europa being once gained with favourable tides, a vessel will continue working along the coast of Spain without passing the limits of the tide, until reaching Tarifa if the flood admits of it. Having gained this point, and should the tide still be favourable or not, she will anchor to wait the change. Then if the vessel has to leave Algeciras, she will get under sail at half ebb, with which she will have time to reach Point

Acebuche by the commencement of the flood, with which she will probably reach Tarifa, under shelter of which she will anchor and again wait change of tide.

With the next flood she is under sail and working up for Tarifa, taking care always to keep within the limits of the counter current. If she finds this cannot be done, she crosses the strait and works up on the African coast with the favouring tide, and anchors in one of the places mentioned, when this is against her continuing on this shore until she reaches Tangier Bay. But the Spanish coast should not be abandoned for the African, unless it is found impossible to reach the island of Tarifa, either from there being much wind, or from this hauling to the S.W. At all events, Tarifa should not be abandoned until the vessel is off it, and the tide increases, or there is a certainty of weathering Point Cires, for if she falls to leeward of it, it becomes very difficult to gain the bay of Algeciras. Having weathered Point Cires, she will work within the counter current, and near the shore, to avail herself of some slants of wind which might come from the coves, and will double Point Malabata and gain Tangier Bay; from whence, availing herself of a single flood, it will be easy to regain the Spanish coast. A vessel once having gained the meridian of Tangier will find less current and more manageable winds, which are never so strong here as in the narrow of Tarifa.

If keeping the Spanish coast the vessel succeeds in doubling Tarifa, she will continue working up in the bay of Lances while the tide continues favourable, gaining perhaps as far as South of La Pena tower, from whence if she has not sufficient experience to work inside the Cabezos, she will cross to the African coast, to work up under that as above directed.

If after passing Tarifa the wind hauls to W.N.W. or N.W., she should by no means abandon the Spanish coast, rather anchoring off it when the ebb begins, and getting under sail the moment the flood makes, either working inside the Cabezos, if she knows how to do so, or if not, passing outside of them. The bearings and marks given previously, will point out the precautions to be taken for avoiding these dangers. If the wind hauls to W.S.W. or S.W. the Spanish coast should still be kept, even if she has to remain constantly under sail, for by crossing the strait for the African coast, she will run the risk with the wind so scant of falling far to leeward.

If from any cause a vessel should, with westerly winds, make the coast about Almina de Ceuta, instead of Europa Point, she may recover herself by working up on the African coast, within the limits of the counter current, keeping at anchor during the ebb. But all this would be very trying for vessels of any considerable draught of water, for the short and repeated boards they would have to make, are only practicable with spring tides. This can only be done with advantage by fishing boats and feluccas. But if instead of West the wind should be S.W., the gaining of westing would be easier, because the numerous coves of the African coast give good slants with S.W. winds, and the craft lays up better.

A vessel finding herself to the southward of Ceuta, with westerly winds, and desirous of taking Algeciras Bay, should work between Points S. Catalina and Circs, availing herself of the flood, and when off the latter should cross the strait with all the sail she can carry, not hugging the wind, so as to lose as little as possible in crossing, and she will perhaps reach it something to leeward of Point Carnero.

Generally speaking, vessels that can make free with the points, and are managed by good pilots, will pass the strait from East to West, whenever the wind (although foul) is manageable, and they can use the whole flood, and they will make the passage the more rapidly the nearer it is to spring tides. With neaps and westerly winds, no vessel of any size should make the attempt. The Spanish coasters when working to windward in the strait, against westerly winds, get under sail an hour after the moon rises, when the flood has gathered some strength.

The greatest difficulty is in gaining the meridian of Tangier, where the general current is not so strong, and the winds more moderate. If the vessel be bound to Cadiz, or another place on the Spanish coast, she has nothing more to do than to make a long board towards it, and work up off it. But if she is bound to the western coast of Africa, she should work along the African coast, between Tangier and Cape Espartel, and when she has reached this cape she can adopt any course that is desired.

Journal of Captain Cracroft, C.B., of H.M.S. "Niger."—*New Zealand.*

(Continued from page 123).

The township of Drury is called after my old friend Byron Drury, late Captain of the *Pandora*, to whom this colony owes so much for his admirable survey of its coasts. It is pleasantly situated at the foot of a range of noble hills, commanding a superb view. Here is situated the mine belonging to the Waihoihoi Coal Company, a sample of whose produce I tested last March. The undertaking does not appear to be in a very flourishing state at present, although it is struggling manfully against serious difficulties, the greatest of all being that of procuring transport from the pit mouth to the place of shipment at Slippery Creek, a distance of barely three miles and a quarter. However, there is some prospect of a tramway being laid down, when the directors say they will be prepared to supply a hundred and fifty tons a week, and deliver it at Auckland at 32s. 6d. a ton, or 25s. at Onehunga.

Being desirous of having the most correct information of the state of the undertaking, I directed Mr. Rock, our chief engineer, to meet me here for the purpose of inspecting the workings. These are simple enough: a tunnel runs into the hill-side piercing the seam, which has

a slight inclination, so that the loaded trucks require very little force to propel them, and the drainage costs nothing. In some places the seam is thick enough to enable a man to stand upright; in others it does not appear more than five feet in thickness. Iron ore is abundant, and very rich in quality; a lump was given me taken out of the seam which was considered to contain full ninety per cent. of metal. Fire clay of a very valuable description has also been discovered in the neighbourhood, and altogether the prospects of Drury are very promising.

I passed the night at a very comfortable house, the Farmers' Hotel, and returned to Auckland via Papakura and Otahu-hu, taking the news to the Governor (brought by Dr. Patrick before starting) of a peaceful termination, chiefly owing to the tact of Archdeacon Maunsell, to the meeting at Patumahoe.

November 1st.—Notwithstanding the decision arrived at by the native assessors and chiefs assembled to investigate into the death of Eretta, the Maori found dead in the bush, who came to the conclusion that the unfortunate man shot himself accidentally, the more violent and ill-disposed natives residing in this immediate neighbourhood (Onehunga) have endeavoured to keep up an agitation on the subject, and have been roaming about in a state of great excitement in bands upwards of a hundred strong, armed to the teeth, each man with his double barrelled gun and tomahawk. They held a meeting at Pukaki last week, and although, thanks to Mr. Rogan's dexterity, and Bishop Selwyn's and the Rev. Mr. Purchas's influence, no outbreak took place, the country was on the very verge of being in a flame. The government, in anticipation of the worst, had sent a vessel up the Mokau Creek to bring the settlers away from that exposed locality, and they were actually on board, but were fortunately prevented from leaving, which would have exposed their property, homesteads, &c., to certain destruction. And now things seem to be settling down into comparative quiet; but it is impossible to shut my eyes to the fact that the peace of this province hangs by a thread. And here I cannot help adverting to a subject to which my attention has been more than once directed since this unhappy war broke out, namely, that whenever any disputes have arisen between the natives and the settlers, the clergy have been always applied to immediately to use their influence to prevent a collision. But notwithstanding the success that has so far invariably attended their efforts, they appear to have received little credit from those who have called upon their services: indeed the contrary has been the case, and with no little indignation I have heard language applied to the conduct of that noble minded man, Bishop Selwyn, even in a place which I consider the last where such language ought to have been tolerated! * * * *

In that place it has become the fashion to heap upon his lordship very bitter aspersions for the part it is pretended he has taken with regard to the present war: there he is regarded as little less than a traitor,—a turbulent priest, intermeddling with the affairs of state, denouncing the Governor, and countenancing the natives in their

rebellion. But what is the truth? So far from intermeddling with the Governor's policy, he had abstained from even offering an opinion upon it before the war commenced; and when he did so, after it was too late to recede from hostilities, it was only because he was asked by the Governor to give it. So far from inciting the natives to rebellion, denouncing the Governor to influential friends in England, or using any interest for the purpose of embarrassing his Excellency, he had absolutely refrained from writing home at all to influential quarters, lest he should be even *suspected* of having taken underhand proceedings. What a contrast indeed does his lordship's conduct present to that of some of his traducers! He values the opinion of his fellow countrymen, because he knows that his power for good depends upon their appreciation of his honesty of purpose, yet he carefully avoids any action by which he might appear to court applause. He evidently always acts upon the conviction that a straightforward course must bring with it, at some time or other, its own justification, and perseveringly does what he believes to be right, however much he may fall for the moment in public opinion. And so, in spite of the denunciations of a contemptible camarilla, there is no man who commands greater respect in this colony than the Bishop of New Zealand!

November 5th.—Some very interesting evidence has been lately taken by a committee appointed by the House of Assembly to inquire into Mr. Fenton's proceedings when employed as a magistrate in the Waikato district, and the result has been an *exposé* most damaging to the reputation of the present Governor's advisers.

I believe firmly, that the native King movement, which had its rise in this district, might most easily have been nipped in the bud in its early stages, when its adherents were few, when only slowly, and one by one, not without much persuasion, chief after chief was won over to join it. In those early days, a vigilant, active, and sagacious native government might by judicious conduct, (even a few words of discouragement from the Governor himself,) might have prevented the accumulation of this political snowball, which through contempt or carelessness has been suffered to roll on, till its dimensions, swollen by discontent at the proceedings of our native department, bid fair to embroil this country in a war of races, the very result which, since the first day of its colonization, it has been the humane and consistent object of England's policy to avert. But a *laissez aller* policy seems to have obtained, and what are the results? A land league that involves the very existence of the colony, on the northern island at all events, and our Queen's supremacy openly put forth as a possible *casus belli!* And where is this to end? Something must be done, and that soon, for these Waikatos are virtually waging war against us. A large party of their best fighting men went down to Taranaki not long ago to assist W. Kingi, and it appears to be the policy of the government to take no notice of it, but to allow them to expend their hostility against us there instead of nearer Auckland. This very significant fact is quite sufficient to indicate the channel into which the native mind has unfortunately been turned. * * *

Thursday, November 8th.—The *Victoria* arrived yesterday, bringing intelligence of an action having been fought between our troops and the Waikato natives who went down to Taranaki, in which the latter were defeated with the loss of nearly fifty men killed, wounded, and prisoners. They appear to have been taken by surprise in an old pah called Mahoetahi, situated on a hill partly surrounded by a swamp, about midway between the Bell Block and the Waitara; the affair lasted two hours; the natives made a stout resistance at first, but finding themselves surrounded, retreated to the swamp, where they were nearly all shot down, very few, it is said, succeeded in getting away. Our casualties amounted to four killed and sixteen wounded.

This news caused much excitement in Auckland: a perfect panic in one quarter. And acting under a vague impression that the Waikatos would exact "utu" for their losses in this province, an order was sent over to me this afternoon to start for Taranaki forthwith, and bring up as many men as I can stow for the defence of the capital, in case a descent should be made on it. Captain Norman of the *Victoria*, is directed to proceed on a similar errand.

Lit fires, and got everything ready for a start; but before the steam was half raised, it was blowing too hard to venture to move. An easterly gale (they come on very rapidly) had set in, veering as usual to N.E., and it would have been madness to have started a chain. The night that followed was fearful, the wind howled, and the rain poured down in perfect torrents. * * * *

Friday, November 9th.—At daylight the gale had broken, but it still blew hard in the squalls. Slipped the stern chain, and before five o'clock the anchors were at the bows, and we stood down the Manukau. The weather was very thick, and we ran into a fog after rounding Popunga, but caught sight first of the *Victoria*, which got away yesterday just as I received my orders, and had to stop here, off the Huia, all night. I was just going to anchor also, as it seemed impossible to proceed, when the fog lifted a little, and we got a glimpse of Paratutai, so I determined to stand on and take the chance of seeing the marks, and the *Victoria* was not long in following us. About eight o'clock we crossed the bar, the water perfectly smooth, and made sail as soon as the course was shaped to a very light north-wester. Set all starboard studding sails and royals; the *Victoria* about two miles astern, but coming up gradually under all the sail she could set, and evidently doing her best in the engine-room. The struggle for the superiority of speed now began in earnest, the rate (a little under eleven knots) of both vessels being nearly equal. About 4h. p.m., while we were clearing out our fires, and the steam very low in consequence, she crawled up alongside, and eventually crossed our bows; but this was the last expiring effort, for she dropped astern again immediately, and never came up afterwards, being full two miles and a half astern at nightfall.

About 8h. p.m. we saw the lights of Taranaki, and dropped the anchor at 8h. 30m., having been only fifteen hours and a half from One-

hunga, the shortest passage, I should think, that has ever been made between the two places. The *Victoria* anchored soon after us, and so ended a race which derived increased interest from the circumstance that the two ships were built by father and son, the *Niger* by the late Mr. Oliver Lang, master shipwright at Woolwich, the *Victoria* by his son, the present master builder at Chatham.

Monday, November 12th.—The troops were to have embarked for Auckland on Saturday, but the weather looked so threatening and the barometer fell so low that every vessel in the roads had to put to sea before noon. Although a very heavy swell set in upon the coast, there was no wind to speak of, and I anchored again yesterday morning. The surf was, however, still too heavy to allow the embarkation to take place till to-day, when I received on board 260 of the 65th regiment, and the *Victoria* 150 of the 40th, and we both started at 3h. p.m. on our return to the Manukau.

November 13th.—We had a magnificent night, so clear that at sunset and for several hours afterwards the burning mountain of Tongariro, although full a hundred miles distant, was distinctly visible. At 6h. a.m., we crossed the bar, and before nine were moored safely. Landed the troops, with the help of the *Caroline*, at Onehunga pier, saving the tide; but the baggage had to remain on board twelve hours longer.

This last run has shaken our old craft a good deal; the spindle of the valve of the port waste water pipe broke, and the metal shield on the after stern post worked loose, eight of the bolts having been found broken on our return. There is no difficulty in repairing the first defect, heeling the ship sufficiently; the latter will, I fear, prove a more troublesome job.

November 26th,—The mail from England arrived at Auckland today. London dates to September 26th. * * * As I anticipated, the shield abaft has proved a difficult and tedious affair; it was impossible to drill out the remains of the bolts, so new ones were driven in, the ship having been trimmed by the head for that purpose.

Thursday, November 29th.—The *Robert Lowe*, screw transport, arrived yesterday at Auckland, in 82 days from Cork. She brought 500 men, including the head quarters of the second battalion 14th regiment, and as there is no accommodation for them in the barracks without displacing the present occupants, I received a requisition today from the Governor to take as many as I could stow of the 65th, the men we brought here a fortnight ago, back to Taranaki. It was short notice, but by dint of exertion I was enabled to embark 350 in the afternoon, and dropped down the harbour with them as far as Shag Point before dark.

The next morning we got away at 9h. a.m., and over the bar without difficulty; the weather, fortunately for us, being most favourable, as the upper deck was crammed with baggage. In the afternoon we saw Mount Egmont very distinctly, although full eighty miles off.

December 1st.—At 4h. 30m. a.m. we anchored off Taranaki, and with the help of the steamer *Tasmanian Maid*, the troops were all on shore by nine o'clock.

After paying my respects to the General, I went in the little steamer to the Waitara with dispatches for Seymour. * *

I found this place much altered, since my last visit in March. A block house has been built on the South bank, at the entrance of the river, on the site of one of the pahs destroyed by Colonel Gold. Our camp has been materially strengthened, and appears very complete and comfortable, but all the peach trees have been cut down, perhaps they interfered with the defences.

The natives are constructing another pah about 4,000 yards off, which promises to be a very formidable place, and which will doubtless be attacked *when finished.* Mahoetahi, where the late battle was fought, is stockaded, and occupied by our troops. It is not more than 3,000 yards from the camp. Puketakauere is also occupied by us, a block house having been erected on the site of what must have been a most formidable pah, from the description given me of the work; one ditch of the two which surrounded it being nearly twenty feet deep These posts are all within easy distance for mutual support, in case of attack, and their gallant defenders appear in high health and spirits. The Naval Brigade, consisting of 160 of the *Pelorus's* crew, forming no unimportant item in their garrisons.

I returned to Taranaki in the afternoon, and left for the Manukau at half-past five, taking as my only passenger Colonel Mould, R.E.

During the night a strong breeze from the northward sprung up, increasing to half a gale, with thick drizzle, and as it was impossible to save the tide in on the following day, I lay to for the night under fore and aft sails, and after being delayed some hours by a thick fog, we crossed the bar before noon, on Monday, December 3rd, mooring below the Bluff at 2h. 30m. p.m. The weather was execreable, the rain falling in torrents. * * *

December 8th.—We were to have started to day for Wellington, with Vernon and a hundred of the *Iris's* men, there to transfer them to the *Pelorus*, to assist in navigating that ship round to Auckland, (for the days of the Naval Brigade are numbered,) but the Governor won't hear of our departure, and has written to the Commodore to send the *Fawn* instead, and keep me in reserve for a very particular service. The fact is, another great meeting of the Waikatos is to come off on the 12th, when it is to be decided for good and all, what line their tribe is to take, whether all the fighting men are to go down to assist W. Kingi, or whether Auckland is to be attacked. In the event of the former, it is arranged (on paper) that the *Niger* is to take up a position under the Mokau Cliffs, where the road follows the beach for two or three miles, and shell them as they go by. A brilliant idea of one of our military authorities! * * *

December 20th.—The grand meeting ended with a split in the camp, which had been foretold, and but a small number of the natives went down to Taranaki, leaving what the Rev. Mr. Morgan calls the

main body, some 350 strong, uncertain what to do. In the mean time, a proclamation has been issued by the chiefs supporting the King movement, to the effect that Auckland is not to be molested. How very kind!

January 1st. 1861.—On this *jour de l'an*, I paid my respects to Sir William Martin, late Chief Justice of this colony, whose pamphlet on the Taranaki question has exploded like a shell in Government House. A copy of it has been sent to every member of both houses of the Imperial Parliament, and its clear and lucid statements, and unanswerable arguments cannot fail to have an effect upon public opinion in England. In this pamphlet Sir William, an acute lawyer, unreservedly states, (p. 82), that "Here in New Zealand, our nation has engaged in an enterprise most difficult, yet also most noble and worthy of England. We have undertaken to acquire these islands for the Crown and for our race, without violence and without fraud, and so that the native people, instead of being destroyed, should be protected and civilized. We have covenanted with these people, and assured to them the full privileges of subjects of the Crown. To this undertaking the faith of the nation is pledged. By these means we secured a peaceable entrance for the Queen's authority into the country, and have in consequence gradually gained a firm hold upon it. The compact is binding irrevocably. We cannot repudiate it so long as we retain the benefit which we obtained by it. It is the clear duty of every officer of the Crown, and of every loyal citizen, to do his utmost by deed and word, to fulfil this national undertaking. Our individual opinions, about the capacity or character of the natives have nothing to do with it. To sustain the pledged faith of our Queen and our nation. this is our duty. Much has been said lately about loyalty. Here is the test of it. The recent measures of the Government must be judged by this standard. They must be approved or condemned according to their tendency to accomplish or to defeat the national undertaking."

In these brief lines a world of truth is concentrated, but the very opposite policy to that enunciated in them has been followed. *Quid plura?*

The *Victoria* arrived on the 2nd from Taranaki, bringing intelligence of a successful attack upon the entrenchments I saw constructing a month ago, by the natives, at Matoriko-riko. Our loss amounted to seventeen killed and wounded, the enemy's is unknown. But the General sends his ship up for re-inforcements, a queer commentary upon what has been trumpeted as a victory. * * *

Of course we had to take them down, and on Saturday, the 5th, we got away in the afternoon, with 250 of the 14th regiment, (second battalion) who have just arrived from England, the detachment being under the command of Major Douglas.

Sunday, January 6th.—The morning brought very thick weather, with rain, so that although my orders are to land the troops at the Waitara, I dare not venture in. But having fortunately caught sight of one of the Sugar-loaves, ran for Taranaki, and anchored there until

the fog cleared off in the afternoon, when we were enabled to shift to the anchorage off the river, and before dark the troops were all safe ashore.

The following morning we returned to Taranaki, and from thence, after obtaining a supply of fresh beef, proceeded to relieve the *Cordelia*, which has been employed, on the General's requisition, watching for the Waikatos to pass along the beach! * * * We found her under sail off the White Cliffs, which always remind me of Beachy Head, about sixteen miles North of the Waitara. Hume had just time to point out the locality to me, and the rope ladder by which the *trajet* is effected between the top and the foot of the cliff, when darkness set in. And as the barometer was going down, and a heavy swell getting up, I stood off for the night. * * *

Sunday, January 13th.—During the greater part of the week just passed, we experienced as heavy weather as it has been our lot to fall in with during the whole time the ship has been employed on this stormy coast. Last Monday night I stood off, intending to be at my station, 700 yards from the White Cliffs, at daylight, but when day broke we were far enough off them, and at noon by cross bearings found we had been set twenty-five miles to the northward. It was no use getting up the steam, for the breeze, which veered from the S.W. to S.S.E., increased speedily to a gale, and during the three following days, it blew almost a hurricane in the squalls, so all that could be done was to lay the ship to under close-reefed trysails, and reefed storm fore staysail, with a close-reefed main topsail set occasionally, and wait patiently for a change. During this period she drifted to the N.W., driven by the heavy sea, until on Saturday (yesterday) at noon, we found ourselves more than 120 miles from the White Cliffs, but the gale had broken, so the steam was raised, and we stood in for the Waitara, where Seymour was, who had his broad pendant flying on board the *Victoria*, and glad to see us none the worse for the breeze, came on board. The Niggers,* he said, had all passed along the beach during my absence; and without anchoring, he ordered me to Taranaki, to assist Colonel Sillery, who is in command there, in the defence of the town.

* I regret to find this opprobrious epithet now in common use in the camp here; until recently it was unknown. Its application, totally undeserved, shows the antipathy against the Maories that has been created since this struggle commenced. But I have not as yet seen any reason to alter my opinion of the natives, as expressed in this journal, *(vide Nautical Magazine*, 1862, p. 512,) and it is melancholy to reflect that a recent and imperfect Christianity and a commencing civilization should have been suddenly assailed by that very power which is the professed protector of both!

(To be continued.)

"Sarah Ann's" Hurricane in the Western Part of the South Pacific Ocean.

Sydney, New South Wales, 15th August, 1862.

Sir,—Herewith I forward you a copy of a letter received from Captain Thomas Verney, of the brig *Sarah Ann*, of this port, describing a hurricane sustained by that vessel in January last on her voyage from hence to Rotumah and Kingsmill Islands. Captain Verney has had great experience in the navigation of these seas, and every reliance may be placed on his statements.

He was acting as chief-officer on the passage down, but returned in command of the vessel. The captain, being sick, was not on deck when the mast was cut away by Mr. Verney's orders; which act, promptly determined on by him and executed, undoubtedly, from the description of all on board, saved the ship, as she was completely on her beam ends. As you will see, Captain Verney is anxious to get any information he can on hurricanes, and it has occurred to me that by availing myself of your pages, as I have been frequently permitted to do before, his object will be best attained, and at the same time valuable data on this very interesting subject be transmitted and disseminated for general information.

I am, &c.,

Henry T. Fox,

Secretary and Marine Surveyor to the Australian General Assurance Company.

To the Editor of the Nautical Magazine.

Sydney, 17th July, 1862.

Dear Sir,—I have taken the liberty of sending you the journal of the hurricane encountered by the brig *Sarah Ann* on the 17th of January, 1862, in about lat. 20° S., long. 171° E.

January 14th.—Strong E.S.E. breezes and hazy weather. Standing to the N.E. Noon.—Freshening breezes and dark cloudy weather; took in second reefs. Lat., by imperfect observation, 22° 30′ S., long., by chronometer, 169° 29′ 30″ E. Barometer very low for S.E. winds, aneroid 29·50.

15th.—Brisk gales from East to E.N.E. and dark cloudy weather, with passing squalls of rain. Ship under short sail, heading to the northward, from N.N.E. to North. Noon.—Lat., by account, 20° 58′ S.; long., by account, 170° 29′ E. P.M.—Same wind and weather, with a short confused sea; barometer falling. Midnight.—Wore to the S.E.b.S.; wind E.N.E.

16th.—Brisk gales from E.N.E. and cloudy, with torrents of rain; heading to S.E.b.S. under short sail. During the forenoon the same wind and weather, with a short confused sea; no observations. Since midnight the barometer has risen a little. P.M.—Same wind and weather; secured everything about the decks, light sails, &c. Mid-

night.—Wore to the northward and stowed the foresail; short confused sea, shipping great quantities of water. After wearing the ship, not liking the appearance of the weather, I went and saw how the barometer stood: aneroid 29·40; sympiesometer 29·30.

17*th*.—Brisk gales from E.N.E., standing North under close-reefed topsails; heavy squalls of wind and rain. The clouds were not low, as described in the works I have seen on storms, nothing more than I have seen in those seas with a strong squally S.E. Trade wind. At 4h. a.m. I went and looked at the barometer—it had fallen to 28·80. It was evident that we were close to a hurricane.

At 5h. a.m., the wind increasing, furled the fore topsail. At 6h. more wind, furled the main topsail, wind and sea increasing as if by magic. At 9h. a.m. blowing a hurricane, endeavoured to heave the lee deck load overboard, but it was too late; the fury of the wind and sea no one can describe. The helm was put up, but she took no notice of it.

At ten the vessel on her beam ends, taking everything off the deck. Cut away the main mast; she righted, and fortunately payed off before the wind. Got clear of the wreck without doing any damage to the ship. No one can form any idea of the immense body of water that was on deck when she righted. You, who are an experienced seaman, perhaps can judge to some extent, as when the mast went it never touched the rail. The deck house was full of water. Six hands were overboard, but all were saved except one native of Rotumah. The fury of the elements no one can describe; it was with difficulty the men could stand up to steer the ship; you could not see the forepart of the vessel.

The wind at this time was East; barometer 28·10; the wind veering round southerly. At noon it was S.E., and such was its force that as it shifted the sea ran as true as if the wind had been that way for a week. The wind veered gradually round by South to West. At about 2h. p.m. the barometer began to rise, as I suppose the centre of the storm had passed, but no abating of the wind. The fore topsail blew to ribbons out of the gaskets to the reefs,—a new sail, only bent when we left Sydney about a fortnight before. The foreyard got adrift and it was impossible for any one to get off the deck. The fore top-gallant mast was carried away above the cap, and yard and mast, with the force of the wind, blew out the same as a dog-vane. Since the vessel righted the pumps continually going, and at 4h. p.m. the starboard pump sucked. Midnight.—Same wind, with a very heavy sea; barometer rising; wind West; running East.

18*th*.—Same wind; running before it; wind veering to N.W. At 2h. a.m. less wind. At 6h. it veered to South and S.S.W. and blew furiously, with light drizzling rain. Running to N.N.E. Noon.—Wind decreasing. Sun obscured. P.M.—Gale decreasing, but a very heavy sea. Ship very laboursome and shipping much water; pumps continually going. Sundown.—The clouds began to break away. Secured the foreyard as well as we could. Midnight.—Less wind, but a heavy sea; barometer 29·20.

19*th*.—Strong breezes from S.S.W. Steering N.N.E.; all hands employed clearing away the wreck and securing the yards. Ship very laboursome. Lat., by observation, 18° 39′ S.; long., by chronometer, 174° 9′ E. P.M.—Unbent the remains of the fore topsail and bent another. At 5h. p.m. set double reefed topsail, foresail, and jib, steering N.N.E.. wind S.S.W.

This is the first opportunity we have had to ascertain what damage we have sustained. We find as follow:—mainmast, main topmast, top-gallant-mast, yards, sails, and gear, main boom, gaff, and sail, fore top-gallant-mast, yard, and sail all gone, and fore topmast badly sprung. The truss of foreyard carried away. Longboat, whale-boat, stern-boat, caboose, and cooking utensils, tanks, water casks, and all small things off the deck. Port bulwarks gone.

20*th*.—Light winds from S.W. and fine weather. Employed refitting, as far as laid in our power. Lat., by observation, 17° 49′ S.; long., by observation, 174° 16′ E. Pumps attended every hour.

This, dear Sir, is about as correct as I could vouch for, as you, who are a seaman, know the state of mind any one must be in at such a time. The few works I have had the means of consulting, and what information I have had on hurricanes in those seas, they have generally had their first hurricane wind from S.E. to East, veering to N.E., North, N.W., West, and all over at the wind South,—whereas this one was the reverse. Some say during the violence of the wind the sea is smooth, but the sea in this one was as heavy as ever I saw it in either the Atlantic or Southern Oceans.

You, who have made the hurricane theory your study, and are ever ready to give any one information on any subject, will know how to account for this. From the little knowledge I possess on the subject, I should say that on the 15th, when the barometer was so low for the wind in the eastern quarter, if we had stood to the south-eastward, and carried as much sail as possible, we should have avoided the fury of the gale, as I think we must have been on the S.E. quarter and very near the centre of the storm. This is my idea, but I only write for information, as I know you will not think it any trouble to give it. The atmosphere for three or four days previous to the hurricane did not possess the thick haze, nor was there any unusual quantity of lightning, as is described in some of the hurricanes.

On the 14th of January, 1847, I left Tanna Island (New Hebrides) for the Solomon Islands. On the 16th a hurricane came on at Tanna, destroying everything they had. The wind veered from East, E.N.E., N.E., North, N.W., to West. I had nothing of it. I had a fresh E.N.E. wind, and carried it to San Christoval.

Apologising for troubling you with these few remarks,

I remain, &c.,

THOMAS VERNEY.

Captain H. T. Fox.

We have yet seen but very little, indeed almost nothing, of hurricanes in the western portion of the South Pacific, and shall gladly

promote their introduction among our readers—as we already have those of the Atlantic and Indian Oceans in our early volumes—whenever opportunity such as this offers.

According to Captain Verney's narrative it would seem that the *Sarah Ann* has been caught in the most dangerous part of the path followed by these meteors—that is, after their western progress curving round to the South and S.E.—for this seems to have been the progress of the storm; and it is important to bear this in mind, for it may lead to the discovery of such being customary with them—that is, that they come round East of New Caledonia, commencing their southern and S.E. course northward of New Zealand. The vessel was evidently well handled (although all lofty spars would have been better on deck), but undoubtedly standing far to the S.E. would have been wrong. But again, standing to the northward with the wind at E.N.E., when the focus was undoubtedly N.N.W. of her, was laying the vessel's head directly for it, the worst thing that could have been done, curving round as it apparently was then doing to the southward.

And this circumstance, with the drift of the vessel to the westward, seems to have been the means of saving her, for it brought the wind East and S.E., thus placing the focus North and then N.E. of her—she being then safe on the S.W. portion of the circle. The wind then veering gradually round by South to West, showed that the focus was travelling to the southward while she was West of it.

Now, had the *Sarah Ann*, instead of *standing S.E. and North*, run a short distance to the N.W., round Tanna and Erromanga, she would have had a better chance of getting clear of it sooner, and when West of the New Hebrides would have known nothing of it, as Captain Verney states of one he encountered in 1847.

We should be glad, however, to record more particulars of these South Pacific hurricanes in detail whenever our correspondent will give us the benefit of his good services, for we have evidently yet to learn what is the locality of their general turning point, and *thereby* depends how a vessel should be handled so as to encounter them to the best advantage.—ED.

REWARDS FOR SAVING LIFE AT SEA.

Board of Trade, February, 23rd, 1863.

The undermentioned rewards for saving life at sea, have been recently awarded by her Majesty's Government and the Board of Trade:—

To Captain F. C. Bartels, of the Prussian vessel *Luise*, of Wolgast, a telescope, in testimony of his humanity and kindness to the master and crew of the *Genoa*, of London, whom he rescued from their disabled vessel on the 24th of September last.

To Captain H. H. Lever, of the Dutch galiot *Dankbaarheid*, a telescope, in testimony of his humanity and kindness to the master and others of the brig *Amity*, of North Shields, whom he rescued from their disabled vessel on the 24th of October last.

To Captain Andreas A. Autzen, of the Dutch schooner *Ernst*, a telescope, in testimony of his services in rescuing the master and crew of the brig *Willey*, of Whitby, whom he picked up at sea on the 20th of October last.

To Mr. Keith Stewart Douglas, master of the *Veronica*, of Liverpool, a telescope, in testimony of his services in rescuing the master, passengers, and crew of the ship *Nepaul*, of Liverpool, whom he rescued from their waterlogged vessel in October last.

To Captain Matteo Fabro, of the Austrian brig *Beppi S.* of Venice, a telescope, in acknowledgment of his humanity to the master and crew of the coasting vessel *I'll Try*, of Boston, whom he picked up at sea on the 24th of October last.

To Mr. John Miller, master of the ship *William Chandler*, of Liverpool, a telescope, in testimony of his humanity in rescuing the master and crew of the *America*, of Belfast, from their disabled vessel on the 2nd of August last.

To Captain Giorgio Zupar, of the Austrian brig *Minerva*, a telescope, in acknowledgment of his services in rescuing the crew of the brig *Satellite*, of Stockton, abandoned at sea 12th of December last.

To Captain Dunbar Henderson, of the American ship *Montabello*, of Thomastown, a sextant; to Charles Burt, the mate, a telescope; and to James Duffey, Edward Moore, David Wilkinson, and Edward Jones, seamen, the sum of £2 each, for their services in rescuing the master and crew of the *Free Trader*, of Cardiff, abandoned at sea, 18th of October last.

To the commander of the Spanish sloop of war *Mazarredo*, a sextant; to D'Miguel Angel Cuadrado, the mate, and D'Manuel Lorduy, midshipman, a telescope each; and the sum of £1 each to the fifty seamen of the said sloop of war, for their services to the master and crew of the brigantine *Morning Star*, of Halifax, Nova Scotia, destroyed by fire on the 18th of October last, in the bay of Samona, San Domingo.

To Thomas Churchill, master of the *Edith Ann*, of Westport, Nova Scotia, a telescope, in testimony of his services to the shipwrecked crew of the *Flora*, of London, on the 21st of November last.

To Captain Elwell, of the American ship *Northampton*, a chronometer, in acknowledgment of his services to the survivors of the shipwrecked crew of the barque *W. B. Dean*, of Yarmouth, Nova Scotia, abandoned at sea February 20th, 1862.

To Captain F. E. Wied, of the Danish schooner *Dorothea Elizabeth*, a telescope, in testimony of his humanity and kindness to the master and crew of the schooner *Phantom*, of Wells, whom he rescued from their sinking vessel on the 29th of October last.

To Captain F. Couvreur, of the French brig *Menagere*, of Dunkirk, a binocular glass, in testimony of his humanity and kindness to

the master and crew of the brig *Whim*, of Lynn, whom he picked up at sea on the 24th of October, 1862.

To Captain David Landis, of the American ship *W. F Brune*, of Baltimore, a chronometer; to Charles Hammond, second mate, a telescope; and to John M'Kay, John Calvert, H. Cammack, and William Smith, seamen, the sum of £2 each, for their services in rescuing the crew of the *Margaretta*, of Plymouth, discovered waterlogged at sea on the 9th of October last.

To Manuel R. de Costa, a fisherman, of the Island of San Antonio, the sum of £5, for his perseverance and exertions in rescuing the crew of the *Nepenthe*, of London, wrecked 27th of December last.

To Thomas King, master of the smack *Paragon*, of Harwich, a telescope and £3; to Henry Bacon, Robert Martin, Abraham Easter, and James Gardner, £3 each; to Alfred Holden and George Miller, £2 each, in testimony of their services in rescuing four of the crew of the schooner *Thrifty*, of Goole, on the 21st of October, 1862.

To Captain Juan de Bilbao, of the Spanish ship *Santa Anna*, a sextant, in testimony of his humanity in rescuing the master and crew of the barque *Henrietta*, of Cowes, on the 21st of October, 1862.

To Captain P. A. Van Rees, of His Netherlands Majesty's corvette *Djambi*, a telescope, in testimony of his humane and gallant conduct in rescuing the master and crew of the schooner *Orlando*, of Jersey, when in distress on the 22nd of December last.

To Mr. John Glass, master of the brig *Dante*, of Greenock, a telescope, in testimony of his humanity and kindness to the master crew, and passengers of the ship *Levanter*, of St. John (N.B.), whom he rescued from their sinking vessel on the 5th of December last.

To Captain J. R. Storm, of the Danish vessel *Fortuna*, of Faaborg, a telescope, in acknowledgment of his humane services in rescuing the master and crew of the steamer *Hercules*, on the 29th of October last.

To the crew of the pilot boat No. 3, Burg master, the sum of £10, for their services in rescuing the crew of the brigantine *Empress*, of Ipswich, which vessel foundered on the Ooster Bank on the 29th ult.

EVENINGS AT HOME AT THE NAUTICAL CLUB. — *Chairman's Address—Union of the Princess Alexandra and Prince of Wales: The Poet Laureate's Lines on the Occasion—The Alexandra Channel into the Thames — The Report of the Royal National Life-Boat Institution—Wallaroo, Spencer Gulf, South Australia —Earl Russell on American Affairs—Mr. John Cropper's Speech at Liverpool.*

Leaving the merits of wood and iron to be discussed in their proper place, observed the Chairman—whether iron shall hereafter represent our wooden walls in toto, or whether it shall be allowed to undertake that responsible position, or taken into partnership with the old hearts

of oak;—we have several subjects for our present attention. We are all aware of the great event which has come off since our last meeting, that a Royal Princess of Denmark has been conveyed to our shores by some of our noble ships of war, that she has been received there and in our metropolis as never was princess received before—that the event for which she came, to be allied to our Royal Prince of Wales, was celebrated at Windsor, with a reality of magnificent splendour that has surpassed every preceding event of the kind, on the 10th inst., and that all these splendid proceedings, in which the whole country has joyfully taken part, now fill a page in the history of this country, one which, whether for the complete happiness of the principal individuals, the auspicious character of the event in a political point of view, or the general cordiality with which it has been every where acknowledged in this country, stands unequalled.

Without entering further into the chain of circumstances which attended these great events, he would propose that the lines of our poet laureate, produced by the occasion, should be preserved among their records, along with the humble and hearty prayer of the club, that the wishes so generally expressed by our countrymen may be realized, by a long life of happiness being vouchsafed to the youthful pair. Certainly never were poet's numbers more in keeping with a nation's desire than when Tennyson wrote—

Sea king's daughter from over the sea,
Alexandra!
Saxon and Norman and Dane are we,
Yet all of us Danes in our welcome of thee,
Alexandra!

Welcome her, thunder of fort and of fleet!
Welcome her, deafening cheer of the street!
Welcome her, every thing youthful and sweet,
Scatter the spring blossom under her feet!
Bloom, happy land, into earlier flowers!
Sing sweetly birds in your new budded bowers!
Welcome her, welcome her, all that is ours!
Let bugle warble and trumpet blare!
Flags flutter forth upon turrets and towers!
Flames on the high windy headland flare!
Ring forth your jubilee, steeple and spire!
Clash all ye bells in the merry March air!
Flash all ye cities in rivers of fire!
Welcome her, welcome the land's desire!
Alexandra!

Sea king's daughter as happy as fair,
Blissful bride of a blissful heir,
Bride of the heir of the Kings of the Sea,
O joy to the people and joy to the throne,
Come to us, love us and make us thine own:
For Saxon or Dane or Norman we,
Teuton or Celt, or whatever we be,
We are each and all Dane in our welcome of thee,
Alexandra!

But we must now to other matters, said the Chairman, and he would next propose that they repair an omission at their last meeting, in reference to their pledge to that national society which looks after our shipwrecked seamen. The usual report had been lost sight of in the discussion on the strife between the dis-United States, and he would therefore move that this be at once read. One thing he might mention *en passant*, as a graceful act, originating in the Trinity House. It was a pretty compliment, one that will preserve the advent of the Danish Princess to all future time on the charts that are used by our seamen, and remain as a becoming memorial by our maritime country.

We are aware of the recent opening of the inner or western end of the Princes Channel, at the entrance of the Thames, by the washing away of the ridge of the Shingles, which in some degree excluded it from the Deeps, and which obtained the name of the Shingles Channel. As the Princess passed through this channel, on her way up the Thames in H. M. yacht, it has been very judiciously proposed to call this the Alexandra Channel, of which it is said the Princess has fully approved, so that the union which has taken place between Prince Albert and the Princess Alexandra, is further endurably marked, by the Princes Channel and the Alexandra Channel forming one of the main branch channels into the ancient "Deeps" of the Thames;—the Alexandra lying between the East and West Girdlers.

The Chairman then called on the Secretary to read the report of the National Life Boat Institution.

The annual general meeting of the friends and supporters of the Royal National Lifeboat Institution was held at the London Tavern, the Right Hon. Lord Lovaine, M.P., in the chair, supported by the following influential gentlemen, amongst others,—S. Cave, Esq., M.P.; Admiral Sir G. Sartorius; T. Baring, Esq., M.P.; Captain Tarleton, R.N., C.B.; Deputy Controller-General of Coast-Guard; Rev. G. Ainslie, M.A.; Admiral Washington, F.R.S., Hydrographer of the Admiralty; T. Chapman, Esq., F.R.S., V.P.; Sir Edward Perrott, Bart, V.P.; W. Jackson, Esq., M.P.; Admiral McHardy; W. H. Harton, Esq.; Captain Halsted, R.N.; T. R. Tufnell, Esq., Royal Mail Steam Packet Company; H. Paull, Esq., M.P.; J. Griffith, Esq.; M. Gore, Esq.; G. C. Begbie, Esq.; Messrs. T. and W. Forrestt; C. Cliflord, Esq.; T. H. Bell, Esq.; T. Page, Esq.; Captain Ward, R.N.; E. Beedell, Esq.; C. Rogers, Esq.; H. Vardon, Esq.; C. Ralph, Esq.; S. Hibbert, Esq.; J. R. Wilson, Esq.; B. Edgington, Esq.; Captain Isacke; Lieutenant Symons, R.N., &c.

Lord Lovaine, in opening the proceedings, said that he was sure the meeting would be gratified to learn that the society was progressing in a most satisfactory manner, and had obtained a firm hold upon the feelings of the country at large, and most deservedly so, as there was not any institution more calculated to promote the welfare of that large and important class to whom the nation was indebted for so much of its wealth and its protection from a foreign enemy. From the Report the meeting would see that the annual receipts had fallen short

of the contributions received in former years, which was to be attributed to the large demands upon the purses of the charitable public by the Lancashire distress.

With regard to the position that the society held, it might be considered as somewhat curious that it progressed as it did, as it was not in possession of any of those adventitious means to attract the attention of society that others had. They had not any splendid buildings or extensive establishments to show, but their labours must be followed in the gloominess of the darkness and the terrors of the storm. They had not the same incentive before them as those who could parade the objects of their benevolence, and who were to be met with in every walk of life, who could choose the objects of their choice to relieve. But the National Lifeboat Institution had to carry on their work in the face of the tempest and the dread of the wave, and it was then, when all other men were shrinking in the cover of their own doors, and could hardly bear to hear the fury of the storm, that the lifeboat went forth. Still the institution gained ground in the affections of the public, and there was every probability of its obtaining increased support. It was satisfactory to find from the Report, that of fourteen new lifeboats recently placed on the coast, eight had been presented by private individuals, and it showed that there were many men who were anxious to help to save the shipwrecked sailor. He was sorry to add that last year the average of wrecks had been far greater than in former years. The average had formerly been 1,000, but last year there were 1,400; but, notwithstanding, the loss of life had been less by one-fifth than ever it had been before. He was glad to be able to announce that the Prince of Wales had become a Vice-Patron of the Institution, and every loyal heart hoped that he would long live to encourage the fond wishes which now reigned in the hearts of the English people.

There was one other subject that he (the Chairman) felt bound to touch upon, and that was to observe that as regarded lighting the coasts, great things had been done in the way of improvement; and he might instance that a new light had been put up at Dungeness, which was a much finer light than had ever been known before. It was lighted by the electric light, and it was to be hoped that having been applied with success, it would be adapted to other lighthouses round the coast, and thus tend to check the fearful loss of life which so frequently occurred on the shores of this island. He concluded by moving the election of the officers of the institution for the current year.

This election having taken place, the Secretary, Mr. Lewis, read at length the Report, of which we give an abstract, as follows:—

The Report began by expressing the deep sense the Committee of Management of the Institution had of the confidence which had been placed in them by the British public, as evinced by the continued liberal support extended to it. The Report referred to the gratifying fact that His Royal Highness the Prince of Wales had become a Vice-Patron of the Royal National Lifeboat Institution, and a liberal con-

tributor to its funds,—a post which for twelve years had been worthily occupied by the late lamented Prince Consort.

During the past year the Institution had placed fourteen new lifeboats on the coast, viz.: at Blakeney, Kirkcudbright, Kingstown, Poolbeg, Howth, Withernsea, Thorpe, New Brighton, Appledore, Guernsey, Porthleven, Tynemouth, Fleetwood, and Newhaven: six of this number occupying new stations, and the remainder replacing worn-out or inferior boats. Other lifeboats were in course of construction for Budehaven, Swansea, and other places. Transporting carriages and substantial boat-houses had been provided for all the lifeboats. Six lifeboats had also been built for the Portuguese Government by the Messrs. Forrestt, on the Institution's plan, and one for the Colonial Government of New Zealand.

The Institution had now 124 lifeboats on the coasts of the United Kingdom. Of the fourteen new boats placed on the coasts during the past year, no less than eight had been the special gifts of individuals, and another, that at Thorpe, in Suffolk, was presented to the Society by the town of Ipswich. The lifeboats of the Institution, during the year 1862, had saved 358 persons from wrecked ships, nearly the whole of them under circumstances of imminent peril, when no other description of boat could have performed the service. For these services the Institution had granted rewards amounting to £915 18s. 1d. On these occasions and quarterly exercise, the lifeboats had been manned by upwards of 6.000 persons, and happily, with one single exception, without loss of life. Taking into account a considerable series of years, the average number of shipwrecks annually on our coasts is 1,000, and the loss of life therefrom amounts to 800 persons. The gales of the past year were unusually heavy, and the result was that the number of shipwrecks was 1,490, accompanied by a loss of 644 lives.

It was for the British public to decide whether they were satisfied with the sufficiency of the means for saving life from shipwreck now in use on our coasts. During the past year 4,081 lives had been saved from shipwrecks on our coast. As usual, ships, ships' boats, and smacks had saved more lives in that period than the lifeboats and the rocket and mortar apparatus. That apparent discrepancy was capable of easy explanation. When a disaster took place in British waters, it generally happened that either a ship or smack was fortunately at hand to render assistance to the crews of the distressed vessels. Such help was seldom attended with any very great danger (although sometimes it was so), and the men were frequently brought ashore before any tidings at all had reached a lifeboat station.

But the great value of the services rendered by lifeboats could only be appreciated by considering that they were mostly performed on occasions when no other craft could be launched from the shore with safety. The total number of persons saved from shipwreck, from the establishment of the institution in 1824 to the end of the year 1862, either by its lifeboats, or by special exertions for which it has granted rewards, is 12,854. How inadequately words expressed the aggregate

amount of misery which the saving of so many thousands of lives must have prevented! During the past year thirteen silver medals, fourteen votes of thanks inscribed on vellum, and £1,125 8s. 1d. had been granted by the institution for saving the lives of 574 persons by lifeboats, shore-boats, and other means, on the coasts and outlying banks of the United Kingdom. Since the formation of the institution it had expended on lifeboat establishments £67,780, and had voted 82 gold and 718 silver medals for saving life, besides pecuniary rewards, amounting together to £16,478.

The Committee expressed their deep acknowledgments to the Board of Trade, the Coast-Guard, the Local Committees, the Railway and Steam Packet Companies, for their continued valuable and zealous co-operation.

The total receipts of the institution during the year 1862 amounted to £14,825 5s. 1d.: of that sum no less than £2,715 was given by benevolent individuals to defray the cost of ten lifeboats. The Committee gratefully acknowledged the receipt of the following special contributions from foreign countries:—£100 from the President of the United States of America, "in testimony of his sense of the important labours of the institution to American shipwrecked seamen." £50 from the Maritime Insurance Company of Finland, "as an expression of their gratitude on becoming acquainted with the blessed results which had attended the efforts of the Life-Boat Society, the Company being convinced that the Institution had been the means of saving many a Finnish life from certain death." £251 15s. from China, collected at Hong Kong and Shanghai by the kind exertions of the Committee's respected colleague, W. H. Harton, Esq., during his visit to those dependencies, assisted by Messrs. Gilman and Co., and others.

The Committee had likewise to express their best thanks to Hugh Taylor, Esq., of Backworth Hall, for his zealous exertions in collecting £350 towards the cost of the Tynmouth lifeboat and rocket-house. The following legacies had been left to the institution since the last report:—Mrs. Ann Cutto, of Old Kent Road, London, £1,000 free of duty; T. A. Venables, Esq., of Worcester, £500; Mr. John Jolly, farmer, of Eustone, Oxon, £210; Mr. Thomas Robinson, commercial traveller, of Cheetham, Manchester, £210; Dr. C. T. West, of Kingston-upon-Hull, £100; William Lupton, Esq., of Salford, £100; Miss Gedge, of Great Yarmouth, £100; Miss Sarah Tagg, of Eccleshall, £50; and E. E. Vidal, Esq., of Brighton, £5. The expenditure of the institution during the same period was £12,177 17s., of which sum £5,269 6s. were expended on additional lifeboats, transporting-carriages, boat-houses, and necessary gear; and £3,977 0s. 4d. on the necessary expences of repairs, painting, refitting, and inspection; £1,094 6s. 1d. in rewards for services to shipwrecked crews; and £2,242 9s. 10d. for coxswains' salaries, and the quarterly practice of the boats' crews. The items of receipt and expenditure were given detailed in the financial statement annexed to the report as audited as usual by a public accountant. From it was seen that the Committee

had incurred further liabilities amounting to £3,100 6s. for various lifeboat establishments, &c. It had already been observed that 358 shipwrecked sailors have been snatched from a watery grave, during the past year, by the lifeboats of the institution. No less than 62 lives were thus rescued during the fearful gales of January last. No society had a stronger claim for general sympathy and support than the National Life-boat Institution, whose lifeboats, under Divine Providence, had so often preserved to an otherwise desolate home a husband, father, or brother. The Committee therefore appealed with confidence to the country at large to assist them to maintain in a state of thorough efficiency the 124 lifeboat establishments of the institution.

Mr. Stephen Cave, M.P., moved the adoption of the report, and congratulated the society on the success of its operations; but while 558 lives had been saved, no less than 644 had been lost, and there only needed that fact to be known still further to recommend the institution to the benevolence of the public.

The Rev. George Ainslie seconded the motion, and drew attention to the fact that while the average wrecks of former years had been 1,000, with the deaths 800, yet during last year, while the wrecks had been 1,400, the deaths had only been 644.

The report was then adopted unanimously.

Mr. Montague Gore moved, and Mr. H. Paull, M.P., seconded the next resolution, which was carried, as follows:—"That this meeting expresses its great satisfaction at the continued success which has attended the humane operations of the Royal National Life-boat Institution during the past year, and is gratified to learn the important fact that in the same period 4,081 persons were rescued by lifeboats, the rocket apparatus, shore-boats, and other means, from shipwrecks on the shores and in the seas of the British Isles,—facts which should call forth the grateful acknowledgments of the community at large, as showing most satisfactorily what is accomplished in this good work by energetic and well directed efforts. That this meeting does therefore undertake to use its best exertions to sustain the philanthropic operations of the National Life-boat Institution, whose claims for support must come home to every one."

Admiral Sir George Sartorius then moved, and Admiral M'Hardy seconded the next resolution, which was carried, viz.:—"That the thanks of this meeting be tendered to the Lords of the Committee of Privy Council for Trade, and to the Marine Department of the Board of Trade, for the important and cordial aid afforded by them to the Royal National Life-boat Institution. Also to the Commodore Comptroller-General, the Deputy Comptroller-General, and the officers and men of her Majesty's Coast-Guard service, for their continued valuable assistance to the society."

The next resolution was moved by Mr. J. E. Johnson, Chairman of the Surrey Quarter Sessions, and seconded by Mr. Wilson,—"That this meeting tenders its cordial thanks to Thomas Baring, Esq., M.P., F.R.S., V.P., the Chairman; to Thos. Chapman, Esq., F.R.S., V.P., the Deputy Chairman; and to the other members of the Committee of

Management, for the care and attention with which they continue to administer the important affairs of the institution. Also to the honorary Local Committee of the several branches of the institution for their zealous cooperation with the Central Committee in promoting the efficiency of the lifeboat establishments intrusted to their superintendence and management."

Mr. Chapman acknowledged the resolution, and a vote of thanks to the Chairman closed the proceedings.

Arion then asked permission of the Chairman to read the following interesting account of Wallaroo, which was readily granted.

The *John Knox* left Wallaroo on the 9th of October, 1862, rounded Cape Lewin on the 19th, and got the S.E. trade (Indian Ocean) on the 26th of the same month, in lat. 26° S. Ran to the westward on the parallels of 22° to 30° S. Winds the whole way to the meridian of Madagascar light and fickle, the greatest distance in any one day being 140 miles. From rounding the Cape of Good Hope, (December 4th) to St. Helena occupied fourteen days, having chiefly light winds from S. to S.S.W., and occasional calms. Left St. Helena on the 18th of December, at 6h. p.m., and crossed the Line at noon of the 31st, in long. 21° W. In lat. 3° 30′ N. got the N.E. trade, which hung far to the northward (not better than N.N.E.) till in lat. 16° N., long. 35° W., 10th of January, it commenced a brisk gale from S.E. to S., with constant lightning, thunder, and torrents of rain, for three consecutive days, carrying the ship to lat. 26° 20′ N. From that time to our arrival the winds were strong from S.W. to W.N.W.

One morning, at five o'clock, a little North of lat. 37°, a very large flying fish flew on board; it measured twenty-one inches in length, and two feet breadth from tip to tip of its largest or foremost wings.

Wallaroo is on the East side of Spencer Gulf, South Australia, about 100 miles up the gulf, or from Wedge Island at the entrance. The navigation of this gulf cannot be called dangerous. Its West side is clear of rocks and shoals, and so is the centre, till above Cape Riley. The only danger is a reef lying a good way from the eastern shore, hitherto very superficially examined, both as regards shape and size, and is most erroneously placed or laid down on the charts. In steering for Wallaroo it is to be carefully guarded against, especially in dark weather, or in the night. The course up the Gulf is about N b.E., and I kept a good offing, the eastern shore being scarcely in sight. By the latitude at noon the vessel was up with the southern end of the danger, as laid on the chart, but nothing could be seen. Soundings were taken, and the depth was thirteen to fourteen fathoms; I therefore concluded we were well outside, or clear of the danger. The vessel was going at the rate of seven to seven and a half knots. At 2h. p.m., an officer was sent aloft to look for the chimney stack of the smelting works at Wallaroo, when, on getting as far as the fore-topsailyard, he called out, "Breakers on the port abow, about four miles distant;" and I had to bring the ship's head N.W.b.W. to clear

said breakers. The lead was kept going, while we came along the outer or western edge of this reef for nearly an hour, the breakers a mile distant, and the depth of water four and a half, five, and six fathoms. After passing the breakers, probably the northern end of the shoal, the water deepened again to twelve or thirteen fathoms. Shortly after this the smoke issuing from the foundry chimneys, already mentioned, was descried, bearing about E.N.E., the ship was steered for it, and brought up in what is now called Wallaroo Bay, in three fathoms, about a quarter of a mile right off the end of a wooden jetty running out from the beach 200 to 250 feet. A steamer trading between Adelaide and Wallaroo was lately wrecked on the reef mentioned.

The Government of South Australia contemplates the erection of a lighthouse or the placing of a float on this dangerous reef. When the *John Knox* lay at Wallaroo, Captain Douglas, R.N. (now Collector of Customs at Adelaide), was examining and surveying this reef, and, from what I heard him say, he was most favourable to a lighthouse being built on the rocks, which are nearly square with the water on the southern end of the shoal. If this be done, which is much required, the navigation of this estuary will be comparatively easy and without risk. Wallaroo has obtained the appellation of a seaport but recently. The *John Knox* is the first ship that has gone to it, with a cargo direct from England, and has now returned from it with a full cargo of copper ore and wool. There is also a considerable coasting trade from Adelaide (in the adjoining Gulf St. Vincent), and likewise from Tasmania to Wallaroo. At this new port a custom house has been established with its collector, &c. Brokers for entering and clearing ships, pilots, and all the other adjuncts usual at maritime ports are also set up. Eighteen or twenty months ago there was only one solitary sheep cot at this place. Now there are a great many houses, and neat cottages erected on a healthy plot of land, fronting the bay. This ground is thinly covered with bushes resembling broom, and, being moderately elevated above the beach, the situation is most healthy; a cool and invigorating sea, or rather gulf breeze, being enjoyed daily.

A magnificent range of buildings run along the beach from the harbour northward, in which are numerous furnaces at work smelting ore, where hundreds of smelters and other labourers are employed. The ore mines are adjacent, and the ore is brought to the smelting works, or for shipment on a tram or railway, having such a gradual slope or incline, that the waggons, when set going from the pit's mouth, come to the discharging berth themselves. The population, composed of miners, smelters, labourers, and artisans, shopkeepers, merchants, &c., now number in the short time above mentioned, namely twenty months, 7,000 persons. It is more than probable this population will rapidly increase, and that Wallaroo will soon be a port of considerable importance, the mines being very productive, both in quantity and quality, (our present cargo contains about fifty per cent. of pure copper), and it is a generally received opinion by parties well

qualified to judge, that the whole of the peninsula, from North of Wallaroo onward to Cape Spencer, Yorke Peninsula's southern point, a distance of 80 to 100 miles, is a deposit or mass of mineral, at very little depth from the surface. I have sent one or two specimens of the ore as it was taken from the mine, which shows the ordeal the metal has gone through in the bowels of the earth. The action of the elements, both of fire and water, are marked and distinct.

There were being built, when the *John Knox* lay there, a court-house, spacious custom-house, and gaol. There is also an episcopal church, and several meeting houses or chapels, Baptists, Independents, and Wesleyans, and a fourth was just finished and opened by a party who designated themselves Bible Christians. None of these have a settled minister but the Wesleyans, the others have a sermon only occasionally. The Bishop of Adelaide pays occasional visits to the Episcopal church to preach, and dispense other ordinances There are several day schools and Sunday schools. The public houses, however, outnumber the churches, and are by far the best and largest buildings in this infant or embryo city.

A ship the size of the *John Knox* (358 tons) is large enough for Wallaroo as yet. The wharf where the vessels go to discharge, has only fourteen feet of water at its utmost extremity; there is also a slight rise and fall, say three to four feet at most, which reduces the water to ten or eleven feet. The proprietor of the wharf intended carrying it out some 200 feet further, which would give a depth at the end of about three fathoms.

I am afraid I have occupied too much space of your valuable paper, and I shall conclude by merely mentioning that the want of water is the chief drawback to Wallaroo. The inhabitants are solely dependent on the rain for the supply for their families, and each dwelling is careful to catch it in tanks in the winter, or rainy season. When the summer is a dry one they are very ill off indeed. This necessary, in the latter case, has to be supplied by a distilling apparatus, which makes water very dear and scarce. Ships that may be chartered or destined for Wallaroo would do well to keep this in view, and provide accordingly.

Having performed this duty said the Chairman, we may proceed with other matters. On which Albert observed, that the cause of freedom he was certain would be always uppermost in the minds of Englishmen, and in reference to the assistance which that of slavery had purchased in this country, as we had seen in the ships and stores prepared for the Emperor of China, he thought that the views of the Government of this country should be preserved also among their records. He would therefore observe that:—

In reference to interference in the American contest between freedom and slavery, Earl Russell has replied to Lord Campbell's attempt towards acknowledging the Southern Confederacy, in a manner which might be expected from an Englishman who loves liberty. And as a contrast to the assistance which the Confederates

have received in the way of ships of war, it will be but fair to preserve among their records the sentiments of the Prime Minister, on this important subject. After alluding to what the late Marquis of Lansdowne said on the subject, and quoting instances where our interference had taken place in the cause of liberty, Earl Russell proceeded thus:—

Now if we look at the present state of North America, as compared with the aspect of affairs in former years of South America, we find a war still carried on with the utmost vigour—I may almost say with the utmost fury; and we find at the same time that some of the provinces which first proclaimed their separation,—for instance, a large part of Louisiana is occupied by Federal troops, and the capital, New Orleans, is also occupied by a Federal army, and in the upper banks of the Mississippi there are also Federal troops. There are also considerable Federal armies established in other states of the Confederation, and Federal fleets were menacing the ports of Charleston and Savannah, so that no man can say it is a case of hopeless war; and though no man can say that the North will finally subdue the South, yet it cannot be said that the war is fairly over.

Then what is the case at the present moment? Although great efforts have been made in former years, have those efforts ceased? So far from it that we find the last acts of Congress, just expired, have placed by conscription every man who is fit to carry arms at the disposition of the President of the United States, and sums of money amounting to not less in the aggregate than 180 millions sterling have been placed at the disposal of the Federal government for the purpose of carrying on this war. Well, then, in this state of affairs I should say, looking to the question of right, it would not be a friendly act towards the United States of America—it would not be in accordance with our obligation towards a great country with which we have long maintained relations of peace and unity—a country which says it can still carry on the war—if at this moment of contest we were to interpose, and recognise the independence of the Southern States. I have endeavoured to guard myself by stating that this is the present aspect of things, and I hardly know any moment of the war when my noble friend could have brought forward his motion with less encouragement. The whole of the efforts of the North may fail, and it may turn out that the spirit of the South is unconquerable, for they say they are determined never to be again united to the North—that their separation is final and irrevocable.

The views of the people of this country may be very different at this moment, but I maintain that it is our duty to stand still, and not to proceed to an act so decidedly opposed—an act, I should say, so unfriendly to the government of the United States, as that of recognizing the independence of the Southern Confederacy. My noble friend has spoken frequently of Canada being attacked by a Northern Republic, and of the West Indies being attacked by a Southern. I cannot follow my noble friend into all these considerations, for I will

not venture to say what may be the future course of events. I confine myself to that which I think is our duty and which is right, and if we do that which is right and do our duty we must be content, and leave future days to prepare and cope for any dangers that may arise, and it will not enfeeble our arms, the reflection that we never failed in our obligations to the United States—States which have been in peace and amity with us, and it will not be our fault that the great afflictions of this war have been prolonged. I know not that there is anything in my noble friend's immediate purpose to-night which will make it necessary for me to go much further into this question; but at the same time there are parts of my noble friend's speech which are suggestive of what has taken place in former questions and former instances of interference, and which seem as if my noble friend and those who look to the motion which he has made, expect there will be some interference on our part in this war.

Now, my lords, I wish to say a few words on the subject of intervention in former days. We interferred in the case of Holland, to save her from the tyranny—the religious tyranny—and political despotism of Philip the Second. In that contest we contributed to the establishment of her independence. My noble friend has referred to the case of Portugal. But Charles I., Cromwell, and Charles II., all agreed with the propriety of that interference, and we declared ourselves ready to send 10,000 men to aid the new government, and to help Portugal to relieve herself from Spanish tyranny and domination, and to establish the independence of that kingdom. In more recent times we interfered in Greece, where there was carried on a bloody contest. Our interference led to the establishment of her independence, for we aided in her being rescued from that destruction which seemed to impend over her, and helped to free that country from despotism. In the case of Belgium again, when the people of that country declared they were unable to remain under the government of the King of the Netherlands, as the treaty of Vienna directed, we interfered by force, and a happy arrangement was made, which has continued up to the present time.

Now, my lords, in all those instances, whether the wars were carried on by our ancestors or in our own times, there is nothing of which an Englishman need be ashamed, for if we have taken part in interventions, it has been on behalf of the independence, the freedom, and the welfare of great portions of mankind. *I should be sorry if there were any intervention in our time which would bear another character.* I hope that will not be the case, and that no interests of our own, deeply as they may affect the industry and well-being of a large portion of our fellow-countrymen, will induce us to set an example far different from that which was set us by our ancestors. But whenever we shall be called upon to interfere—may it be seldom—I trust it will be in the cause of *liberty, and to promote the freedom of mankind,* as we have hitherto done. With regard to this war in America, I trust we shall be permitted to follow an impartial and neutral course. Depend upon it, it will be far better that the war

should cease by the conviction, both in the Northern and Southern States, that they never again can happily form one community and one republic, than that a termination of hostilities should be brought about either by the advice or mediation, or interference of any European powers.

At an emancipation meeting recently held at Woolwich, observed the Commodore, he found the following concluding resolution carried with applause:—

"That this meeting expresses its concurrence in the principles of non-intervention by the British Government in this contest; but consider that more vigilance should be exercised in enforcing the neutrality laws, especially as regards the building of war ships for the Confederates."

Notwithstanding the *interested* support which the Confederates had received, he believed this to be the real feeling of the country.

[The following is the speech of Mr. John Cropper, (alluded to in our last number,) at the Liverpool meeting on American slavery, for which we could not find room.]

The Chairman stated why he had consented to preside. He said:—I do not come as the justifier of the American war, or of any of the evils connected with it; I freely admit the errors and inconsistencies of the Federal government; but I do come as the hearty sympathiser with that party in the Northern States—I hope a large, and I feel sure an increasing party—whose hearts are true and right in the cause of humanity and freedom, both to the white and to the black, and who are beginning to feel that slavery in the South and complicity with slavery in the North have been the real cause of the war which is now desolating their country, and demoralising their population. I come also with a hearty and thorough detestation of that party in the South—and I know of no other party there—who are glorying in building up a Confederacy the basis and corner-stone of which is "the right for man to hold property in man." He proved by quotations from the speeches of Vice-President Stephens, Mr. Crittenden, and Mr. Jefferson Davis, that the nationality asserted by the South had this character, and declared himself unable to understand the feelings of those Englishmen and Christians who sympathise with it, or who expect that slavery will ever voluntarily be terminated by its measures.

We are taunted on every hand, said the chairman, with the insignificance and want of respectability and standing of those who are now pleading the cause of negro freedom. This is no new cry. The abolition of the slave trade and the extinction of slavery in our colonies are now vaunted by orators and statesmen as the glory of Britain, as contrasted with other nations, and especially with the American States. But I am older than most in this meeting, and perhaps remember better than some of you how the first advocates of the freedom of the negro in our colonies were a small and, in the eyes of most, a despised and very insignificant body. With a few, a very

few, honourable exceptions, they numbered none of the wealthy or the influential—none of the higher classes of the community, either social or mercantile. Among these few exceptions in Liverpool I may mention the names of Isaac and Adam Hodgson. The former left Liverpool many years ago; the latter continued amongst us, the supporter of social, moral and religious interests, till increasing years and infirmities laid him aside, and it is but very recently that he entered into his rest, full of years and of honour. There is one other name I would mention as amongst the very first promoters of this good cause—the accomplished and benevolent William Roscoe.

But if those who forty years ago advocated the cause of freedom met with calumny and opposition, those who at the close of the last century exposed the enormities of the slave trade had their moral courage much much more severely tested. It would take up too much of your time to enter into the difficulties of that long struggle; but I am tempted to allude to a meeting held in Liverpool nearly seventy years ago. That meeting was not without the sanction of great names—it numbered the most wealthy and the most influential merchants of the town. Its object was to pass resolutions deprecating in the strongest terms all interference with this gainful commerce. Those resolutions would have been passed without a dissentient voice had it not been for the strong sense of humanity and right in one man. He felt that it would be a disgrace to his native town that such resolutions should go forth as the unanimous sentiment of Liverpool. He was a member of the Society of Friends, engaged in business, and perhaps known to few beyond his immediate circle; but he was an honest and a brave man. He did not calculate how much his business might suffer by incurring the displeasure of those merchant princes, who were amassing wealth from this traffic in the blood and groans of their fellow-men; but he did remember that those poor wretched victims of avarice had flesh and blood and feelings like his own, and when the resolution was put by the mayor he manfully raised his solitary arm against it. This man was the late Isaac Hadwen. Often have I made my father relate this passage in his life with feelings of emotion and admiration. But I am asked—What has President Lincoln done to entitle him to our approval? I answer, more than any previous President has ever dared to do, and I honour him for it. 1. His government has enforced the laws against slave trading. 2. It has entered into slave trade treaties with Great Britain, conceding the right of search. 3. It has prohibited slavery for ever in the territories. 4. It has abolished slavery in the district of Columbia. 5. It has entered into diplomatic relations with the negro republics of Hayti and Liberia. 6. It has offered terms of compensated abolition of slavery to the loyal States. 7, and last, It has proclaimed liberty to the slaves in the States in rebellion.

If in his attachment to the Union Mr. Lincoln has occasionally seemed to sacrifice to it the cause of humanity and freedom, we must never lose sight of these substantial acts of his legislation, which show that he is at heart true to the negro emancipation. These are

some of the reasons which have induced me to unite with those who propose to present President Lincoln with an address expressive of sympathy in the emancipation measures of his government. Of the wisdom or policy of his last act I venture no opinion. I own I fear more from the exasperation of the masters than from the violence of the slaves. May God in his mercy avert the evils which are predicted from both these sources. The whole subject is to me full of deep solemnity and signification. Long years of injustice and oppression to the negro, of rights withheld and feelings outraged, have already been succeeded by a period of fearful national suffering. Commerce has been suspended—torrents of human blood have been shed—thousands of homes have been desolated—thousands of hearts agonised We would not, we dare not, speculate as to the reasons which move a just and righteous God in what He appoints or in what He permits; but surely these events should teach most impressively, both to nations and to individuals, those lessons from God's own word, "to do justly," "to love mercy," and "to despise the gain of oppression."

Dr. Wallich and Professor King's *Question concluded.*

Kensington, March 16th, 1863.

Sir,—Had Professor King, whilst attempting to meet my statement, confined himself to an accurate narration of facts, it would have been quite needless for me to add to what I have already written on the subject of his plagiarisms. The subjoined brief remarks will, however, show he has not so confined himself; and under these circumstances alone do I venture again to trespass on your valuable space.

Professor King asserts—Firstly (*Nautical Magazine*, March, p. 134), that I have assumed the position of the sunken land of Buss "at 748 fathoms;" secondly, that, in speaking of carbonate of lime in sea water, I assume the presence "of a salt of which no one has ever detected a trace" (*N. M.*, p. 134); thirdly, "that it cannot be said that I latterly maintain otherwise than that there is a considerable degree of probability attached to the opinion that the Foraminifera live and multiply at the depths from which the sounding-machine occasionally brings them" (*N. M.*, p. 134).

To these three assertions I reply seriatim—that no such assumption is made by me regarding the sunk land of Buss, as may be seen on reference to my *North-Atlantic Sea-bed*, pp. 65 and 66,—that carbonate of lime is specially given as a constituent of sea water in the latest editions of the following standard works on physical geography and geology—namely, Herschel, p. 221—Maury, p. 16—Mrs. So-

merville, p. 221—and Jukes' *Manual*, p. 125. Whilst in the very page of my work from which Professor King adduces a garbled extract, I distinctly state my "full convictions" as to the vitality of the organisms alluded to, in the localities and at the depths in question?

Leaving Professor King to reconcile, as best he can, his mention of my name amongst the authorities on deep-sea soundings, in his *Preliminary Notice* of November last, and his declaration (*Nautical Magazine*, March, pp. 135 and 136) that he was not "aware that I had written or published *anything on the subject* before he read my charges," I have to direct attention also to his *ex post facto* "denial" of any pretension to originality (*N. M.*, March, p. 132) when placed side by side with the intimation corrected in the first paragraph of his *Preliminary Notice* (in the November number, p. 600), namely, that he then "purposed giving a summary of the results of *his* investigations as far as they had been conducted"—and the avowal contained in the last number (p. 136) of his "having avoided, as much as possible, consulting any work on the subject, until after he had published his *Preliminary Notice*, wishing to form independent conclusions *from data in his own hands!*"* Truly, the view here taken by Professor King of the proper mode of drawing up "a detailed report on the various objects which the Lords Commissioners of the Admiralty have done him the honour to place in his hands for examination," is eminently original, to say the least of it; and in perfect keeping with his definition of "good taste" which immediately follows.

In conclusion it only remains for me to add that, since Professor King would have it appear that my charge against him is altogether "gratuitous," the reader will find abundant data for arriving at a correct estimate regarding its probable validity or otherwise, on reference to certain papers on "The Permian System" and "The Structure of the Shell in Rhynconella Geinitzi," which were published in the seventeenth and nineteenth volumes of the second series of the *Annals and Magazine of Natural History*.

I remain, &c.,

G. C. WALLICH.

To the Editor of the Nautical Magazine.

* Professor King informs us that he sent a "Preliminary Notice" of his investigations to the last October Meeting of the British Association at Cambridge; but he omits to state that the said Notice met with anything but a complimentary reception at the hands of the President of the section before which it was read; inasmuch as the British Association professes only to recognise the results of original observation.

Nautical Notices.

Particulars of Lights Recently Established.

(Continued from page .162)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
5. Batavia	Java	On W. jetty head	F.	54	13	Est. 1st January, 1863. (*a.*)
6. Cape de Gata	Spain, South coast	36° 43·6′ N., 2° 14·2′ W.	R.	194	19	Est. 30th April, 1863.
Villaricos	Ditto.	37° 11·3′ N., 1° 52·8′ W.	F.	63	9	Est. 30th April, 1863.
Altea	Ditto.	38° 33·5′ N., 0° 4·0′ W.	F.	367	9	Est. 30th April, 1863.
7. Cape Formento	Isle Majorca, North pt.	39° 57·8′ N., 3° 14·9′ E	R.	502	19	Est. 30th April, 1863. Every half minute.
Port Cindadela	Isle Minorca, Point Enderrocat	39° 59·8′ N., 3° 51·8′ E.	F.	66	7	Est. 30th April, 1863. On West side of entrance.
8. Suances	Spain, North coast	43° 26·8′ N. 4° 0·9′ W.	F.	118	7	Est. 30th April, 1863. (*b.*)
Santander	Ditto.	At S.W. angle of the Capitania	F.	33	3	Est. 30th April, 1863. Red.

F. Fixed. Fl. Fixed and Flashing. R. Revolving. I. Intermitting. Est. Established.

(a.) 5.—Vessels coming from the northward for Batavia Roads should bring the light to bear between S. ¼ E. and S. ¼ W., which will lead to the anchorage. In coming from the westward and having passed Karang Kuiper, steer to the south-eastward for the anchorage until the light bears South.

The old harbour light is discontinued.

(b.) 8.—It stands on Punta del Torco de Afuera, at the West side of entrance to the Ria de San Martin de la Arena, 28 yards from the sea.

When coming from the westward and being near the shore, the light is hidden by the highest part of Punta del Buey between the bearings of E.S.E. and S.E. ¼ E.

The "Rifleman's" Surveys *in the China Sea.*

We made the highest peak of the great Tambelan in lat. 1° 1′ 24″ N., agreeing with Ross's chart. Horsburgh places it in 1° 0′ N., which cannot be correct, as we cannot be that much in error, our latitude being from three sets of circummeridianal altitudes by artificial horizon, all agreeing within a few seconds. Probably Ross's latitude was found by similar means. The longitude we made 107° 32′ 42″ E. In Ross's chart it is 107° 35′, and the same in Horsburgh.

From the position of Tambelan Peakall the latitudes and longitudes given below have been calculated.

It is required of surveyors by the Admiralty, that all meridian distances be determined from equal altitudes. Bad weather prevented us obtaining these, and the longitude of Tambelan Peak, and conse-

quently all the longitudes given below, may be affected by subsequent observations, but only to a very small extent—certainly not more than half a mile; and the same error will apply to all the positions.

The *Rifleman* anchored in five fathoms on the Europe Shoal, found to extend about a mile N.b.E. and S.b.W., the shoalest patch about the middle, with three fathoms on it at low water spring tides. Horsburg gives two fathoms, but we could not find less than three, and all our boats were sounding over it several hours. Southward of the three fathom patch the shoal extends westward nearly three-quarters of a mile, with six to ten fathoms over this part of it. All round it there is from eighteen to twenty-five fathoms.

We made the position of the three fathoms patch to be lat. 1° 11′ 18″ N., long. 107° 25′ 42″. Compass bearings:—Rocky Islets, S. 85° 13′ W., 11·75 miles; Gap Rock, N. 79° 25′ E., 8·5 miles; Apex Pulo Iray, S. 17° 31′ W., 5·25 miles; right extreme of the Tambelans, S. 19° W., 5·8 miles; left extreme of the Tambelans, S. 44° 17′ E., 14·20 miles.

The Rodger Rock is of very small extent and, as described by Mr. A. Rodger (*vide Horsburgh*, page 305), is about 100 yards square; at low water springs there is but three feet water on it.

This is an exceedingly dangerous rock, having regular soundings of nineteen to twenty-two fathoms for miles round it. The *Rifleman* was four days before she found it, steaming slowly about with look-outs on all the yard-arms, &c. As her tracks were plotted on the chart as she ran them, it was seen, when the rock was found, that she had passed very close to it several times,—the boats also. It was ultimately found by the tide making against the wind and causing a slight ripple. We made its position to be as follows:—lat. 0° 43′ 6″ N., long. 107° 31′ E. Compass bearings:—Tambelan Peak seen on the right apex of large Jarrang, N. 1° 30′ E., 11·05 miles; Green Island, N. 81° 24′ W., 12·10 miles; right extreme of Tambelans, N. 11° E., 17·09 miles; left extreme of Tambelans, N. 30° 20′ W., 20·07 miles.

No doubt this is the rock seen by Mr. R. Loney, R.N., when in command of the *Rose Ellis* (*vide Horsburgh*, page 305), and so marked in the Admiralty charts. The rock being far from the islands, the least error of bearing would cause the discrepancy in its position as given by Captains Rodger and Loney.

In the latest Admiralty charts there is a danger marked "Constance?" laid down about a mile and three-quarters South of large Jarrang. The *Rifleman* was steaming a whole day about its position without seeing it. Beyond being marked in the chart, we have no particulars; and, moreover, the shoal being marked as doubtful, and not as of doubtful position merely, induces us not to believe in its existence.

A coral shoal, however, was found off the S.W. end of little Jarrang; the shoalest part, with three fathoms on it, bearing N. 68° W. nine-tenths of a mile from the S.W. end of little Jarrang. From this patch (its western extreme) it extends about S.E.b.E. three-quar-

ters of a mile, with depths varying from four to nine fathoms. We believe that to have been the Constance Shoal.

Tambelan highest peak on with the right extreme of Harbour Island clears it half a mile to the West; and White Rock on with the right extreme of large Jarrang leads over nine fathoms on the S.E. end of it. White Rock kept well open of the right extreme of large Jarrang clears the danger to the southward.

There is seventeen to twenty fathoms between this shoal and little Jarrang.

Several other shoal patches and dangers were found out of the ordinary track of navigation; a glance at the chart would describe them better than a long account here.

The general description of them given by Horsburgh is in the main correct.

Sunken Wreck in Funchal Bay, Island of Madeira.

Information has been received at the Admiralty, that the brig *Comet* has recently been sunk at the anchorage in Funchal Bay, island of Madeira. The wreck lies in about 23½ fathoms water, with Cape Garajoa bearing S.E.b.E. ¾ E.; Ilheo do Gorgulo, W.b.N. ½ N.; Pico da Cruz, N.W. ⅝ W.; the Cathedral, N.E.; and the right extreme of the Loo Rock, N. ⅝ E., and in line with the house West of the flagstaff. Mariners are cautioned not to anchor near the wreck, as H.M.S. *Egmont* by doing so lost an anchor and a portion of cable. All bearings are magnetic. Variation 21° 55′ West in 1863.

Voyage of H.M.S. "Cyclops:"—The Red Sea.

Captain W. J. S. Pullen.

(Continued from vol. xxxi, page 664.)

Finding that Mr. Vice-Consul Page had effected a purchase of 600 tons of coals, as I had desired on the 6th ult., the embarking them was commenced. I determined on taking as many as the boxes would hold, leaving the remainder for future use, to be taken in on our way down the sea, which would not be until I had run the line up the centre, as I had before intended.

This work kept the crew constantly employed, except the intervening Sunday, until the morning of the 15th; when, finding that 376 tons from the shore, with what was remaining on board, filled our bunkers—in the whole 408 tons,—I proposed going to sea as soon after I had got sights for time as convenient, not expecting a later delay than the 16th.

Frequently since arrival, and previous, Mr. Page had brought to my notice the circumstance of a British ship then in the port having

assumed a Turkish character without any consultation with the Consul, the papers of which were still lying in the consulate. This was certainly contrary to all law; but, being doubtful on the point, I declined interfering until, finding that it was an indisputable case, and that one of the owners had made a formal complaint to the Vice-Consul on the subject against the other, and aggressor, in the matter,—moreover, the other merchants complaining,—I decided an assembling a court at the consulate for the purpose of trying the case, and directed Mr. Page to issue the necessary notice to all parties concerned, and also warn any two British merchants (Indian) residing in the place that their presence would be necessary.

Accordingly, on the morning of the 13th, I landed and proceeded to the consulate for the purpose of inquiring into this matter. As the proceedings of the court have been detailed, I merely state now that the infraction of the law was so palpable, the wrongdoer finally admitting so himself, and his name appearing as part owner on the British register that I seized her as a forfeiture to the crown, intimating to all concerned—also by writing to the Caimacan and Pacha—what I had done and my intention to send her to Bombay, the first Vice-Admiralty Court, for adjudication. A boat from the ship proceeded to the one in question *(Eranee)* and took possession, hauling the Turkish colours down and replacing them by British.

On my way to the boat, I remarked to an officer with me that the people in the bazaars appeared to eye us very strangely, but thought nothing more of it. On reaching the wharf I was questioned by the pilot as to when I should go to sea. I told him the 17th, but he must be on board by the next evening. This was quite six o'clock; we reached the ship at seven. During the night several Greeks came off to the ship, some in a complete state of nudity, stating that they were clerks in merchants' houses on shore, and had escaped for their lives, the Mussulman population having risen against the Christians, and as a preliminary torn down the consular flagstaffs of the English and French, and were committing other acts of violence. But they thought the flags would protect the lives of the Consuls, &c.

On the morning of June 16th daylight showed neither of the consulate flagstaffs standing. According to my intentions, as before stated, at eight a.m. I left the ship for the purpose of getting observations on the government wharf, and to endeavour to find out what had taken place on shore. As a precautionary measure, I ordered the arms in my gig, and took besides one of the cutters, Mr. Armstrong, Senior Lieutenant in command, having with him Mr. Maclear (Mate) and one of the escaped Greeks as interpreter. Mr. Mayes, the Master, accompanied me. All were fully armed.

Passing along the line of merchant ships (British Indian) the crews, which they had never done before, assembled to look at us as we passed them—significant, I thought. Pushing on, we got without any hindrance nearly up to the last narrow channel, leading direct into the landing-place. Entering it, and heading for the wharfs, not more than a hundred yards from us, and about eighty from the large fort on

our right, we saw an unusually large concourse of people assembled on a sort of esplanade under the walls forming the sea face to the town, the walls also crowded, and the windows of houses within them.

On the parapet of the large fort at the S.W. angle of the town were also some people, apparently soldiers; several of whom we perceived jump off the wall and appear in the embrasures, evidently making signals for us to turn back. As we were near enough to talk to the people, I laid on my oars and, calling the cutter alongside, desired the Greek to ask the meaning of the large concourse, and if they intended to prevent our landing. Before reply could be obtained, musket balls were dropping about the boat, and at the same time two men on the Government wharf head were seen waiving scarfs, either to approach or go away, I cannot say which; but interpreting it in the latter sense, and something more convincing following in the shape of a volley of musketry from about the vicinity of the Custom House, I gave the word to pull out, and came to the conclusion that the reports of last night were too true. But to what extent the mob had proceeded, was all conjecture, for it was apparent it was only the mob, which the Government, from their friendly warning, were not concerned in, but in their miserable inefficiency could not put down.

As we pulled round, besides this volley we were saluted with yells and shouts of fury, for it was evident that they hoped to get us entrapped. A stroke or two more of the oars would have put us among them, and had we landed, not one would have been left alive.

Pulling out, occasional shots dropped near us, and large bodies of men were seen running along the southern face of the town towards the shoals leading to the first channel, and there act in concert with other bodies from the northern side of the town, and intercept us in our passage out. A great many of these people seemed to be armed with the long Arab musket, and with a full intention of doing us mischief, and certainly such a preponderance of strength over our two boats, seventeen all told, was sufficiently alarming.

The men, however, I was pleased to see, displayed no apprehension of being able to clear the way, merely stretching out with a good will to endeavour to win the race. The shore part from the northward though had the advantage, and succeeded in gaining the passage before the boats could head into it. Up to this very time, not a single firearm or weapon of offence had been shown on our part, for I was determined on not proceeding to extremities as long as I could possibly help it, for if blood was once shed by us, I knew not what Christian lives might be sacrificed on shore in revenge, never dreaming but that all we knew of among such a set of fanatics were safe enough.

But it was time to prepare and show those who now appeared determined to stop us, that it would not be without a struggle. I was ahead with my boat, and seeing that many had crossed the channel, not more than twice the boat's length (winding) and about half her breadth, I sent Mr. Mayes in the bows, armed with his sword and revolver to clear the passage, and the men to have the arms and cutlasses on the thwarts alongside them; when with the yoke lines in

one hand and pistol in the other the passage was entered, rather difficult under such circumstances to keep her in it, when her keel sometimes scraped the ground; and seeing several men ahead bearing down on each bow with the intention of laying hold, I desired Mr. Mayes to clear the way, and turning to the right I saw one man, among several, not more than the boat's length off, pick up a large stone and launch it at my head; by dodging it passed just astern, and I fired over his head. This not appearing to satisfy the fellow, he made a rush, thinking I suppose that I was now powerless, when another shot stopped him as well as his friends, rather I think from fright and astonishment than anything else, for he crouched down, and did not trouble us any more, the others pausing in their meditated rush, and the Master in the mean time dispersing his assailants, forward we got into deep water.

Here I rounded to to wait for the cutter, just entering the channel, with large stones, clubs, and shot flying about her, when she got out clear, and with the satisfaction of knowing that not a single casualty had occurred, and that the men were to be depended on for cool and steady behaviour; for although discovering that what had been taken for the long Arab musket were in most cases nothing more than clubs, yet the numbers, and so apparently determined, were quite enough to make one nervous.

How we escaped I cannot tell, for at the first commencement the shot for a short time were dropping about us like hail, but they must have been very bad marksmen. It was however a most merciful interposition of Providence, for had we once landed all would have been sacrificed. As we afterwards learnt, it was their aim to lure us on, and the captain of the port, used the expression and gesture, Had you fallen into the hands of the mob, they would have eaten you.

On passing the line of merchant ships again, the crews all Mahomedans, I boarded several, in the endeavour to get information respecting what had taken place on shore, and it was not until on the point of giving up what appeared to be a fruitless task, for they either would not tell me what I required or did not know, when one man in the last ship boarded stepped forward, and in very disjointed English said, that the people on shore had been cutting off heads, and that he had got his information from the crew of an Arab ship, the people from the shore allowing them to come off. On enquiring what had become of the English Consul, he said that they had cut his head off, as well as that of the French Consul and his wife and family; in fact all the Christians they could get hold of. This was indeed horrifying, but from such a source I had hopes that it might be untrue, but how to get correct accounts was the difficulty, for my boat had already been attacked in attempting to land.

Under these circumstances I decided on seizing all boats coming out from the town; and finding the chief mate of the *Eranee*, (the ship seized) a Muscat man, willing to take a letter on shore, I wrote to the Caimacan for intelligence.

My proceedings in this affair for the next eight days, and arrival of

Pacha from Mecca, having been detailed in correspondence with the Admiralty I shall not enter into them here, further than that after getting all the remaining Christians out of the hands of the authorities, I put to sea on the morning of the 25th of June.

As it would not be possible now for the ship to get to Suez in time to catch the next mail for England, to send home reports relating to this affair, I decided on running a line of soundings up the centre of the sea to Jubal Strait. Accordingly, after clearing the Gehan Shoal, ran off the land, sounding at the same time; and in lat. 18° 58′ N. long. 39° 18′ E. hauled up to the northward.

The first cast on the line from the harbour of Jeddah was 42 fathoms, a short quarter of a mile N.W. of the Gehan Shoal, thence N.W. for about two miles, the depth was 351 fathoms. Steering a West compass course from the last cast, we passed the large patches Abbolhodere, Aboolyahood Ulfagarne, and Ul Wastance, geittng successively 384, 428, and 596 fathoms, on a soft bottom, except at the last depth (the valve bringing up nothing) in the above latitude, forming the point of intersection with the line up the sea, on a N.b.W. ¾ W. compass course.

Throughout the whole of this passage strong northerly winds have prevailed, obliging us to get the lower yards and topmast down, and work full power to make any progress. The sea, too, was rather heavy, yet not sufficient to prevent the sounding work going on constantly, night and day, thus showing no difficulty in that point in laying a submarine cable.

In consequence of the delay from this wind, the last cast was not got until the evening of the 30th, 608 fathoms, sand, to the southward and eastward of Shadwan, and as it was too late to enter Jubal Strait, no considering it prudent to pass through in the night with no good marks to run by, I kept to the westward of Shadwan, and anchored under its N.W. point, in seven fathoms of water, with the South end of White Stratum N. 43° E., and Sandy Point N. 69° W. (compass). This was near where we anchored before on the 28th of May. I consider it a very good anchorage, as affording shelter from N.W. winds, and may be readily made. You have smooth water, and may approach the island very close. It is however, very necessary to keep your lead going, and a good look out, for there is a small rock under water, in about the centre of the outer part of the bay. It does not show by any break, and I have only seen it once, a slight undulating motion showing over it. In working up make short tacks close to the island, and anchor directly you get soundings of ten fathoms. You can generally see the bottom in the day time directly you get into shoaler water.

The bottom in this line runs up the centre, appears to be rather irregular, but on only one occasion was the ground found hard, the valve bringing up nothing. The deepest was 1054 fathoms, in lat. 22° 24′ N., the least 461, about thirty miles S.E. of the former.

(To be continued.)

New Books.

THE WEATHER BOOK:—*A Manual of Practical Meteorology. By Rear-Admiral Fitz Roy.* London, Longman and Co., 1863.

"How will you have the wind? and how much of it?" were the conditional questions returned by a sailor to a lady who had asked him to foretell the weather for the morrow; and in this reply we may at once see the justness of the common observation of how much easier it is to ask a question than to answer it. But there was philosophy in either of the conditions required to be complied with from the sailor. How much wind? This in itself opens out the disturbing effects of currents of air, from a light breeze to a strong gale, producing transits and accumulations of the various clouds which winds will collect to a greater or less amount; and then the quarter from which it is to come,—the freezing North or warm South, the cold East or temperate West,—how much will either of those contribute to load that wind with cloud-forming vapours to make or to mar the weather of the morrow. Alas, the machinery of the weather is something like that of the physical system of man:—as this depends for its healthy equanimity of disposition, of sayings and doings, of rapid or slight movements on the sudden or gentle mandates of the dominant master called mind, so does the weather indulge in gentle or rouse to vio'ent action as the forces of the wind take the command. When it is considered how much can be brought into active influence, how soon and how rapidly controlling powers may go to work, the overwhelming number of disturbing effects were duly appreciated by the celebrated French astronomer, Arago, when he pronounced his opinion that "He is a bold man who will prophecy the weather of the morrow!"

Still, the curiosity of man! where will it not lead him? That restless commanding spirit of his, where would it stop? It would know everything, it pries into the secrets of nebulæ, the deep caverns, the imagined seas, the lofty volcanic crags of the moon! He who can command the hidden wonders of chemistry, can apply the resources of science to measure the lengths of the years of heavenly bodies; nay, even their very weight in the scale of creation,—is he to be foiled by that simple element in which he moves, its varieties of heat and cold, moisture and dryness, its vagaries and fancies of change perpetually going on before him, is all his knowledge to stop short of the weather? 'Tis very much like it! for there are very many questions about it of which we know nothing.

Why have we had no winter lately in this metropolis of ours? Why has it been so long put off? Snow has not been seen in it as usual these last few months. We have had a prevalence of S.W. winds. Is it owing to the warm atmosphere which they bring that the snow has been kept from us? Meteorologists said nothing of this. On the contrary, a severe winter, from the prevalence of the red hawthorn berry, was foretold. Where is it? Not in London. The cold has kept to Russia East of us, and to the West it came tardily. Verily we have much to learn. Why has it gone to the South and made winter there? Did the railways make this country too warm for it? They say there are less of them, space for space, in France than in England.

> "Verily man, as the story goes,
> Can scarcely see beyond his nose,"

as yet, at least, in the vast overwhelming subject of meteorology.

But let us not despair. The subject has been forced into our lap; and here is the first real weather book from the weather office of this country, com-

bining in its ample pages a store of information for the assistance of any one who desires (and who does not) to become weatherwise! It was time we set about it,—that a sailor (especially) with a staff should be duly installed in the very heart of the first maritime power of Europe. We were on the verge of ridicule for our old fashioned ideas of *cui bono*, which even the smallest state of Europe would not acknowledge, but set manfully at work with the duties of a meteorological observatory. We had one also, but we have more than that now in a staff to discuss the observations Thanks to agitation:

It would take us far out of our limits to refer to a tenth part of the subjects touched on in the *Weather Book*. And when we inform our readers that they embrace the varying regions from pole to pole, from East to West, describing the several phenomena of our terraqueous globe as far as its ocean of air is concerned,—that variables, trades, monsoons, normal and prevalent winds, hurricanes, waterspouts and waves, Papagayos and Tapagayos, (in fact, to string them all together would require room that we cannot give,) they may be satisfied that the *Weather Book* contains a vast amount of valuable information,—which we can, moreover, tell them is preceded by descriptions of the best and most approved kind of instruments to be employed in meteorology,—and all this the more valuable from any part of it being unlocked in a moment by that most inestimable of all keys, a copious index.

There is no need for stopping about opinions, or we might inquire in the subject of the dissipation of clouds, as the sun gets low, has the effect of cold and the chemical affinity of damp surface more effect than that of the moon? Terrestrial radiation does its work in terrestrial rather than in a lunar atmosphere. And again,—the hard, defined, or soft woolly edges of clouds, are not the first produced by a dry atmosphere where they are well packed, and the last in a humid one, which has not pressure enough to scrape them together?

Doubtless we shall shortly find the *Weather Book* in another edition, when we shall have another opportunity of opening out some more of the hidden treasures which it contains.

CALENDAR OF STATE PAPERS, COLONIAL SERIES,—*East Indies, China, and Japan*, 1513—1616. *Preserved in H.M. Public Record Office and elsewhere.* Longman and Co., London, 1862.

Another invaluable present to the historian of records concerning one of the most important periods in the history of our country's progress. It embraces "the early voyages for the discovery of a North-East or North-West passage, the establishment of the East India Company, the various early voyages to the East Indies, an account of the settling of the different factories with the gradual developement of the lasting influence of England in those distant countries; the commencement of a commercial intercourse with Persia; the first faint attempt at establishing a direct trade with China; the opening of a communication with Japan through a series of adventures as curious as the history of Robinson Crusoe, and the approaching cessation of all intercourse with that empire, chiefly caused by the death of one Emperor and the different policy of his successor, in which religious consideration formed a predominent part." The contrast presented by the state of all the affairs treated on in the foregoing *resumé* and the present condition of each and all of them, is a display of progress of which England may well be proud in the high satisfaction at the part which she has contributed towards it. An interesting historical survey of the contents of the volume forms a graceful and valuable introduction to it, from the careful notes of the Editor, W. Noel Sainsbury, Esq., of the Public Record Office. We hope to avail ourselves of its treasures in another number.

THE YEAR BOOK OF FACTS—*in Science and Art, &c.* Lockwood, London.

Mr. John Timbs perseveres in his annual collection of Facts, forming a useful little volume for reference on all subjects of science and art. That before us for 1862 enters on that most important of questions between wood and iron for ships, and the all engrossing subject of iron clad ships and heavy projectiles, on which conclusions seem yet to be in abeyance.

FORMULÆ OF NAUTICAL ASTRONOMY, ETC.,—*Arranged by Captain Shadwell, R.N., C.B., F.R.S. Revised Series,* 1862. London, J. D. Potter, 31, Poultry.

These formulæ, concisely printed on twelve cards and contained in a pocket case, comprise all the principal problems of nautical astronomy in every day use, as well as a few others of a useful character occasionally employed by the nautical astronomer. They are "intended to serve as an *aide-memoire* for the use of naval officers and students of nautical astronomy."

By a judicious alteration of the size of the type, and by other arrangements, the author has succeeded in introducing into the present series of cards several improvements: among these we may mention useful formulæ of trigonometry and for the solution of triangles, both plane and spherical; accurate formulæ for the reduction of Pole Star observations; a modification of Borda's method of clearing lunar distances, requiring for its application only the ordinary tables of log sines and cosines; and Mr. Jeans's method of obtaining the latitude by altitudes near the meridian, which is independent of any special tables and of a previous knowledge of the latitude by account.

We have long been of opinion that, even in the case of students not thoroughly conversant with mathematics, the system of working by formulæ might advantageously supersede the method of instruction by verbal precept usually adopted in most books on navigation and taught in our schools. In any case, unless the student understands the problem mathematically, he must take his rule in the first instance on trust. It is as easy to assume the truth of a formula as of a long series of verbal instructions. The formula is but one step further back, and has the advantage, when judiciously handled by a careful instructor, of impressing on the mind of the student the connection between different problems in cases where, as often happens, their processes are mathematically identical. When verbal precepts are alone employed each different problem requires a distinct rule, notwithstanding the possible identity of their mathematical conditions. Hence the science of nautical astronomy has become oppressed with a mass of verbal diffuseness, and has been made needlessly complicated and burdensome to the memory.

As an illustration of our meaning we may observe that the following problems, of constant occurrence in the practice of nautical astronomy,—finding the hour angle—finding the azimuth—computation of the altitude—reduction of double altitude observations by direct process—clearing the lunar distance by direct process—calculation of course and distance in great circle sailing—can all be solved by the application of two cases in spherical trigonometry. How few young students recognise these facts, disguised as the rules of nautical astronomy are at present by long and tedious verbal precepts and explanations.

To those who prefer the elegant conciseness of a formula to the diffuseness of verbal rules Captain Shadwell's cards will be very acceptable, and we therefore confidently recommend them to the notice of young naval officers and others interested in the progress of nautical science.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

MAY, 1863.

The Sea Coasts between Antwerp and Boulogne.

The countries formerly inhabited by the Morins and Menapiens, have changed considerably since the time of the Romans. The greater part of their large forests, has been in the course of years converted into arable land, and the remains of them now are to be seen in the woods of Niepe, Boulogne, and those in the environs of Ypres, Poperingue, Thourout, and Bruges. That these are really the remains of those forests cannot be doubted. When glancing over a map of the countries, it may be seen that they form a circle round the mountains that Dion Cassius mentions, and which this in some degree confirms.

As to the marshes found by the ancients in this country, they have also in a great measure disappeared. They are now only seen in the departments of Nord, and Pas de Calais, in Bergues, Bourbourg, St. Omer and Aire. What has become of the rest? Some have dried up, and others have been drained; the greater number having met another fate. But let us now advert more particularly to the present state of the shores of these countries.

Near the Scheldt, from above Antwerp to its mouth, and in the vicinity of the coast from the mouth as far as the heights of Blanez,* a bed more or less thick of clay or mud everywhere prevails, contrasting in a remarkable manner with the surrounding soil, which is very sandy. The downs of the coast form one of the limits of this bank of clay. The other boundary begins near the Tete de Flandres, opposite Antwerp, crosses the shore of the river as far as the fortress

* Cape Blanc Nez.

of Calloo, from thence passes from Holst towards Selsaet. It then turns towards Assenede, Middlebourg and Stalhille, crosses the canal of Bruges to Ostend, near this latter village; spreading from West to East passes between this last place and Eerneghem. After this the line of demarcation returns towards Zebercote, but before reaching Dixmude the bed of clay again spreads, taking the same direction as the former.

Beyond Dixmude, the boundary of which we are speaking again returns towards Women and Merkem, thence towards Oereu, follows the Loo canal for some distance from Furnes, passes to the canal of Colme, and follows its course as far as the heights which border the basin of Aa, and which we see terminate at Blanez.

This clay bank includes between Furnes and Dunkirk the moors. It is also indented by the inequalities of the sandy soil in the Gulfs of Ghistelles and Dixmude; but on leaving Loo it abruptly turns towards Furnes, verging towards the sea. From the side next the sea the same circumstances are remarked. In the village of Clemskerke, between Ostend and Blankenberg, there is a small bank of sand extending beyond the bed of clay for a distance of several feet. At Nieuport is a little hill of sand, probably about seventy-five feet high, which attaches itself obliquely to the downs West of that port. This hill also forms a portion of the sandy soil.

At Jucotte, near Dunkirk, is a second range of downs, about two leagues from the sea, although the clay extends between them. It is between this double range that the canal from Furnes to Dunkirk passes. From Mardgk, beyond this last town, as far as Gravelines, the downs are very low, and near Calais the soil is extremely sandy. In digging the canal antique vases and bits of painted glass have been found at a depth of fifteen feet. Here we perceive by the clay where the bank of flints and the sand forming the downs terminate. It goes as far as the turfy bogs which extends from Ardres to the sea, a little West of Calais. These bogs form the apparent boundary of the bed of clay, but properly speaking, it only terminates at their western extremity, as we find it again under the turf which fills them, and it is only bounded there by the yellow clayish soil from the heights.

The thickness of this bed of clay is variable. From the part near Antwerp it is reduced to almost nothing. Towards the Sas-de-Gaud it is from three to four feet; along the coast from Ecluse to Gravelines, it runs from five to ten feet, sometimes more, sometimes less. It is generally not so thick to the West of Dunkirk as to the East, in the *meres* the clay is very deep, while about Soigne, near Gravelines, it is scarcely a foot in thickness.

Nearly the whole of this range of clayish soil is lower than high water of equinoctial springs. It is also defended in several places from the inundations of the Scheldt and the sea, by means of dykes, very numerous along the banks of the river, and at the different ports; and also by means of sluices, which convey the water into the sea at low water, and prevent it from returning at high water. The

sluices also serve to inundate the environs of Ostend, Nieuport, and Dunkirk, and thus to render the approach to these towns difficult, in case of a siege. These inundations extend a great distance, especially round Nieuport, where in 1793, during the last siege by the French, the sea reached as far as Loo and Dixmude, and filled the gulf which commences there, extending more than four leagues from it. Under this layer of clay appears, till we come to Dunkirk, a strata of turf, from three to ten and sometimes fifteen feet thick, next to a sort of grey mud or fine sand. The lower portion of this turf about Ostend, is a black and compact mass, intermixed with roots, leaves and reeds, in a state of preservation. This part is termed *Ondermere*. The upper portion, named *Bovenmere*, contains no reeds, but a great number of fibrous sticks, which appear to be the roots of furze. The more elevated layers in several parts appear to be different, and when dried resemble cow's hair, the name locally applied to it.

In this range of turf we often find vertical fissures, which in Flanders they call Aardscheen, because they are filled with clay. Some of these are three or four feet wide, and the result of receiving the turfy matter. The country people attribute them to a current of water, but they are evidently wrong, since they are as large and sometimes larger in the lower part than in the upper, and although generally vertical, they are sometimes inclined to the bank, and this inclination is great, especially when they are not very wide. These cracks always end with a corner.

The ashes of turf produce muriate of potash or common salt, and were procured several centuries ago in the Isles of Zealand, by washing it with sea water. This article then formed a large branch of commerce, but on French salt being introduced into the country, the trade in it soon ceased. Lately a manufacture for extracting the alkali contained in these ashes, was established at Ostend, but it appeared that the produce did not cover the expense of the manufacture, and this has also ceased.

It is not uncommon to find trees in the turf, and always at the bottom of the layer, resting on the ground which supports the turf, their branches more or less raised through the soft mass. They are generally oaks, which become very black and hard after being recovered, and are much looked for by cabinet makers. Other kinds of trees are fir and beech, which also appear entire, lying embedded in one direction, from South to East. The turf also contains, about the environs of Dixmude, nuts, and seeds of broom.

Works of art are also found there. De Bast, in his collection of old French and Roman antiquities, mentions a great number. These are for the most part vases of different sizes; very narrow at the top and bottom, and bulging out gradually towards the centre; along with dishes of various sizes. They are all formed of clay, red, brown or grey, sometimes embellished with designs, and even figures, very well done. De Bast gives the design of one of these vases, representing women with their right hands on their heads, as well as some ornaments uniquely finished. Ceylus describes some fragments of

vases found at Nimes, of the same character, and others similar have been found at Bordeaux. The vases mentioned by De Bast, were dug up in the bogs of Oost-Dugnkerke, and other places. A dish dug up at Wendugne bears some Roman characters, apparently the name of the maker. A piece of conical glass has also been found in the turf, at a depth of two feet. It is terminated by a curved stem, part of which is broken, and most likely is one of those glasses without feet used by the ancient Freislanders. It is not only in the turf itself that these works of art are found, but also in the clay which covers it.

Workmen employed in collecting the turf, have reported a human skeleton being found extended, on the upper portion of the bank, at the village of Clemskerke. They also state that the vases were found near heaps of ashes and half burnt wood.

In one of these bogs at Manuekensveere, near Nieuport, a few years ago, a vessel laden with millstones and hand mills was found, embedded in the turf about five feet, and penetrating four or five feet into the clay which covered it; it appeared to have been partly burnt. The greater part of these mill stones have served to pave the yard of the farm to which the bog belonged, but the thickest and heaviest were left in the vessel, which was covered up again, but from being so long under ground they had become quite soft.

The downs form one boundary to the clay, but in the strand on the other side of the downs are spaces of clay more or less extensive, which appear to be a continuation of the lower stratum. Beneath the strand, more or less deep in the sand, the same turfy layer is found as in the downs. Between Ostend and Nieuport great quantities of it were dug up in 1823. It is sometimes uncovered, leaving places dangerous to horses and carts engaged there. It appears also uncovered further out to sea, for after a gale great quantities are thrown up on the shore. This is the case in the island of Walcheren, as well as on the coast of Flanders, the turf being similar to that collected on the downs. This, however, applies only to the coasts between Dunkirk and the Scheldt. From this place to beyond Calais, there is no turf, but layers of clay appear on the sandy soil.

These marshes, as well as those of Flanders, also contain enormous oak trees. Near Ardres a boat was also found laden with grain, which had become quite black, and appeared as if it had been burnt.

At a league beyond Calais, the coast and character of the soil entirely change. Instead of a low coast, and a flat and level country, we find steep shores and a sinuous water line, with rocks such as are not seen in the part previously mentioned.

On the promontory of Cape Blanez we find ourselves on high land, which forms a line of separation of waters. Those flowing from the coast of the Netherlands, are directed to the North or N.E., and those from the other side of the ridge, are directed first S.W., and then N.W. This ridge is only intercepted but not terminated at Blanez; beyond the Pas de Calais we again find it towards Folkestone, where it follows the same course, namely N.W. and S.E. as far as Gloucester.

In glancing to the South of Cape Blanez, we find the Bas Boulonois, enclosed in a rocky chain, which from Cape Grinez takes a half circular direction towards Neuchatel, about two leagues from the port of Etaples. Cape Blanez belongs to another chain, the direction of which is equally rocky. Blanez itself is a chalky cliff, 5,200 metres in length.

In descending the South side of Cape Blanez, we perceive at the distance of 3,000 feet, a narrow valley, called the Creu d'Ecoles, and at 8,500 feet is the ridge of rocks named Quenos, which are very dangerous. At the foot of Blanez begins the Bay of Wessant. In this part the coast is flat and bordered with downs, beyond which are the marshes, the bed of which is composed of sand mixed with black earth, thirteen feet thick, next to a layer of *galets*, sixty or seventy centimetres deep, resting on gravel mixed with shells. Several brooks of water flow through the downs, and lose themselves in the sea.

Passing the Bay of Wessant, the coast presents a declivity forming Cape Grinez. Near Grinez the coast forms the Bay of Ambleteuse, which is surrounded by high lands. The coast then becomes steep as far as the mouth of Wimereux, and afterwards again forms a ridge of downs. Then appear other deep declivities, by which nature gives irresistible evidence of that total overthrow, which has doubtless detached the British Isles from the continent of France. These declivities reach as far as Boulogne.

From the promontory of Chatellon, beyond the Liane, to Cape Alprèck, the shore is very steep. Near the middle of it are the remains of an ancient redoubt, placed on the edge of the cliff, half of which has fallen into the sea. Further on, the coast presents alternately rocks and downs, which we shall not venture to describe, considering them beyond the limit of our subject.

The strand, called *estrand* in these parts, is the flat shore found between the downs and the sea, and which is covered by each tide. It slopes very gradually from the downs to the sea, and its width varies from 100 to 2,000 fathoms. It is formed almost entirely of sand and the remains of shells, divided into two or three small undulations, forming banks parallel to the direction of the downs.

The sea at high water rarely reaches the foot of the downs, except during tempests, and then it makes considerable breaches. The sand of the *estrand* which is between the ordinary level of the sea and the downs, being generally beyond the limit of the sea, becomes dry and moving, and is easily transported when the wind is strong; so that when the wind blows in the direction of the *estrand* this appears covered with a light mist of moving sand, by means of which the downs are formed.

Along this coast the sea is not deep. Beyond the Pas de Calais, it is filled with numerous banks, extending for some distance off shore on leaving the straits, thereby rendering the navigation extremely dangerous. All these are formed of fine sand, gray and black. All these banks diverge from Cape Blanez towards Dunkirk Roads. Be-

yond this they run parallel to the coast as far as the mouth of the Scheldt, and their direction generally shows the course of the currents.

The rivers falling into the sea on this coast, are the Scheldt, the Zwin, the creeks and canals forming the ports of Ostend and Nieuport, Dunkirk and Calais, the Aa, flowing from Gravelines, the Wimereux and the Liane.

The Scheldt at Antwerp is 1,300 feet wide and its depth 52 feet. It continues its course seaward, mingling its waters with those of the sea, and soon after divides into two branches, the most easterly of which, named the Hout or Eastern Scheldt, flows along the shore of Zuid-Beveland, and falls into the sea between the islands of Walcheren and Cadzand. The other branch passes Bergen-op-Zoom, forming the West Scheldt, which flows along the other coast of Zuid-Beveland, and the islands of Wolfersdyk and Noord-Beveland, and falls into the sea between the islands of Walcheren and Schonwen. A little beyond Bergen-op-Zoom is another branch of the Scheldt, which passes Tolen and joins the Kecten. Here it is said that the Scheldt flowed into the Meuse in the time of Cæsar.

Properly speaking the Scheldt terminates some leagues below Antwerp, for the rest of it may be regarded as arms of the sea, as there is no resemblance between the river and the mass of waters which inundate the islands of Zeeland. Here again, like the arms of the Meuse, are enormous creeks which the sea enters at each tide, flowing to the interior of the country, and which form outlets for the Scheldt and Meuse, presenting traces of those daily inundations which have hitherto been so frequent on the coast of the North Sea. A short distance from the eastern mouth of the Scheldt is that of the Zwin, another creek communicating by several branches with the Scheldt, and which formerly extended as far as Damme, where it formed a considerable port.

The ports of Ostend, Nieuport, Dunkirk, and Calais, are still the remains of former creeks. That of Nienport contains a branch of the Yperlée, which rises a little above Yprès. This little river, which has been cut into a canal, is nearly dry in summer, but during the rainy weather forms a rapid torrent, which inundates the neighbouring country. At three leagues from Yprès flows the Iser, taking its rise at Mount Cassel. Near Dixmude the Yperlée divides into two branches, one flowing to Nieuport and the other towards Oudenbourg and Bruges. This last has several branches, one of which terminates at Middelkerke in the downs.

The Aa rises on the confines of Boulonnais and Artois, and after reaching the foot of the hills forming the boundary of Artois, it flows to St. Omer, thence to the flat country, where it divides into two branches. The smallest is called Colme, and flows to Bergues; that flowing to the left retains the name of Aa, and ends at Gravelines, in the sands, where it forms a small port, communicating with some creeks of moderate size, which serve to irrigate the country.

Report of the Committee Appointed to Examine the Fog Signal, Proposed by Mr. Daboll.

[Those of our readers who are acquainted with the Bay of Fundy are also familiar with the fog signal on Partridge Island. The extraordinary distance at which this is heard, even in vessels in the wind's eye of it, renders it at once the most efficient and desirable that can be produced. Indeed, our own slow methods of bells and gongs are left by it in point of effect in the fog of the dark ages. We have received the following report of a similar apparatus, which we insert for the benefit of those who will take it up, being desirous of seeing those improvements in the aids to navigation on our own coasts that are found on those of our active-minded friends of the United States.—Ed.]

The Committee of the Light House Board appointed to inspect the apparatus proposed by Mr. Daboll, for giving signals during fogs, met at New London on the 28th of October, 1859. The members of the Committee present were Captain Tilton and Professor Henry of the Lighthouse Board, and Commander Pennock, Inspector of Lighthouses of the third district.

The Committee proceeded to the lighthouse, (situated about three miles from the city,) where the apparrtus was placed for their examination. They found it in operation, giving signals at regular intervals.

The sounding or signalizing instrument consists of a trumpet about four feet and a half long, of a conical form, with a flaring orifice, the exterior diameter of which is eighteen inches. The larger or open end of this trumpet projects through the stone wall of an old house facing the water, while the small end and the working part of the apparatus, are within the building.

The trumpet is furnished at the small end with an ordinary reed arrangement, with a very stiff tongue, and is sounded by a blast from a reservoir or receiver of condensed air. The air is condensed in the receiver by means of a small Ericsson caloric engine, the piston rod of which gives motion to the air pump, by which the condensation in the receiver is effected. The receiver in which the air is condensed is about three and a half feet long, and two and a half in diameter. It is furnished with a safety valve, loaded with about ten pounds to the square inch, but is capable of withstanding a pressure of several hundred pounds. It has also a discharging valve through which the blast of air to sound the trumpet passes. This valve is opened at regular intervals of about ten seconds, and produces a sound in the trumpet which lasts about five seconds. This automatic effect is produced by four cams on the surface of a wheel attached to the shaft of the engine. The valve is opened by means of these cams four times during each revolution of the wheel, and the ratio of the interval of sound to silence can be regulated, by increasing or diminishing the portion of the circumference of the wheel occupied by these cams.

The intervals, as said before, are about ten seconds of silence to five of sound.

The caloric engine, whatever may be its comparative merits for other work, appears to be well adapted to the purpose to which in this case it is applied. It is very simple in construction, easily put in operation, and not, apparently, liable to get out of order. The whole horizontal space occupied by the engine and condenser is ten feet long by two and a half wide. The quantity of fuel required to supply the necessary amount of motive power, is too small to be considered an item of importance. The furnace holds about a peck of coal, and no addition was made to the fire during the time the Committee was making the examination, though the engine was constantly in motion for several hours.

But the properties which more particularly recommend it for the purpose of signals are, that it offers not the least danger of explosion, and no water is required for its operation. Any person possessed of ordinary intelligence and sufficient handicraft skill to attend a Fresnel light, can readily manage this engine, and any one who has not this small amount of practical talent, ought not to be retained in the office of a light keeper of a lens of the first or second order.

The apparatus while the Committee were present, continued in operation for several hours with perfect regularity, and without any diminution in the quantity or intensity of the sound. The Committee had no opportunity of ascertaining the maximum distance at which the trumpet could be heard under favourable circumstances, but the captain of the steamer *Commonwealth* assured them that he had heard it five miles. In order to ascertain the distance at which the sound could be heard under ordinary conditions, the light keeper was directed to put the apparatus in operation at the time when the steamer in which the Committee were to embark, left the wharf at New London, and to continue the sounding until the vessel was at the distance of several miles. This was done, but the conditions were unfavourable to hearing, and the result could not be considered a proper test of the power of the trumpet. A strong wind was blowing nearly in an opposite direction to the sound, and the motion of the wheels of the steamer and of the vessel through the water produced so much noise in the immediate vicinity of the hearers, that the distant sound was neutralized at a comparatively short distance. It was not thought advisable at a late hour of the night to request the captain to stop the engine of the boat. The distance at which the trumpet was heard under these conditions, was about two or two and a half miles.

Various attempts have been made under the direction and at the expense of the Light House Board, to introduce means for giving reliable signals during foggy weather, but none of these have proved satisfactory. Bells sounded at intervals by clockwork, and whistles blown by high pressure steam have been employed. The sound of the bell cannot be heard amidst the noise of the breakers at a sufficient distance, and if heard it is extremely difficult to locate the

sound. In addition to these the automatic arrangement which has been adopted to give the bell motion, is liable to get out of order, and requires the aid of an additional keeper to be in readiness to assist in winding it up on the occurrence of a fog.

From the testimony collected by the Committee, it appears that the steam whistle can be heard farther and be more readily recognized than the bell; but to furnish the steam by which it is blown a constant supply of fresh water is required, which in some localities cannot be obtained. Besides this a small engine is necessary to pump the water into the boiler, and to open the valve at the proper intervals. The Committee also think it probable that a greater amount of motive power is required to produce a given amount of sound from a whistle blown by steam, than by a reed trumpet sounded by a blast of condensed air, but on this point they have no positive information.

From all the facts which the Committee have been able to gather, they are of opinion that the apparatus exhibited to them by Mr. Daboll, at New London, offers the most promising means of producing sounds for signals with which they are acquainted.

1.—The trumpet of this apparatus gives a peculiar sound, which cannot be mistaken for any other.

2.—It directs the whole force of the agitation of the air to that part of the horizon in which the sound is to be heard.

3.—The engine is easily worked and not liable to get out of order, or subject to explosions.

4.—The intensity of the sound may be indefinitely increased.

But in a matter of so much importance as the means of giving signals during fogs, and which has occupied so much attention in this country and in Europe, the Committee would advise that previous to the adoption of this apparatus, or to giving it the sanction of the Board, a series of experiments and observations be made in regard to it, under different conditions, and in comparison with the steam whistle and the ordinary fog bell; and for this purpose they would recommend that the apparatus now at New London, be purchased, provided it can be obtained at a reasonable price, and the Board have the means and the power.

JOSEPH HENRY,
Chairman of Committee on Experiments.
A. M. PENNOCK,
Commander U.S. Navy.

THE WESTERN DIVISION OF THE MEDITERRANEAN.—*Winds and Weather.*

If we consider the contour of the western basin of the Mediterranean, or rather of the space comprised between the islands of Sardinia and Corsica and the Strait of Gibraltar, we shall at once perceive the tendency of the coasts of Africa and Europe to converge

towards each other; so much so, that between Cape de Gata and Cape Fegalo they are not more than eighty miles asunder. From thence to the westward this tendency continues in the parallel of 36°, as far as the mouth of the Strait. Here the two continents approach so closely, that in the vicinity of Tarifa the channel between them is less than eight miles across. This arrangement of the continental shores, along with the high ground of which they are formed, produces distinct alterations in the direction of the wind, alterations which become the more perceptible the nearer the observer is to the mouth of the Strait.

These currents of the atmosphere being promoted by diversities of temperature in the two shores, there is perhaps no place where greater modifications of this nature take place, than in the space of sea separating Europe and Africa, and limited to the eastward by the high lands of Corsica and Sardinia. Besides, the coasts of Spain and with its Gulfs of Lyons and Valencia to the East, and the Strait of Gibraltar to the West, is sufficient with these features to produce changes in the direction of the wind.

For instance, when a strong N.W. wind is blowing in the Gulf of Leon, it becomes North, more or less strong, when it has reached the Balearic Islands, and even N.N.E. at Algiers, and N.E. in the Gulf of Valencia, is changing to E.N.E. as it reaches Cape Palos on the coast of Mureia, is due East when it passes Cape de Gat, follows the narrowing of the Mediterranean in the direction of the Strait, where it is as strong as in the Gulf of Leon, having regained its strength in its course throughout this great distance.

In summer time it is also common for a N.E. wind to be blowing in the channel between the coast of Spain and the Balearic Islands while it is S.E. between these islands and the African coast, and West or S.W. between the Strait and the meridian of Cape San Antonio.

The N.E. wind which blows along the western coast of Algiers becomes due East when it enters the Strait following its shores; and if beyond Sardinia the S.E. wind is blowing, it falls in the Strait, changed to East, the direction given to it by the African coast.

A similar case occurs with westerly winds. If they are from the S.W. or N.W., then they pass through the Strait as if they were due West, and continue thus through the Mediterranean as far as the meridian of Cape de Gat, while on the coasts of Spain and Africa they are S.W. or N.W., and in the middle of the Mediterranean are following their course due East.

The winds of the Strait, however, do not always undergo such changes, whether from East or West; although the effect produced by the configuration of the coasts of those continents holds good ordinarily and when the atmosphere may be considered in a state of quietness: in such cases the easterly or westerly wind is blowing moderately at either end of the Strait. When a S.W. gale is blowing which penetrates into the Mediterranean, it preserves its direction and even strength and sky, without the trend of the shore in the Strait altering its course, as far as and beyond Corsica and Sardinia, hauling

to the South at the entrance of the bays. If the N.W gale enters the Mediterranean it falls severely direct on the African coast, attains great strength on leaving the Bay of Valencia, and becomes still stronger when, having crossed the plains of France from the Gulf of Gascony, it enters the Mediterranean by the Gulf of Leon, compressed as it rushes between the chains of the Pyrenees and the Alps which act upon it like a funnel. These gales which are the most terrific perhaps of the part of the world under consideration, go down at North on the coast of Spain, the Balearic Islands, and Algiers; but in the Gulf of Valencia they seem to retain their original strength and direction.

Easterly and S.E. gales, with slight variations, follow the same direction from the Syrian coast to the Strait of Gibraltar; when they reach it they become due East, for it is seldom a S.E. wind is found in the mouth of the Strait, this wind blowing only from Cape de Gat to the northward.

Gales from North or South are unknown in the sea to which we are referring, for if a southerly wind should chance to reach the Spanish coast, it may be considered as coming from a S.E. or N.E. wind, and the northers which are found at the Balearic Islands and ports of Algiers must be considered as proceeding from the N.W. gales from the Gulf of Leon, to which we have alluded.

It is to be observed also that the natural shifting of the wind in the Mediterranean is always from left to right,* such as generally takes place in the northern hemisphere, even in the little rotatory storms of this sea; but the contrary is also frequently observed, the wind shifting from right to left, and is considered a sign that the gale will increase. Generally speaking, the wind in these storms does not change through the several points of the compass consecutively. When they commence at N.E. or E.N.E. they shift to the eastward, and after blowing for a day or more from that quarter the wind hangs between East and S.E.; it changes more rapidly to South and afterwards to West quickly, and W.N.W., terminating at N.W., which is the wind that clears the sky and settles the weather. The gales also which set in from S.S.W. and S.W. change to West and end at N.W. When they retrograde from the point at which they commenced this must be attributed to some counter gale as strong as that which is blowing, or that the bad weather is going to set in afresh.

Winds from N.W. to North, and even those from North to N.E., generally bring fine weather and keep the sky clear, like the northerly wind in the arctic regions. Exactly the contrary happens with winds from South to W.S.W., which coming from the tropical regions, and saturated with moisture on their passage over the ocean, rush on the coasts of Europe laden with rain.

Opposite currents of the atmosphere are commonly observed in the part under consideration, and even in the whole Mediterranean, a scud of clouds being seen going in a contrary direction to those beneath

* This depends on the place of the observer, whether the centre of the storm (being rotatory) passes North or South of him.—Ed.

them. The meeting of opposing winds* is also experienced off the capes of the Spanish continent, without the appearance of a single cloud at the time, and the fact that while the westerly wind is blowing in the Strait, and reaching as far as Cape de Gat or beyond it, on the African coast the easterly wind is blowing.

It is true that opposite winds prevail in the lower regions of the atmosphere, passing over the surface of the sea and scarcely rippling it during the fine weather season; for in winter they are neither so frequent nor lasting, however, sometimes they come down heavily on ships which are unprepared for them.

We find from extensive collections of meteorological observations, that, taking those for one year in the Strait, on an average the East wind blows for 160 days, the West for 192, and variable winds fourteen, the former prevailing in the months of March, July, August and September, and in the other months alternately with the westerly wind.

On the coast of Algiers 154 days have winds from N.E. to S.E., and 169 from N.W. to S.W.; thirty-three days from N.N.E. to N.N.W., and nine from S.S.E. to S.S.W., the easterly wind prevailing most in the months of May, June, July, August, and September.

At Toulon there are 144 days of winds from N.E. to S.E., and 179 from N.W. to S. W.; only three days from N.N.E. to N.N.W., and thirty-nine from S.S.E. to S.S.W.; and westerly winds prevailing more in the months of May, June, July, August, and September, than in the other months of the year.

At the Balearic Islands winds from North to N.E. are frequent, owing to their position off the Gulf of Leon; winds from E.N.E. to E.S.E. prevailing in May, June, July and August.

In Valencia Gulf the winds from N.E. to S.E. are seventy-five days, and those from N.W. to S.W. thirty-two; those from North predominating a little, and those from South being in minority; but not so those from the East, which are more general and prevail in the months of March, April, May, June, July, August and September.

From the foregoing it may be concluded that in the Strait of Gibraltar and at Algiers, westerly winds are more prevalent than easterly: that in the Valencia Gulf easterly are the most prevalent: that in the Gulf of Leon easterly winds are most common in the months of October, November, December and January: and that while at Toulon westerly winds are most common, in the Valencia Gulf and on the African coast easterly winds are most prevalent, proving the truth of the statement previously made, that North-westers originating in the Gulf of Leon, become North at the Balearic Islands, N.E. and E.N.E in the Gulf of Valencia and Algiers, and due East in the Strait of Gibraltar. Let us follow up this question, of considerable interest to seamen, specifying the prevailing winds of each season.

Summer Season.—In summer, or from May to September, the easterly wind predominates between the Strait of Gibraltar and the meridians of Cape de Gat and Fegalo, changing more to N.E. from Cape de Gat

* Called by the Spaniards *contrastes*.

to Cape Creux, off which cape it has become North, produced by the N.W wind which blows in the Gulf of Leon, and which often reaches Minorca; but in the channel between the Balearic Isles and the coast of Spain it becomes N.E., and between those islands and the African coast about S.E. and E.S.E., the winds of these two directions combining to form the East wind of the Strait.

If the weather be fine and the sky clear, and the wind passes over the surface of the sea without change, and during the day in the Gulf of Valencia as well as on the coast of Spain the wind veers to S.E., and E.N.E. or N.E. on the coast of Africa, veering again to East or more towards the land at night-fall, and frequently falling calm during night on the coast.

When the easterly wind originates in the interior of the Mediterranean or is a radical wind, it presents very remarkable characteristics. It is generally preceded by a hollow sounding sea, even while the westerly wind is blowing with a clear sky, by an abundance of moisture, and by a mist which insensibly steals over the shores. When it comes on it is accompanied by a light light mist and low, which renders every thing damp, and which on reaching the land forms into light clouds on the sides of the mountains. Often by a contrary current of air a vessel will be sailing with the wind at West more or less strong, while the easterly wind is prevailing aloft, and depositing its effects on the summits of the mountains.

The easterly wind when once established will last for six or seven days, generally blowing strong about the Balearic Islands, stronger still in the Strait of Malaga, and yet more powerfully in the Strait of Gibraltar. It generally goes down imperceptibly; but there are not wanting instances at this season when it gradually freshens up again, and blows strongest during the day, even in the channel of the Strait; the mist becomes thicker, the sky overcast, the land is concealed from view, and rain follows. It is at this time that the sudden change to a strong opposite wind will take place, the result generally of their meeting.

Signs of the Easterly Wind.—The dampness of the ground is no less a sign of the easterly wind on the coast of Africa than on that of Spain. When the extreme ends of the capes appear suspended above the horizon from the effect of mist, the easterly wind may be expected, the opposite part of the horizon being quite clear and well defined. Another sign of it also is, when in the midst of calm serene weather a clamminess is found on every thing on board, or when moisture is prevailing all night. The wash of the sea also giving a dull hollow sound as the swell comes from the eastward, is another sign of the wind coming from that quarter.

In spite, however, of these prognostics; the easterly wind does not always reach a place where they may be observed, from the opposition of the westerly wind, or while the westerly is blowing in the lower portion of the atmosphere, the easterly wind is prevailing above it. It is common enough, moreover, for some vessels to be running with an easterly wind on the African coast, with the conditions of weather that always attend it, and others on the Spanish coast with westerly

winds clear and fresh, while those in the channel between them have either a complete calm or else light variable winds from all quarters, and constant to none, the consequence of being between two opposite aerial streams. These phenomena, more common to the West of the meridian of Cape San Antonio, are found also about the Balearic Isles, for while the wind is N.E. in the northern part of these isles, it is S.S.E. in the southern part, and N.W. in the Gulf of Leon.

At the time of change in the seasons or in the months of March and April, September and October, in which the sudden changes of wind to opposite points *(contrastes)* are most frequent, a contest for superiority between the easterly and westerly winds commonly occurs, either off Cape de Gat, Cape Palos, or Cape San Antonio, and especially near the coast, that interferes much with the progress of sailing vessels. These have been seen, for instance, on their voyage from the Strait of Gibraltar, running with a fresh westerly breeze, and when off Cape de Gat have suddenly met the wind from E.N.E. equally as strong, if not stronger than the westerly which they brought there. If the westerly wind prevails in the encounter which then takes place, the ship will certainly carry it on as far as Cape Palos, where another battle with the easterly wind may be expected similar to the former; and if the westerly wind is again victorious it becomes S.W., and may be carried as far as Cape Antonio, which is not to be passed so easily, because off this cape the North-easters or Northers are generally very tenacious. Such contests between the two winds are not so severe on the African coast, this being less indented than the Spanish; but they are frequently observed off Cape Tres Forcas, and it is no matter of surprise that while these battles between the winds are going forward on both coasts, a fresh westerly wind is passing freely through the channel midway between them.

During the fine season these contests commonly occur with a clear sky, and only last a few hours. But they produce the remarkable spectacle of a multitude of vessels meeting together, as if by agreement, off some particular cape, where they have arrived with contrary winds; each party having come with the wind aft, as far as the limit of the opposing winds; which limit is generally a direct zone or band of calm. As soon as the contest is decided between these opposite winds, as to which is to prevail over the other, some of the vessels continue their course with the wind aft, while others haul up on separate tacks, and others are presenting the curious condition in the same vessel, of having their head sails trimmed to a westerly wind, and their after sails trimmed to the wind from the eastward.

It is not always, however, that these phenomena occur without some severe encounter, or without the mediation of clouds or heavy showers. Even in the middle of summer these meetings are accompanied by rain and strong whirlwinds, which at the time of the equinoxes are generally very formidable, from the heavy gusts, electricity, and whirlwinds which attend them.

The brigantine, *Carmen*, on her passage from Mahon to Malaga, with a fresh easterly wind, smooth sea, and clear sky, was off Cape de Gat on the night of the 26th and 27th of June, 1825. At midnight flashes like

those of musketry were observed to the southward, that kept on increasing more and more, passing successively to S.S.W., S.W., and W.S.W. On reaching West, a dark cloud, which had produced these appearances, rose and approached nearer to the vessel, spreading itself over a considerable portion of the sky overhead. The easterly wind continued blowing with the same strength; but for precaution's sake, and as much out of consideration for the change that was threatening as for the electricity evidently in the cloud, all sail was taken in, excepting the fore topmast staysail and foresail, which were left set. The cloud was passing over the vessel, with heavy rain and lightning, one flash striking the masthead which served as a conductor, and it ran down the whole mast to the deck, destroying a great part of the rigging, and rendering the mast useless, with no other harm to the crew than one man being struck senseless, who recovered with the proper treatment. The easterly wind slackened rather during the passage of the cloud, and when it had gone by completely to the eastward, the sky became tranquil, the westerly wind came on light and lasted only only three or four hours, when the easterly wind commenced and accompanied the vessel to Malaga.

It may be gathered from this narrative that the lower wind was East, blowing over the surface of the sea, while above it at a somewhat higher level of the atmosphere, the westerly wind prevailed.

During the fine season, land and sea breezes are common on the coasts under consideration. In settled weather they are experienced especially, in the gulfs and bays of the Spanish coast. As these are the diurnal or solar winds, which blow with greatest strength from the sea to the land, and in a direction at right angles to the coast, it happens that when the sun is near the meridian the wind is from the southward in the Gulf of Almeria, S.E. in the Gulf of Vera, East in that of Valencia, S.W. in the Bay of Palma, and N.E. and North in the several bays and gulfs of Algiers. This variety of direction in the wind from the sea occurring within so small a space, is produced by the difference of temperature between the sea and the land of each locality, only from a short distance from those coasts, while outside of them the general easterly or westerly wind is still blowing.

The sea breeze begins regularly from nine to ten in the morning; as the sun acquires height, so does the wind gain strength: it is strongest from noon to 2h. p.m., and becomes weaker and weaker as the sun loses height, until at nightfall it falls calm. After two or three hours of calm, and while the land is still somewhat cool, the land wind is commencing, and attains its greatest strength about daylight, then gradually subsiding as sunrise approaches.

These winds generally follow the same course as the sun. In the Gulf of Valencia, for instance, the sea breeze sets in at E.N.E., veers to the southward in proportion as the sun approaches the meridian, passes to S.S.W. and S.W. as he declines in height, and goes down at West as he sets.

When the wind at sea is strong and well established, the sea breeze does not take place as usual; but the influence of the sun which pro-

duces it is still felt. That is, when a wind is blowing along a coast while the sun has power, it hauls out and keeps to seaward, and is more inland at midnight, or else it falls calm. Thus it is that while the wind is S.W. on the coast of Spain, between Capes San Antonio and de Gat it becomes more South during the day, and more westerly during the night, a state of things which very much facilitates coast navigation. The same takes place on the African coast, where the easterly wind hauls to the N.E. during day, and to the S.E. during night, and the westerly wind becomes N.W. and S.W.

Winter Season.—The months of change (September and October) being past, in which generally calms and the meeting of opposite winds from different points of the compass are common, although of short duration, the S.W. winds, commonly called *vendavales* (and also *lebeches*) set in. These winds alternate with North-westers and North-easters.

It may be added, that the opposing winds of the months of change bring abundance of rain, which introduces the winter season. Even the weather of November is very fair, from the meridian of Cape San Antonio to the westward; but in the sea to the eastward in the Gulf of Valencia, as well as the Gulf of Leon, hard North-westers have set in.

Westerly winds begin to prevail in November and December. When S.W. winds are blowing hard in the Atlantic, and for long intervals they penetrate into the Mediterranean with all their strength, being somewhat modified in passing across part of Africa, but regaining their original force on reaching the coasts of Catalonia and France. They are always dirty and accompanied by heavy showers. When they shift to West they become weaker, and the sky is rather clearer; but if they haul to N.W. they blow hard for one or two days, clear up the atmosphere entirely, and then gradually settle down in fine weather.

If on becoming W.N.W. or N.W. they haul back to S.W., a renewal of bad weather may be looked for, worse indeed than prevailed before. It is quite common in the months of December and January, for the S.W. winds to set in and become N.W., with brief interruptions of moderate breezes and clear skies. But at these times navigation is tiresome in the small extent of sea of which we are treating, seamen being obliged to make sure of some port, from not being prepared with sufficient water on board for keeping the sea for several days.

When these winds prevail off the Balearic Islands and the Spanish coast, they are usually from N.E. to S.E. in the Gulf of Leon, producing consequently severe contests of opposing winds in the Gulf of Catalonia. It is common enough also to be sailing with a strong S.W. wind on the coast of Spain, and on reaching Cape Creux to meet a hard northerly wind. The same thing will occur off Cape San Antonio, it commonly happening that in the Gulf of Valencia the wind will be N.W., while on the coast of Alicant it is S.W.

When in February the land is saturated with moisture, and the higher parts of the mountains are covered with snow, the *vendavales* do not reach the coast, or perhaps become converted into winds from

West to N.W. Vessels may be frequently seen from the Straits for the port of Malaga with a S.W. wind fresh for Malaga, and on arriving in the bay will suddenly find it change to West or N.W., but weak, and the same thing occurs in other bays and gulfs of the Spanish coast.

The *vendavales* in February and March lose somewhat of their strength, and alternate with easterly winds, which in these months are accustomed to become very strong, accompanied by dirty weather, penetrating with all their strength into the bays and gulfs of the Spanish coast. If in the Gulf of Lyons they are N.W., they still follow the whole Spanish coast, reaching even the Strait of Gibraltar as easterly winds, but on the coast of Africa they are N.N.E. or N.E., doing much mischief.

(To be continued.)

Journal of Captain Cracroft, C.B., of H.M.S. "Niger."—*New Zealand.*

(Continued from page 193).

Tuesday, January 15th.—I found the state of affairs here most unsatisfactory. The town is nothing more or less than what I long ago described it,* "an entrenched camp." The natives have closed round it, driven off the stock, plundered and burnt most of the farm-houses, and no one is allowed to venture beyond rifle shot of Marsland Hill to look after the remnants of his property. But I may well spare further remarks upon the situation, when New Plymouth, with its strong garrison, hemmed in on every side by a rude half armed foe, affords weekly a standing butt for the local *Punch*, which in one of its latest caricatures exhibits a Maori at one of the gates making the following "neat and appropriate speech,"—"*Please, sir, as we have nearly finished the burning and destroying outside, when will it be convenient for you that we may complete the work within?*" Matters have indeed been brought to a melancholy pass, so that both soldiers and civilians, unable to discover any way out of the discreditable mess we are in, are driven half mad under the shame they are compelled to endure. Whilst the natives, instead of being overawed by British prowess, are highly elated at their own successes, and threaten louder than ever to drive every Pakeha into the sea. Our cup of humiliation seems full to overflowing!

On the 16th, the *Robert Lowe*, s.s., chartered by the Government to convey invalids home, arrived from Wellington, and sailed on the 19th for Spithead, taking our first lieutenant, now Commander Hans Blake, who has been promoted for his services at Waireka 1st March,

* At p. 17 of this volume.

when he was so severely wounded. He carries the goodwill of all hands with him!

Tuesday, January 22nd.—On Saturday I observed from Marsland Hill large parties of natives on Waireka heights, digging, and apparently entrenching themselves: but no attempt was made by the authorities to ascertain their object. Yesterday morning the *Tasmanian Maid*, with some military officers on board, went round the Sugar Loaves to reconnoitre. This manœuvre was performed without any previous communication having been made with me, and a more ill judged one I cannot conceive. In the afternoon, accompanied by Lieutenant Wells and Doctor Patrick, and piloted by Mr. Standish of Taranaki, I ascended to the summit of the highest Sugarloaf, (Paretutu,) a precipitous rock of considerable elevation, difficult of access, but from whence a good view of the interior for miles was obtained. From here we could see the natives very distinctly still hard at work. Reports that a pah was commenced had come into town early in the day, but no palisades were visible. We saw three farmsteads, stacks, &c., in flames, and great numbers of sheep and cattle in the enclosures beyond Waireka, which doubtless had once been the property of the unfortunate settlers. The weather was magnificent, and the water so smooth that a dingy or punt could have landed with perfect safety anywhere along the beach. Noting all these things carefully, at sunset we descended, returned on board, and after due consideration and reflection, carefully weighing the chances of failure against those which promised a successful issue to the attempt, I determined to land and surprise these ruffians if possible before daylight in their half finished entrenchments. The announcement of this intention was received with intense satisfaction by the ship's company. They all feel the degradation daily and hourly accruing here, and enter heartily into the object of the expedition.

Some extra preparation was necessary for the extra risk which the men, who, by the way, were all volunteers, would be exposed to. Special orders were given to the officers and petty officers in charge of the subdivisions and sections. Each man tied a strip of white round his right arm. And at 10h. 30m. p.m. I shoved off from the ship with a landing party consisting of 118 souls (including Mr. Standish, who undertook to be our guide,) besides crews to bring back my galley, two cutters, and a surf boat.

Before leaving I wrote to Colonel Sillery informing him of the expedition, which I told him was undertaken entirely on my own responsibility, and requesting him, if it was consistent with his duty, to send a force out to meet me at daylight, to make a diversion should it necessary, and also to send some ambulances or spring carts to the Omata Stockade. * * * *

The night was calm and fine, and the moon shone brightly. We pulled as quietly as possible up to the Sugar Loaves, and waited between the two outer ones until the moon, set shortly after midnight. Then continued on towards the intended landing place, about four miles distant, situated at the entrance of the little Tapui stream, under

the Pontoko Pah, inhabited by friendly natives, off which we arrived at 1h. 20m. a.m. It was now intensely dark, and I stood close in to the beach to reconnoitre, leaving the other boats in the offing. While thus occupied, we got inside the line of breakers, and a heavy sea broke only just clear of the boat. Our guide, who had also undertaken to pilot us to the landing place, now began to have doubts whether this was the right spot; then he was sure it was not, and requested me to pull on a little further to the southward. He was evidently all adrift, —at all events there was nothing like a landing place to the southward; so we returned and tried to the northward, but all in vain; and I began to despair, for the roaring of the surf was increasing every moment. We continued, however, pulling backwards and forwards, seeking for some inlet into which the boats might be thrust, but without finding any.

At length, soon after 4h. a.m., daylight revealed our position, and showed how utterly impossible it would be to land without running the risk of staving and losing the boats; and with a heavy heart I gave the order to return on board. As we pulled away we could see the natives coming out of the entrenchments, not much more than half a mile from the beach. They little knew what a narrow escape they had had; but such is the glorious uncertainty of this wild coast. * * There certainly was no visible reason for the heavy swell which rolled in between 8h. p.m. and 1h. a.m., during a perfect calm, and completely frustrated my intentions.

In the meantime Colonel Sillery had sent out 300 men, with a 24-pounder howitzer, to the Omata Stockade, where they waited patiently until recalled upon the news reaching the Commandant of my return. And so ended my "failure," which is sure to be sharply commented upon. * * *

But the movement was not altogether fruitless, for the force which marched out from the town unkennelled an ambush, prepared by the natives that very morning near the Whalers' Gate, for the daily Omata escort, and in the skirmish that followed we had a valuable hospital surgeon killed. The enemy's loss was of course unknown.

The Taranaki *Herald* had the following remarks upon the expedition, which I cannot forbear quoting.

"Tuesday's expedition to Waireka must undoubtedly be called abortive. Like many a very wise scheme, it failed entirely of the purpose for which it was planned. But the general intention was good, and the plan at least better than that of the first Waireka expedition, which for several months was the only success of the war. The position of affairs in and about the town was such as to justify something of a sharp remedy at the hands of any one who had it to apply, and we have cause to thank Captain Cracroft for his effort.

"The same perfect inaction and appearance of fear which preceded and attended the first fortnight of General Pratt's presence among us was emboldening the southern natives to creep up to the very town and to threaten an attack. The sight of eight hundred of his countrymen cooped up within a semicircle of a mile radius, while the Maori,

no stronger in numbers, danced his war dance around them, and fired into our narrow bounds, was too much for the gallant commander of the *Niger*. Long may such a sight be intolerable to our brave seamen! The expedition as undertaken was a strong remedy, but one which if the *Niger's* crew had landed, the result would have justified. As it was, the advance of our troops and volunteers in all probability saved the lives of the next escort to Omata by unkennelling the ambush at the Whalers' Gate. It also reminded our neighbours the Ngatiruanui that the very men who discomfited them at Waireka last March, were still alive, and not more nervous about encountering them than at that time."

January 25th.—The *Star Queen*, a fine Sunderland built ship, arrived the day before yesterday with 350 men of the 57th regiment, whom she embarked at Bombay, and has brought round from Auckland. This arrival strengthens Colonel Sillery's hands, as they are to remain in garrison at Taranaki. The ship only anchored at sunset, and they were landed immediately, just in the nick of time, for at 9h. p.m. an attack was made on the block house in Carrington Road. Blue lights were burnt, and we were all in readiness to land, but were not summoned, and before midnight all was quiet again. On the same morning, before daylight, the natives attempted to surprise No. 3 redoubt, near the Kairau Camp, when they were signally defeated with a loss of fifty-two killed and missing, of which we buried forty-nine ourselves; the wounded may be fairly estimated at double the number. The attack was admirably planned by the enemy: during the night the storming party crept unseen into the ditch, and a large number advanced to their support, but were detected creeping through the fern, and were all driven back by the reinforcements of our troops, which speedily arrived after the alarm was given. Our casualties were five killed and eleven wounded, including Lieutenant Jackson, of the 40th, who was shot through the head. This defeat will be a heavy blow to the Waikatos, and the death of so many of their leading men may have the effect of inducing this tribe to withdraw from the conflict. * * *

The water has been so smooth here lately that I was enabled to haul the *Reita* brig alongside, and succeeded in getting forty tons of coal out of her. There are not many days in the year that two vessels can lay alongside each other off Taranaki.

January 29th.—The *Cordelia* arrived at noon from the Manukau with orders for me to return to Onehunga immediately. Is there another panic? Started at 2h. p.m., called off the Waitera, and left at 8h. p.m. Crossed the bar at noon on the 20th, and moored below the White Bluff at 4h. p.m.

I found all quiet at Auckland, but the Governor was about to start for the Bay of Islands in the *Iris*, to hold a "korero" with the northern chiefs, who, it is said, are becoming unsettled in their minds, and more than half disposed to join the insurgents, which is not very surprising.

Completed provisions and filled up with coal from the *Moa*. Find-

ing the ship touched the mud in swinging, I moored head and stern, with 48 fathoms on the bow chain, and 40 fathoms on the one astern. On our way up the starboard foremost boiler gave out, and it took us the best part of ten days to patch it up. While this was doing we had a good overhaul and refit aloft, which the rigging wanted very much.

February 17th.—The Commodore arrived to-day, most unexpectedly, in the *Fawn*, from the Waitara, with an urgent demand for more men from the General. And at 3h. p.m. on the 20th, we started with upwards of 300 belonging to the 57th and 65th regiments, and volunteers for the Taranaki militia, besides some seventy tons of baggage, which was piled up to the top of the hammock nettings fore and aft: the ship was never so crammed before, and was brought down nearly a foot below her deep draught. The Commodore took a passage with us, so he had an opportunity of seeing what a perfect baggage waggon we have been made, for the *ninth* time, since this war commenced,—in less than a twelvemonth. * * *

On the 21st, at 1h. 30m. p.m., we anchored off the Waitara, and before dark Major Logan and his men were all landed. The greater part of the baggage had, however, to wait for the next morning's tide.

Friday, February 22nd.—I have been for some time anxious to visit the "sap," which now occupies exclusively the attention of our military men, and promises to become almost as famous as that before Sebastopol, of which it indeed seems to be a humble imitation—with a difference!

It certainly is an original idea to drive saps by the mile in the direction of the enemy,—with what object Providence only knows. It surely cannot be contemplated to waste time and labour in approaching every New Zealand pah upon the scientific principles that would be applied to a modern European fortification. The Maories have neither shot nor shell to disturb us in our trenches, yet we appear to go to work as timidly as if they, like ourselves, possessed all the approved appliances of modern warfare: while they look on with contemptuous scorn at our proceedings, and, it is even reported, recently sent a notice to the General of their readiness to carry the sap in any direction he wished at the rate of a shilling per head per diem,—but perhaps this is only a camp shave.

Doubtless various opinions are entertained here as to the difficulties of bush fighting: from the extreme *cautious* view that a screen of a few trees is an impassable object to white men: to the extreme *plucky* view that nothing is necessary but to go in and win. I am inclined more to the latter than to the former, being satisfied that when the Maories feel that we can encounter and repulse them in the bush, can destroy their food stores and crops, they will understand the helplessness of striving against us. But without committing myself to any decided opinion upon so important a subject, I may venture to say that up to this period we do not appear to have profited much by the experience of our former wars in this country, for the early operations at the Bay of Islands, badly as they were thought to be conducted, would compare favourably with the present ones.

There we attempted to subdue two powerful tribes with a mere handful of troops, who were always without tents and frequently without food. Deficient throughout the greater part of the campaign of artillery, and destitute of all the *materiel* necessary for attacking a fortified position, a force that numbered less than three hundred men at the beginning, and never, at any time, exceeded eleven hundred, not only held their own, even after a terrible disaster which reduced them by one third, but succeeded within nine months in destroying every fortified place belonging to the enemy, reducing him to starvation, and compelling him to sue for peace. In 1845 the cry used to be,—"If we only had a few heavy guns, and a couple of hundred more men, we could surround a pah and not a Maori should escape." And doubtless the soldiers would have made their words good. But now we have a great many heavy guns, and we count our troops by the thousand, yet we do not invest pahs,—we do not astonish the enemy in the morning by the sight of a battery or a breastwork within two hundred yards of him that was not there the evening before,—but we build redoubts, and leave the enemy to astonish us in the early morning by attacking them.

The soldiers of 1846 and 1860 are the same in quality; but the commanders are very different. Neither of the latter has, however, in his day appeared to understand the nature of the service in which he was engaged. One attached so little importance to a Maori pah, that he attempted to carry it unbreached, with fixed bayonets, and was repulsed with enormous loss: the other attaches so much importance to these fortifications, that he wastes time in making regular approaches to them, which time the Maori employs in erecting another pah to fall back upon when the beseiged one becomes untenable, and in this way intends to give us endless practice in siege operations.

The capture of these stockades alone will not, however, bring the war to a termination; the natives must be captured also. But judging from the manner and spirit with which it is being conducted, there is a very small chance of the latter consummation arriving, however devoutly to be wished for. Hitherto, indeed, it has been only a war of defence on our side; but a war of subjugation cannot be waged on defensive principles. Generals who prefer the spade to the sword may defend a position, but they will never conquer a country. The spade is the weapon of the weaker; and an invading army that finds or thinks itself weaker than the enemy it has gone to subdue, had better stay at home.

To-day I had an opportunity of visiting this famous *sap*, and rode out to the advanced position with the Commodore and Dr. Patrick, a distance of about five miles from the camp. The weather was brilliant, and the Commodore, who has been a performer in nearly all the scenes enacted here, was a capital cicerone.

We took the road by Puketakauere, the site of the disastrous affair of the 27th of June, now occupied, I have before stated, by a block house; thence to No. 1 or the Kairau Redoubt, which was planned and executed under a heavy fire, the enemy trying every

ruse to check the progress of the works, without effect: part of the 65th regiment is now in garrison here. We passed by Nos. 2 and 3 Redoubts, which are no longer tenanted. Here the "sap" commences, a double sap with traverses, with two more small field works, about four hundred yards apart, as covering places for the supports, and shelter at night for the working parties. This sap, the longest of which we have any record, is terminated by another redoubt, No. 6, on the edge of what was formerly a peach grove, and a favourite spot of the natives, who had bestowed some pains on its cultivation. It was from this point that the retreat of the 1,400 under General Pratt commenced, leaving one man in the hands of the natives, who may have numbered *seventy* or *eighty!* A full account of this inglorious affair has been already given. At this redoubt we dismounted and proceeded on foot, accompanied by an escort furnished by Colonel Wyatt, who is in command here, to No. 7 Redoubt, where the sap recommences. The road crosses a deep gully, and skirts a dense bush, which has been cleared for a distance of about two hundred yards, a necessary precaution to prevent the natives approaching too close unobserved. A few yards off it, on the left hand side, there is a beautiful view of the Waitara, flowing some five hundred feet below through a narrow gorge, the opposite bank rising almost perpendicular, and densely wooded, excepting where, here and there, a white cliff of magnesian limestone peeps out through the luxuriant foliage. The scene is highly picturesque, well worthy of the pencil of an artist. We had now a good view of the Te Arei and Pukerangiora pahs, the head quarters of Wirimi Kingi's fighting chief, Hapurona, situated on the crest of a rugged hill, honeycombed with rifle pits, up to which the sap is being carried.

Colonel Leslie, of the 40th, was in command of No. 7 Redoubt, and did the honours of his post. We spent some time with him at the head of the sap, which is progressing at the rate of about fifty yards a day, under a continual whistle of bullets, which are sharply replied to by the rifles of the covering parties, and a shell occasionally from a 24-pounder howitzer.

Whatever force the enemy have in front of us is carefully concealed. I watched closely during the time we were in the trenches, and only saw one native and two great heads, like mops, projecting over the nearest hill, so that whether there are fifty or five hundred, it is impossible to tell, although I am bound to say no attempt has been made to ascertain. The noise they make at night is hideous, hooting and howling, and calling out to us in good English to come on, &c., &c. On our side we have in this redoubt four hundred soldiers, a detachment of the naval brigade, with an 8-inch gun, besides two 24-pounder howitzers and artillery to work them. * * *

We returned to the camp by Matoriko-riko. Naturally a very commanding position, the natives had exhausted all their ingenuity in constructing here a most formidable pah, protected by a series of field works, consisting of rifle pits, with covered ways leading to the gullies which terminate on three sides of it in an extensive swamp. General

Pratt invested the place on the 28th of December with more than a thousand men, and a protracted defence was anticipated; but the natives made scarcely a show of resistance and evacuated it on the 29th, retiring to Pukerangiora. On the site of this pah a block house has been erected, similar to the one at Puketekaure, and it commands a splendid view of the whole valley of the Waitara. The remains of the L pah, the scene of poor Colonel Gold's discomfiture on the 15th of March, were barely visible through the high fern as we rode past, and after a hospitable reception at the naval mess tent, we returned on board. * * *

February 26th.—An alarm was given yesterday, and fears arose for the safety of Taranaki, owing to heavy firing having been heard in that direction, and at the General's request I was moved up off the town, and anchored at 7h. p.m. between the buoys, ready for anything; but all was quiet. The firing heard was an attack upon the Omata escort. This is the anniversary of our departure from Auckland with the first detachment of troops, artillery, and ammunition, and little did Colonel Gore Brown imagine, when he sent to me in hot haste the evening before, whither his measures were "drifting" him.

"Ah me! what dangers do environ
The man that meddles with cold iron!"

Friday, March 1st.—The *Fawn* arrived yesterday at the Waitara with the English mail, (London dates to December 26th,) and our portion came up in the *Tasmanian Maid;* with some interesting news from the "front" as well. Another redoubt has been thrown up and the sap continued from it. The natives keep up a sharp fire upon the working and advanced covering parties with some effect, four men having been wounded,—one since dead. The sap is now advanced to within 350 yards of Hapurona's pah, and *volleys* are fired at the working parties morning and evening as they go to and return from their work; a desultory fire being kept up on them during the day as usual. Our troops in reply expend, I hear, about 5,000 rounds a day, besides shells, with what result is of course unknown; but occasionally a *tangi* or lamentation for the dead is heard. On Tuesday night there was more than the usual howling and hooting, and a fire was seen at the head of the sap. In the morning, the sap rollers were missing, as well as a quantity of gabions, many of the sand bags were found also cut to pieces, and about a hundred and fifty yards of the sap more or less destroyed. In the course of the day the rollers and gabions were exhibited in front of Hapurona's pah for our edification, and the natives may well be proud of the results of their enterprise. The *Cordelia* left to-day for the Manukau, and is to return immediately with a battery of Armstroog guns and mortars, which are expected hourly at Auckland. When they arrive it is expected that great things will be done. *Nous verrons!*

(To be continued.)

A Trip to Tananarivo:—*Madagascar.*

(Continued from page 181.)

When the time for my official reception arrived two officers came from the palace with a guard of troops to announce it to me. Every European, all Frenchmen, who happened to be at Tananarivo was invited to meet me, but the missionaries, for good reasons, declined. M. Laborde (senior) on this occasion, as well as on all others, served me as guide and interpreter.

The entrance gate of the palace, of stone and with hexagonal pillars, surmounted by an eagle with outspread wings, similar to that which ornaments the work at Traonvola and the Palais Royal, has a pleasing picturesque effect. To the left on entering, and immersed by other parts of the building is the tomb of Radama the First. Every one on passing this monument turns round and salutes it, pronouncing several words which I could never comprehend.

The Hovas, among others, have good reason for paying this respect to the ashes of him, who, although dead for thirty-six years, has by his great enterprise and conquests succeeded in making them what they now are. This monument is said to contain very considerable riches; but although its guardians may watch day and night over their precious relics, it is not improbable that the metallic stores so sacredly deposited have not been altogether held inviolate. This, it appears to me, is a resource at all times very uncertain for the power which reckons on it at a moment of financial crisis.

When I arrived at the entrance of the court there were soldiers inside facing the tomb and military bands commenced playing our national air. The minister of foreign affairs, Rahaniraka, presented himself to me and conducted me to the reception room, and, taking me by the hand, was most careful to place the right foot in it first, which seemed to be a matter of great importance. This small piece of ceremonial had been pointed out to me so frequently that I thought it most prudent on my part to keep the step with my conductor.

Radama awaited me at the foot of a large sofa which served him as a throne. He was attired for the occasion in the uniform of a French general, complete in all respects and looked to the best possible advantage. He is by no means on a large scale, although not small, and has nothing about him that is unpleasant. His manner is frank and open, and there is vivacity and intelligence about him. His features are regular, fine eyes, excellent moustaches, black waving hair—not stiff and straight like that of the Hovas, nor woolly as among the Malgaches, his colour clear like bistre, all enlists one in his favour as a first impression and imparts a favourable opinion of his character. One feels that he is a man who may lack firmness, but whose calm mind has no crime for the reproach of his conscience.

On his right, behind the sofa that he had reserved for me, were all the important personages of his capital in their rich brilliant military costumes. On his left were the ladies of the court, dressed in satins

and brocades of the most lively colours, with their amazing headdresses, covered with a profusion of ribbons, flowers, and feathers, as well as lace. Between the ladies and Radama the two adopted children of Rabodo occupied the place of the Queen, who was prevented from assisting on this occasion by some indisposition.

When we had all taken our places my first proceeding was to hold up a fifty franc gold piece, which I presented to Radama as *manasina*. I have not been able to trace the origin of this formality. All that I can ascertain of it is that it is the general custom to present the King with a piece of money on every occasion of asking him a favour. It is in fact the consecration of the business which you may have with him. Thus, if he gives an officer increase of rank, this person sends him a dollar to consecrate the nomination: two young persons being desirous of marrying, or being divorced, after having explained their motives, offer his Majesty a piece of money, which is accepted or refused according to the fate of their demand. Strangers no doubt conform to this custom first when they have to address the King on the subject of claim or privilege; and now that he attends to all circumstances brought before him, to fail in it would be on my part an act of gratuitous disrespect.

I presented my credentials afterwards, and opened the question which was the object of my visit. Radama would not remain on his throne after the official reception was over, but came and seated himself by me, entering into an intimate conversation. He told me much of his future projects; asked me with much feeling about his friend, Mr. Lambert, who had recently gone back to France, and whom I had met at Isle Reunion, vowing that my example would attract to him many other Europeans to assist him in his efforts and contribute to the prosperity of his country. He then took me to a table on which were a variety of wines, and proposed the health of Napoleon the Third, which I accepted, and returned with that of his Majesty.

The Hovas are very fond of these voluntary opportunities for a glass, so that every one who was present took his turn with the toast. Compelled as I was thus to accept it, and also to respond, I found myself in a position for requiring all the wine in the island; and if I had not taken on myself to stop the flowing of these generous sentiments, the abundance of vows that would have been made in my favour, would assuredly have thrown me into a high fever. In fact, I took myself home after having assisted at a display of feeling in my honour; and although I had a good opportunity of giving my attention to all the proceedings, I did not observe on this occasion, nor any later, the singular action of the foot mentioned by Madame Ida Pfeiffer.

The following days were devoted to forming an intimate acquaintance with the principal persons among the merchants. Without entering here on unnecessary detail, it may be as well to add a few words on those who have the greatest influence in the government.

Besides the absolute power vested in the king, there is another to which the name of the executive power may be applied, and which even from its prerogatives alone is one of considerable importance. It

is simply that which is exercised by the commander-in-chief of the army. This person must be one of the common class, and seems intended as a balance to the influence of the aristocracy in the decisions of the chief officer of the state. He is a fixture in his office which is also hereditary in his family, with the view no doubt, that having no inducement to commit a fault, he is the more independent in his conclusions, and without any subsequent causes for regret may defend the people's interests, of which he is the representative. He commands the army, and gives away all the appointments and offices. The person in this position at present is named Rainivoninhitriniony, in three words, Raini Voninhitri Niony. Entirely plebeian as he is, he has lately obtained the hand of a lady of nobility; an alliance which has been considered as unfavourable by her class. He passes for a just man, but one of little energy. His brother Rainilaiarivony, who is to succeed him, is, on the contrary, a man of decision, an active and highly estimable man, and it is to be hoped that he will succeed to his office while he is yet young, for even now he exercises much of his brother's prerogatives. Two of their cousins, Rainimahavaro and Rabamelo, are also two good men, whose council and advice are often of good service to Radama.

The officer of most importance about the person of Radama, is without doubt, Raharolahy. He is a man of immovable nature, who has passed several years in England.

Another person is he who has served to introduce me to Radama, the foreign minister, named Rahanioaka. Educated in England, he has been in correspondence with many Protestant persons in power, although he has never embraced their religion.

It may be observed *en passant*, that the Hova aristocracy have titles of nobility corresponding to the word "*de.*" The principal are "*Ra Roandria, Lay,*" &c.; and they could write if custom had not established the contrary, Ra Dama, Ra Rode, Ra Navalona, Roandria, Narosy, &c. The order in rank of public stations is entirely military. One occupies a higher position in proportion to the number of steps called *voniahitra* that one has. The expression is literally, the flower of the plant, which we translate into honor. The steps commence with that of a common soldier, which is the first step, the corporal is the second honor, and so on. It is necessary to have the thirteenth honor to be commandant of Tamatave. The fifteenth honor is the highest step, and there are only four dignitaries who have reached it.

The Hova army, about 30,000 strong, is replenished by pressing. A soldier who is thus entered remains so always, at least, as long as his physical powers render him serviceable. Under the last reign, the greater part of the army was employed in public works, the remainder being stationed at garrisons distant from the capital; a guard of some hundred men only remaining in the capital, dressed in English uniform. At present, Radama proposes to reduce his troops to ten or twelve thousand men, and allow the rest to return to agricultural pursuits, in the hope that foreigners will be the means of improving

Madagascar with the introduction of industrial arts, which he is doing all in his power to encourage.

No one receives any wages from the Hova government, neither the soldier nor his officer. Hence he who has not private means is compelled to work for his living. The soldier when he is in garrison has all his family with him. He obtains grants of land, and cultivates rice. Sometimes he does a little in the commercial way. In a word, he gets his living as he can, for he is neither fed nor paid. An officer engages in commercial pursuits, with the assistance of his subalterns. He exercises from time to time exactions, presses his employés, and is always striving to realize a few dollars, for the purchase of one or two steps, with the view of attaining a position in which he can make still greater returns.

It is sometimes asked, what is the religion of the Hovas? to which it may be replied in all truth, that money is the deity which is superior to every other in their minds. Steps of advancement in rank, place, favour, everything is purchased; and from thence at present is the chief revenue of the state derived. Coin is tolerably plentiful among the Hovas, in the shape of five franc pieces, commonly called by them current dollars; they have also the Spanish and Mexican dollars, to which they give the name of *cinta* and *tanamaso andra*. The dollar is generally known amongst them by the name of *aransa*.

The different values of these are regulated by the price of oxen, which are always considered as good as money. Small money has no currency, and the deficiency is made up by clipping the dollar into pieces. Sellers and buyers each in their turn weigh the pieces which thus pass between them with little scales, carried about them. In commercial transactions the dollar has a fictitious division into *centimes*, as in the neighbouring colonies. But this simple money of figures it is necessary to convert into metallic payments. The monetary system adopted in the country is entirely different; this is founded on the Spanish dollar, divided into twenty-four parts, called "*mena*." The *voamena* in the ordinary language has its multiples and its fractions.

Each pair of scales is furnished with five cylindrical iron weights, pointed at the two ends. The two largest each weigh one *loso* or half a dollar; the third is the *kirebo*, or fourth of a dollar; the fourth the *sikasy*, the eighth part of a dollar; and the last is the *roavoa-mena*, the twelfth part of a dollar. For those weights which cannot be obtained by a combination of the foregoing, grains of straw rice are employed. Allowing that the *voamena* weighs forty grains, which makes thirteen grains for the *ernambatra*, and six and a half for *varidimivinty*. Here then is the statement of each:—

For one	*varivinty*	.....	1½ grains
,, two	,,	.....*3	,,
,, three	,,	.....*4	,,
,, four	,,	.....*5	,,
,, five	,,	.....*6½	,,

* So in original.

It is evident these last fractions are not of much importance, but for precious metals, &c., such as gold and those matters. But they are quoted to show the Hovas carry out well the combinations of calculations.

They have the decimal system of numeration, not the quintinal like the Americans; but they count their numbers by commencing with units. Thus for one thousand eight hundred and sixty two, they say *roa*, amby *enimafolo*, amby *valo-zato* (two *plus* sixteen, *plus* eight hundred, *plus* one thousand.) It is the contrary among the Malgaches.

The year is divided into twelve lunar months as among the Arabs. It has only then about 345 days. The result is that for an interval of some years, the dates do not correspond to the same seasons, a great inconvenience in agricultural pursuits, which thus have not the periods assigned for the several labours. It is Radama's intention to remedy this, by adopting our calendar. The names of the lunar months commencing with the new moon of the 31st of December, 1861, are *Adijady, Adalo, Alahosoty, Alahamady, Adaoro, Adizaozo, Asorotany, Alohasaty, Asombola, Adimisana, Alakarabo, and Alakaosy.*

Lastly, the writing used by the Hovas is quite modern. It is composed of Roman characters, combined (if one may judge) as convenient by the missionaries to represent the sounds of the language. They have not thought it necessary to introduce the letters c, q, u, w, x, and their alphabet is composed only of twenty-one letters, and the o has the pronunciation of ou.

In the greater part of the words, and according to certain rules, the last syllable does not make itself heard. Thus *Rakoto* is pronounced Rakout, and *Ranavalona* Ranavalon.

(To be continued.)

Iron *v.* Wood.

Sir,—After the recent debates in the House of Commons on the subject of iron ships *v.* wood ships, and the practical allusions to galvanic action and fouling by Sir Morton Peto, I take the opportunity, as a practical man, who has made this interesting part of the subject his study for upwards of thirty-five years, to offer a few remarks upon what appears to be generally so little understood.

The question of ships fouling is one of very old date. The galleys of the ancient Greeks and Romans were coated with wax to obviate this.

Cærulea ceratas accipit unda rates.—Ovid.

Tallow was also used, and is still employed on the Greek and Italian wood ships of the present day, over a layer of brimstone, first applied to prevent the attack of the teredo; but both wax and tallow soon get very foul, and these ships are careened very frequently.

Sheet-lead was formerly used for sheathing the wood ships of the navy, to prevent the ravages of worm, and then coated with a mixture of tallow and tar; but fouling took place so rapidly that it was necessary to hog, dock, careen, or lie aground very frequently, in order to cleanse the bottoms. About seventy-five years ago copper sheathing began to be in general use in the navy,* it having been found to possess the advantage of keeping clean, owing to the action of the sea water causing it to assume a "*positive*" electrical state when the ship was under way, or riding in a tideway in salt water, for without friction to excite the electrical action copper sheathing soon gets foul.

My experience has enabled me to witness the fact of a ship of war, after lying some time at Bermuda, with tons of oysters, barnacles, coral, &c., on her copper bottom; but this action was found, nevertheless, to wear or waste away the copper by very delicate exfoliation —hence the cleansing process—and Sir Humphrey Davy was applied to in 1823 by the Admiralty of that day to devise some means for obviating this expensive deterioration.

The great chemist, after making a series of experiments, proposed what he called "protectors," composed of a mixture of iron and zinc, which were attached in thick oblong slabs, rounded off at the edges, to different parts of the bottom over the sheathing; but the remedy was found to be worse than the disease, as the copper sheathing now assumed a "negative" state by galvanic action, and soon became very foul, so that these "protectors" were done away with in 1826, and entirely removed in 1828; the last ship from which they were removed being H.M.S. *Blossom*, on her return from the interesting voyage of Captain Beechy to Behrings Straits, with a view of meeting poor Franklin.

It was my good fortune also to be present when the *Blossom* was docked at Woolwich for examination. The copper was very foul with oysters, barnacles, weeds, &c., particularly near the "protectors," which were much reduced from their original size, and had become quite soft and plastic, so as to cut like cream-cheese, and as the water left the ship smoked, and became quite hot by the rapid absorption of oxygen; but the copper sheathing itself did not appear to have lost much of its original weight upon being stripped, and I noted these interesting particulars for future investigation.

It was my fate to be then (1828) serving in one of the first steamers of the navy, converted from a ten gun brig, and everything connected with steam afloat being in those days novel, even to the dockyard officials and engineers, it appeared that where the copper feed and blow-off pipes were attached to the boilers with copper bolts, after about twelve months' action in salt water, there the iron became rapidly eaten away, and the large copper steam pipe which passed with its bell-mouth from the steam chest along the upper part of the

* It was introduced twenty years before this, but suspended for a while, as the *iron* fastenings were all destroyed by galvanic action, but copper fastenings were then introduced, and copper sheathing in 1788 became general.

boiler inside, coming in contact with the angle of the steam chest at the bend, soon ate a hole right through the boiler; this was mended with a patch, and the copper pipe, at my suggestion, was taken down, painted, woulded with white spun yarn over fearnought, then coated with a particular metallic composition, new No. 1 canvass sewn tightly over all and replaced; and by this means no further injury ensued. It was my lot to notice also that the iron spars, or supporting arms for the paddle-boxes in this ship, which touched the copper sheathing at the water-line, soon became corroded to an alarming extent, and at the instance of Mr. Lloyd, of Woolwich Dockyard, a small portion of the sheathing was removed, and sheet lead substituted, which arrested the galvanic action.

When I, some two years after these incidents, was appointed to H.M.S. ———, at Port Royal, Jamaica, I found that the mooring swivel had given way the year before, and had been replaced by a new one; upon examining the swivel at the dockyard, I at once saw that the cause of its breaking arose from galvanic action, and recommended that the swivel should be hove out of the water instead of being kept awash, and the two first links of the bridles served the same as I had done with the steam pipe on board the ———, and I never heard that any accident had subsequently happened there, although I recollect that H.M.S. *St. Vincent*, 120, parted her mooring swivel at Malta, in 1833, and drove on shore from this cause. I am also of opinion that H.M.S. *Formidable* parted from her moorings at Sheerness last year in the same manner. Indeed, I have every reason to believe, that when chain cables part under no very extraordinary circumstance of bad weather, (which is of every day occurrence,) that some of the links have become injured at some previous time, by lying in close proximity with the copper sheathing at the water line in harbours subject to continued calms, such as the anchorage at the Chincha Islands, and other places on the coast of Peru.

Well do I remember that in 1845, at Islay, the port of Arequipa, two Peruvian ships of war which had been lying five month at anchor there, parted their chain cables at the water line, drove on the rocks in a moderate breeze, and went to pieces. I had examined these cables from time to time, as deterioration gradually went on, and reported the same to the captain of the port; and only a week before they parted, observed that the copper on the stems of both ships, at and below the water line, was now thickly covered with large barnacles and weed, and the links of the cables had become reduced to less than half their original thickness.

Coppered paddle-wheel steamers invariably foul opposite the arms and runs of the wheels. My observation has shown me that the copper sheathing of wooden steamers, both in the navy and merchant service, thickly coated to the extent of one third the diameter of the wheels, after a voyage to the West Indies, with oysters, barnacles, coraline, wormshells, and weed,—the copper becoming "negative" by the proximity of the iron wheels, which require to be turned frequently lying in harbour, to prevent the inner arms from being de-

stroyed by galvanic action. The inner arms and rims of H.M. steam sloop *Cormorant* were reduced to the thickness of a dollar on a single voyage, under sail, between Tahiti and Valparaiso, in 1844, and were obliged to be renewed, the copper sheathing opposite being unusually foul on this occasion.

The French armour-plated ship *La Gloire*, is an illustration of the result that may be expected by allowing the iron-armour plates (which of course cannot be avoided in the present mode of constructing invulnerable (?) wooden ships) to come down to the water line, thus connecting the electro-galvanic current by the medium of the salt water and copper sheathing all round the ship, and setting up a most powerful galvanic battery, rendering the copper sheathing "negative;" consequently these ships will foul as rapidly, or more so, than iron ships, unless coated with some self-cleansing composition, such as is used by the Peninsular and Oriental and Royal West India Mail Packet Companies and applied some eleven or twelve months since on trial upon the iron ship *Defence;* but the difficulty of preventing the destruction of the submerged armour-plates is a serious matter, requiring much thought. The following extracts are copied from a French marine journal, the *Moniteur de la Flotte:*—

"L'échouage de la frégate la *Gloire* dans le bassin de Castigneau a permis de constater trois phénomènes auxquels on était loin de s'attendre d'abord; le trop grand rapprochement du doublage en cuivre des plaques en fer immergées de la cuirasse, ont etabli un courant galvanique qui, produisant l'effet d'une pile voltaique, a fortement détérioré le blindage dans les parties placées sous les lignes d'eau du navire.

"On a ensuite découvert parmi les masses de mollusques qui couvraient la carène, un type de coquille complétement inconnue et qui paraît avoir été produite sous l'influence du même courant galvanique car elle est d'une telle sensibilité qu'elle s'epanouit au moindre attouchement."

"La frégate cuirassée la *Gloire*, ayant terminé le nettoyage de sa carène, sortira bientôt du bassin de Castigneau, ou elle va être remplacée par le vaisseau le *Donawerth*, qui fait partiè de l'escadre d'évolutions.

"On assure que plusieurs vaisseau de l'escadre subiront la mème operation, afin de nettoyer leur cuivre, et de visiter leurs œuvres vives pendant la mauvaise saison."

Sir Morton Peto, the hon. member for Finsbury, a practical man, stated during the late debates, that—

"It had come to his knowledge within the last few days, and he was prepared to stake his character and reputation on the proof of the fact, that the wooden vessels lately made by France in their navy, which had copper bottoms, practically became as foul as any of the iron ships in the navy. Sir Humphrey Davy had argued that by placing a belt of zinc around the copper it would prevent its wearing

away; but the result had shown that though the galvanic action of the zinc on the copper prevented it wearing away, it took away the cleansing quality; and the *Gloire*, on being docked the other day, had forty tons of barnacles and grass taken off the bottom."

This is far more than the *Warrior* and *Resistance* put together had accumulated in proportion (see *Times* of 10th of September, 1862); and both these ships at that time had been coated with liquid copper!

Copper, in any shape, will be found eventually to injure iron, unless every part of the surface is effectually isolated by an under coating that cannot be rubbed up or chafed, a thing practically impossible on board a ship, for galvanic action, although slow in its operation, is ultimately sure in its effects. It is a certain law of Nature, and salt water with iron in the presence of copper although not forming so powerful and destructive a battery as sulphuric acid and zinc, nevertheless is sufficient to destroy the iron eventually.

Mr. Ewart, the hon. member for Liverpool, stated during the debate that one of the large iron steamers of the Peninsular and Oriental Company, launched in 1847, and lately sold for conversion into a sailing ship, after fifteen years of arduous service in India and the Mediterranean, "upon being examined by one of Lloyd's surveyors last August, was found to have all her iron plates and rivets perfectly sound on the outside," being only injured on the inside here and there where copper pipes had lain on the bilges leading to the boilers, and it is well known that this ship had never had any preparation of copper applied to her bottom, although the directors and marine superintendents had been frequently urged to try liquid copper. This ship contrasts very favourably with several iron ships of much more recent construction, which have lately been found "to have their plates reduced to the thickness of writing paper,"—see *Times* and *Army and Navy Gazette* on H.M.S. *Triton* and *Sharpshooter*,—whilst others have been obliged to have entirely new bottoms—it is said by having used liquid copper.

It has been proposed to enamel the bottoms of iron ships; but, unless the surface can be kept intact, which is impossible in practice, from the rubbing of the chain cables, running over a buoy, &c., wherever the naked iron is exposed. If liquid copper be used the iron will be eaten away, for enamelling will not *per se* prevent fouling; witness glass bottles, and pieces of glazed earthenware, fished up from the bottom in tidal waters covered with oysters, limpets, weeds, &c. This process was tried twelve years ago and failed. Bitumen mixed with arsenic, blacklead, &c., has been tried, being laid on thick, and polished when cold with chamois leather, and brushed with powdered blacklead, a very expensive and laborious operation, on one side of a large iron steamer going to Australia, against the preparation used by the Peninsular and Oriental and Royal West India Mail Companies on the other side, at about half the cost of the former. The polished side looked like a patent-leather boot, and great expectations were looked forward to. However, on her return from Melbourne,

upon going into dock, the polished side was found to be like a door mat, covered with shellfish and weeds! some cartloads of which were scraped off; but lo, and behold! the other side was perfectly clean; the cleansing process, by this inexpensive and simple preparation, being effected by gradual exfoliation, somewhat after the manner of copper in a *positive* electric state; and it is the general opinion of practical men that this simple process will be found the best thing for keeping iron ships clean and sound for any number of years by giving them an occasional coating.

The iron fleet of the Pacific Steam Navigation Company have kept their station in the Pacific, carrying the mails with the greatest regularity for the last fifteen years, on a coast proverbial for fouling, by coating with this inexpensive and simple preparation every six or eight months, without requiring to go into dock. The fact is, an iron ship can be fearlessly laid on shore, where there is a good rise of tide, without the least injury or risk to her frame or bottom; but with a wooden ship a dock is indispensable.

PROTECTOR.

To the Editor of the Nautical Magazine.

Loss of H.M.S. "Orpheus,"—*on the Bar of Manukau Harbour. New Zealand.*

Another wreck of a ship of war, with a fearful amount of loss of life, has blotted the page of our naval history of modern times. The particulars of this sad event are thus related in the local papers:—

Yesterday morning (8th of February) at an early hour the inhabitants of Auckland were horrified by the appalling intelligence that her Majesty's ship *Orpheus*, for some time back expected on this station, had been totally wrecked in attempting to cross the Manukau bar, and with the awful loss of one hundred and ninety souls out of a ship's company mustering two hundred and sixty officers, seamen, boys, and marines.

The *Orpheus* (a fine new corvette of twenty-one guns, 1,706 tons, 400 horse power) sailed from Sydney on the 31st of January, and, after a fair passage, under canvas, fetched the land off the Manukau Heads on Saturday at noon, (7th of February.) The ship was at that time under all plain sail and within eight miles of the entrance, the signal flying on Paratutai "Take the bar,"—Commodore Burnett and the master being at that time on the bridge. Steam was got up at once, the Commodore determining to go in: the lead was kept going, a sharp look out was observed, the ship steering East until 1h. p.m., and then N.E.b.E., the Nine Pin Rock on with Paratutai, being in accordance with Drury's sailing directions in the *New Zealand Pilot*. At 1h. 20m., the ship bumped slightly, but still went ahead;

at 1h. 30m., however, she struck hard, and orders were given to back astern full speed. The engines never moved; the ship fell off broadside to the rollers, the sea knocking away her stern-post, port bulwarks, and boats, and making a clean sweep over all. The wind was from about S.W. to W.S.W., a stiff breeze, with occasional puffs.

In this dismal plight, Commodore Burnett, whose coolness and decision was the theme of admiration among his officers and men, gave orders to Mr. Fielding, midshipman, to take a cutter with the records, ship's books, and other articles; but, on losing sight of her, fearing that she was swamped, the pinnace was got out, and, with Lieutenant Hill, Mr. Amphlett, Paymaster, (formerly of *Dido* and *Niger*, and well known and esteemed in Auckland,) despatched to her assistance, with instructions to push on afterwards to the Heads, in the vain hope of obtaining relief through White's lifeboat, known to be stationed there; but, alas! without a crew to launch or to man her. It was an awful moment; but it is gratifying to know that even in this extremity all hands, officers and men, spoke in praise of each other, and of their gallant chief, who expressed a determination to be the last to quit the wreck. After the pinnace had left, the launch was got over the side with forty men to lay out anchors, in the hope of making grapplings fast to haul into smooth water. The ebb tide, unhappily, swept her under the bows, where she was stove, and nearly all on board, including Lieutenant Jekyll, were drowned.

The pinnace, meanwhile, continued her course towards the Heads, descrying the steamer *Wonga Wonga*, outward bound for Wellington. The anxiety was intense, as the *Wonga Wonga* went round and round, and nearly out of sight. Mr. Amphlett at length succeeded in reaching the pilot boat, and came up with H.M.S. *Harrier* at 10h. 30m. p.m. The *Wonga Wonga* anchored, and the few survivors were transferred to her from the boats of the *Orpheus* that had been got afloat.

To return:—The heavy guns broke adrift about 5h. 30m. p.m., tearing up the upper deck, and driving the people to the tops, the rollers becoming longer and heavier. The masts stood firmly, until the flood tide made at about 6h. 30m. p.m., they then began to go, and the ship parted in halves, the rollers breaking into the tops. When the masts went the crew gave three cheers, as if taking farewell of life. Commodore Burnett and the young gentlemen were in the mizen top; all perished except Mr. Barkly, son of the Governor of Victoria. Commander Burton, Mr. Strong, sailing master, and Lieutenant Mudge, who were in the maintop, were lost. The men who were saved succeeded in getting down the jibstay on to the jib-boom, dropping from thence into smooth water, where they were picked up. Many of the survivors are badly wounded, having legs and arms broken, and bodies bruised and maimed by the guns and falling spars.

Those in the fore part of the ship are principally among the saved. When she struck and heeled over a rush was made to the rigging, and those on the main and mizenmasts were washed off almost im-

mediately into the surf and drowned. The foremast soon followed the other spars, and as it fell many of the men jumped off and swam to the bowsprit, from which they dropped either into the boats or into the sea, and made their way to the boats as best they could. Many were drowned in the attempt. The pinnace and cutter succeeded in landing their men.

While all this was going on, twenty-six miles from Onehunga, a seaport town, in broad daylight, and in full view of the pilot station, no signal of the disaster was given. Her Majesty's ship *Harrier*, seventeen guns, Commander Sullivan, was lying at her moorings at the Bluff, within twenty-three miles of the disaster; the colonial steamer *Avon* was also unemployed at the Onehunga wharf.

We do not blame the pilot, for he was doing his duty on board the *Wonga Wonga*, which sailed at half-past twelve on Saturday, and we suppose there was no one to telegraph for assistance. The noble ship was left to her fate, and her gallant crew to the mercy of the waves, without a helping hand being stretched out to save a life, although help in such abundance was at hand.

As we have said, help was available if a proper pilot establishment had been at Poponga to make known the disaster. But although the *Orpheus* struck at half-past one o'clock on Saturday, it was ten o'clock at night before intelligence was communicated to the *Harrier*. About 10h. p.m. the pilot boat, with four men came alongside the *Harrier*, and reported the loss of the *Orpheus*. Commander Sullivan at once despatched an officer to Auckland, to report the event to the senior naval officer on the station, Captain Jenkins; and at one a.m., on Sunday morning, the fact was reported to Captain Jenkins, who left for Onehunga, after apprising his Excellency the Governor.

The inter-provincial mail steamship *Wonga Wonga*, Captain Renner, was fortunately in time to save several lives. As soon as intelligence of the disaster was reported to Commander Sullivan, on Saturday night, he took measures to have the little steamer *Avon* despatched to the wreck in the hope of saving life; but a piece of the machinery was in Auckland, undergoing repairs, and the *Avon* was, consequently, not available for the time being. A messenger was despatched to the engineer in Auckland, and in an hour and a half he returned with it. Meanwhile steam had been got up on board the *Harrier*, but it was found that the tide was too low for her to turn, and she did not get under way till near noon yesterday (Sunday). When it was found that the *Harrier* could not proceed to the scene of the wreck, steam was got up in the *Avon*, and she left the wharf at 3h. a.m. on Sunday morning, and reached the heads at daylight, when she met the *Wonga Wonga* returning with the survivors, who were transferred to the *Avon* and fetched up to Onehunga.

The following is a corrected list of the saved and lost, kindly handed to us by Captain Jenkins, of H.M.S. *Miranda*:—

Saved.—Charles Hill, lieutenant; Duke Yonge, lieutenant; Edward A. Amphlett, paymaster; Charles G. Hunt, midshipman; Henry Barkly, midshipman; Mr. Fielding, midshipman; William Mason,

boatswain; John Beer, carpenter; fifty-three seamen; seven boys; two marines.—Total 70.

Lost, Twenty-three Officers.—W. F. Burnett, C.B., commodore; Robert H. Burton, commander; W. F. W. Mudge, lieutenant; Arthur Jekyll, lieutenant; W. D. Strong, master; Charles B. Hazlewood, chaplain; Samuel Stephens, chief engineer; Edward E. Hill, 1st lieutenant, R.M.A.; James Clarkson, assistant surgeon; W. H.P. M. Gillham, assistant paymaster and secretary; William T. Taylor, acting second master; A. D. Johnstone, assistant paymaster; A. R. Mallack, midshipman; T. H. Broughton, midshipman; George H. Verner, midshipman; H. N. Aylen, clerk; John T. Tozer, master's assistant; John H. Adams, engineer; John H. Vickery, assistant engineer; E. J. Miller, assistant engineer; William Adamson, assistant engineer; George F. Gossage, assistant engineer; William Hudson, gunner; ninety-five seamen; twenty-six boys; forty-five marines.—Total, 190 lost.

The Sydney *Morning Herald* makes the following remarks on this event:—"It has been for a long time known to nautical men that the channel laid down in Drury's chart has shifted considerably, and that to steer strictly in accordance with the directions would ensure the destruction of any large vessel. Commodore Burnett and Master Strong—(than whom a more efficient mariner did not hold a commission under her Majesty)—were strangers to the Manukau harbour, and as the change in the channel had never been officially notified, the ship's course was kept in accordance with the Admiralty chart. The fearful calamity which has cast such a gloom over this community, and inflicted such a heavy loss upon the nation, was the result."

We preserve the above in order not only to show that it was known that the channel across the bar had shifted, but to correct the wrong impression conveyed by one portion of it. The *Orpheus* took out from England, officially supplied to her, the notification usually given on such occasions, that the marks on the chart were not to be relied on, and had the best information that could be officially given, from Captain Cracroft's remarks. These are all momentous circumstances on which the safety of a ship on such an occasion would depend, and yet this was information officially supplied with her charts, that if it had been properly considered would have averted the catastrophe.

The readers of the *Nautical* will be familiar with Captain Cracroft's interesting journal of his proceedings on the coast of New Zealand. They will have observed in our number for November last, what he has said about the dangers of the Manukau bar, and how the *Niger* was detained by this said bar, although she crossed and recrossed it drawing seventeen feet water,*—a ship, however, of 1,072 tons and 400 horse power,—while the *Orpheus* was 1,706 tons, and also 400 horse power.

* *Niger's* draft on January 1st, 1860, was 14 ft. 9 in. forward, 17 ft. 1 in. aft.; that of the *Orpheus* on going abroad, 17 ft. 3 in. forward, 20 ft. 1 in. aft.

But we need not further allude to this distressing scene, where British courage under trials of the severest kind, braved the dangers which carried off above 180 souls to eternity. We annex a view which was on the chart on board the *Orpheus*, showing the locality of this sad catastrophe. The immediate vicinity of the interior of the harbour to Auckland (only five miles) across the isthmus, and the neighbourhood of the river, are all referred to by Captain Cracroft, along with the flourishing condition of Onehunga.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*Report of the Royal National Lifeboat Institution—The Wreck of the Orpheus—The Manukau Bar—Pilot Signals—The Blockade Runners—Electric Light in Lighthouses—Perilous Balloon Descent.*

Following our usual custom, said the Chairman, in opening our meeting, we will call on the Secretary to read the narrative of our lifeboat proceedings, in saving the shipwrecked mariners on our own shores, in case it should be thrown into the shade by a calamity of the same nature that has occurred nearly at our antipodes, involving as it does so fearful a loss of life. Although such events seldom, very seldom occur, where so much sacrifice has taken place as in the loss of the *Orpheus*, still they do come "now and then," like Warren's celebrated story, to remind us that the ships of the state, whether of wood or iron, fall a prey to rocks and shoals as well as their more fragile companions of the wave, those of the merchant service.

The Chairman then called upon the Secretary to read the report of the monthly meeting of the Royal National Lifeboat Institution, held at its house, John Street, on the 2nd of April, Thomas Chapman, Esq., F.R.S., V.P., occupying the chair. It stated that a reward of £14 was voted to the crew of the institution's lifeboat at Padstow, for their gallant services in rescuing, during a heavy storm on the night of the 18th March, the crew, consisting of thirteen men, from the brigantine *Pandema*, of Plymouth, and schooner *Betsy* of Brixham, stranded on the Doom Bar Sand, off Padstow. Thanks were voted to Mr. Daniel Shea, chief officer of the coastguard, for putting off in the lifeboat on both these occasions, called *Albert Edward*, after the Prince of Wales. By a happy coincidence, she was also instrumental in rescuing a shipwrecked crew on the day that his royal highness attained his majority, on the 9th November last.

Rewards, amounting to £53 7s., were voted to the crews of the lifeboats at Rye, Winchelsea, Tynemouth, Middlesborough, Fraserburgh, Dundalk, Berwick, St. Ives, and St. Andrews, for putting off to render assistance to vessels with distress signals flying, but which did not afterwards require the services of the boats. Some services on these occasions were of a very laudable character, and attended with con-

siderable risk. The boats of the society are often called out in heavy gales, especially at night, in reply to signals of distress from vessels not ultimately requiring their help, the vessels succeeding in getting out of danger.

It was reported that the institution had, during the past three month, voted £444 for rescuing by its lifeboats and other means, 203 persons from different shipwrecks on our coasts. During the past year it had expended £12,583 on its lifeboat establishments and lifeboat crews.

The committee of the institution therefore earnestly appeal to the public for continued support to assist them to carry on its great and important work.

The silver medal of the institution was voted to Mr. D. Williams, collector of her Majesty's customs at Aberdovey, for his gallant services in putting off in a heavy sea, in the lifeboat stationed at that place, on the 8th of February, to rescue the crew of the brig *Friends*, of Newport, stranded on Aberdovey bar. Mr. Williams had previously exerted himself in saving life from wrecks. A reward of £8 was also voted to the crew of the lifeboat.

£4 16s. was also voted to pay the expenses of the lifeboat at Drogheda, in saving in a heavy surf, the crew of five men from the schooner *Mary Anne*, of Newquay, stranded on Drogheda Bar on the 14th of February.

£15 was also voted to pay the expenses of the Walmer lifeboat, in putting off, on the night of the 6th of February, in reply to signals of distress from a vessel on the Goodwin Sands.

The silver medal and a copy of the vote on parchment, were presented to Mr. Henry Maddick, master of the smack *Ruby*, of Hull, and to his apprentice lad, William Thompson, for their rescuing with their boat, at great risk of life, the crew of six men from the brigantine *Ganymede*, of Ipswich, which, during a fearful gale of wind, had sunk some distance off the coast, on the 28th of January last. When the captain of the vessel found her sinking, he signalled to the smack to take him and his crew off, their own boat being useless. Captain Maddick, immediately on observing the signal of distress, launched his boat, but neither of his seamen would go off to the sinking vessel; he therefore determined to go alone, when the apprentice boy requested to be allowed to accompany him. The two brave fellows then succeeded, after great difficulty, in rescuing the six shipwrecked men, and in getting them safely on board the smack.

A reward of £6 was also voted to the Irish fishermen, for putting off, during a hurricane, in a curragh (a small wicker boat) and rescuing two men belonging to the ship *J. S. Parsons*, of New York, wrecked off Innishenen, on the coast of Donegal. The ship struck with fearful violence, and in a few minutes was in a thousand pieces. The sea at the time was running mountains high, and it was considered impossible for any boat to live in it. It was heart-rending to witness the crew, twenty-eight in number, clinging to the rigging, with huge waves breaking over them every moment. Shortly after

the vessel broke up, two men were seen holding on to the roof of the deck cabin, which had floated away from the ship. Seeing the dangerous position of the poor fellows, the three curragh men put off in their frail boat, and succeeded in saving one of them, the other in the meanwhile perishing. Twenty other persons were saved by men wading into the surf, and a reward of £5 was granted to these men. The institution presented its thanks, inscribed on vellum, to R. Edwards, Esq., inspecting chief-officer of the Portland coastguard division, for his valuable services on the occasion, and ten shillings each to his boat's crew.

The silver medal of the institution and £6 were presented to Mr. Thomas Evans, sen., Thomas Evans, jun., and William Evans, and also £6 to three others, for their gallant and persevering services on the night of the 20th of January, in assisting to rescue the crew and passengers of the American ship *John H. Elliott*, of New York, which during a terrific squall, accompanied by thunder and lightning, was stranded in Liverpool bay. With the help of the sailors' boats, about fifty-three men were safely brought to Liverpool, on board the steam-tug *United States*, to the crew of which vessel the society voted £5 10s.

A reward of £6 was granted to six fishermen for pulling off and rescuing three out of seven coastguardmen, who had been capsized from their boat while proceeding to board a vessel during squally weather, off Greencastle, on the coast of Donegal. Four men unfortunately perished on the occasion, notwithstanding the gallant and prompt endeavours that were made to save their lives.

A reward of £2 was also voted to two fishermen for saving six persons, whose boat had capsized in a heavy sea, off Faha, on the coast of Limerick.

It was reported that the Mayor of Liverpool and the Lord-Lieutenant of Cardigan had, during the past month, convened public meetings for the purpose of presenting some silver medals of the institution, which had been voted by the society to different persons for their gallant exertions in saving life from shipwreck.

The institution had, during the past month, sent a new lifeboat to Porthleven, on the Cornish coast. The boat was the gift of Mr. Robartes, M.P., who had also previously given the cost of a lifeboat to the institution.

The committee decided to send a new lifeboat and transporting carriage to Fishguard, on the Welsh coast, in lieu of the present one there. They also decided to call the boat the *Sir Edward Perrott*, after the hon. baronet of that name, in acknowledgment of his long and valuable services to the lifeboat cause, as chairman of the preparatory committees of the institution.

A letter was read from the Hamburg Lifeboat Society, requesting the co-operation of the National Lifeboat Institution, in placing a lifeboat at Heligoland.

It was reported that Mr. Magenis had presented to the institution £262 10s. to assist it to place a new lifeboat on the coast.

A legacy of £204 16s. had been received by the institution from the executors of the late Miss Gedge of Great Yarmouth.

It was stated that Messrs. Hoare, the bankers, had given the society a donation of 50 guineas, and that the principal London bankers had also recently contributed to its funds.

Admiral Sir George Sartorius handed to the institution £71 8s., which he had collected for it, fifty guineas of which amount was from Mr. Henry Green, of Blackwall.

Payments amounting to £560 having been made on various lifeboat establishments, the proceedings closed.

At the conclusion of the report, prosperity to the Royal National Lifeboat Institution of Great Britain, and long life to its supporters, was the prevailing sentiment of the Club.

The Chairman would now revert to the sad event to which he had alluded, the total loss of H.M.S. *Orpheus*, on Manukau bar, New Zealand; an event which had brought the cup of bitter affliction to many a warm heart. Parents, wives, sisters and brothers all had their share to deplore in the loss, which is stated to amount to 190 souls. It was one of those extraordinary events where one main object seemed to engross the whole attention, and where sound discretion seemed entirely to have lost her seat. The narrative of Lieutenant Charles Hill, the principal surviving officer, took us all by surprise, and was the first official account of the catastrophe, that we shall preserve. It comes with the following letter from Captain Jenkins, commanding the *Miranda*.

The following details relative to the loss of the *Orpheus*, have been received at the Admiralty by the overland mail just arrived:—

H.M.S. Miranda, Auckland, February 10th, 1863.

My Lord,—In addition to my first letter from the scene of the wreck of her Majesty's ship *Orpheus*, dated the 8th inst., sent to their lordships, to save the southern mail, by the *Wonga Wonga*, I have to enclose for their further information the detailed narrative of Lieutenant C. Hill, the second lieutenant, and the senior surviving officer. It is a clear and truthful account of the whole proceedings of this melancholy calamity, so far as he and the other officers that are saved are acquainted with them.

According to my judgment on the spot nothing can exceed the exertions of Lieutenant Hill, the other officers, and all the survivors of the crew, who, at the imminent peril of their own lives, continued to the last to make the utmost endeavours to save the lives of their shipmates. I am informed that the *Wonga Wonga* was at the time of the *Orpheus* striking steaming out of the South channel of the Manukau. She first steamed outside the bar to the entrance of the main channel, but afterwards returned by the South channel, picking up the boats off Paratutai Point, and towing them to the wreck by the main channel.

Their lordships will observe from the narrative of Lieutenant Hill, that from the time the steamer was first observed, at two o'clock, until

she reached the wreck at six, the most critical and invaluable time was unaccountably lost; but Captain Renner, and all on board the *Wonga Wonga*, were most kind and hospitable in the treatment of the sufferers when they reached his ship from the wreck. Mr. Wing, pilot, and in charge of the signal station at the Manukau, informed me that the wreck of the *Orpheus* is precisely on the bearings laid down in Captain Drury's chart and sailing directions, since the publication of which the middle banks, and small shoal on which the ship first touched, have shifted bodily and considerably to the North. With their lordships, I deeply deplore the loss to her Majesty's service of an officer so distinguished as Commodore Burnett; it appears he met his much-to-be-regretted death when sitting in the mizen-futtock rigging; the mast fell over to port, the top striking him on the head when in the water; it is said he never made the least exertion to save himself.

I have directed Commander Sullivan to proceed in H.M.S. *Harrier* to the Manukau Heads, and to detach an officer and party as far as he may consider necessary along the shore, North and South, for the purpose of burying, with such honours as circumstances will admit, the bodies of any officers and men, late of H.M.S. *Orpheus*, which may be found, and also to recover such remains of the wreck, public and private, as he may deem fit. So soon as he may consider it no longer necessary to continue on this service, I have directed him to conduct the duties of senior naval officer in New Zealand.

With the view to save the mail which will leave Sydney on the 20th inst., it is my intention to proceed at once under steam to that port with the six officers and ten of the crew of the *Orpheus*, who have been selected as the most able to give evidence relative to the loss of that ship. These I purpose sending to England by the mail steamer. The remaining fifty-one men and boys I have detained for disposal on the station; the majority have already volunteered for the *Miranda* and *Harrier*. I have sent twenty-five to the *Harrier*, for about which number she has vacancies to complete her complement.

I have, &c.,

ROBERT JENKINS,
Captain and Senior Officer.

To the Rt. Hon. Lord Clarence E. Paget, C.B.,
Secretary to the Admiralty.

H.M.S. Miranda, Auckland, New Zealand,
February 8th, 1863.

Sir,—In obedience to your directions I have the honour to report, for the information of the Lords Commissioners of the Admiralty, that her Majesty's ship *Orpheus* sailed from Sydney on 31st January. After a fine passage to the coast of New Zealand, we sighted the land on the morning of 7th inst.,—it was my forenoon watch, at about eight miles from the bar of the Manukau. Steam was got up in two boilers; we had been condensing. The ship proceeded at 12h. 30m., under all plain sail, with starboard foretopmast studdingsail set, towards

the Manukau; steering East till one o'clock, then N.E.E.,* being the courses laid down—so the master told me—in Captain Drury's sailing directions, keeping the Ninepin on with the end of Paratutai. The hands were on deck, the ropes manned for shortening sail, the Commodore, Commander, and Master on the bridge; the leadsmen in both chains; spare tiller shipped, with relieving tackles hooked, and six men stationed; gratings and hatchway covers were placed ready for battening down.

The wind S.W. to S.S.W., force 5 to 6, with occasional slight squalls; high water at 12h. 20m. As we approached the bar there was nothing more to see, in the shape of rollers or sea on, than I had been led to expect. The signal from the pilot station had been flying since 11h. 30m. a.m., "take the bar;" the Commodore and Master were very attentive with the chart on the bridge, and very particular in the steerage of the ship, and in his orders to the engine-room to keep the steam at command. The signal officer and signal man on the look out. At about 1h. 30m. she touched slightly in the after part, when the Commodore gave the order, "Give her all the steam you can." At about 1h. 40m. the ship struck forward; order given, "Astern full speed;" but the engines or screw never moved. At the same time the Commodore ordered, "Hands shorten sail." The ship broached to, with her head to the northward, lurching heavily to port; the rollers setting in from the westward, which immediately made a clean sweep of the upper deck, taking away port quarter boats, second cutter and jolly boat), netting and bulwark. Sail was shortened as far as possible; the men not being able to keep the deck, immediately the ship took the ground, the hatchways were battened down, which, however proved perfectly useless, as the fastenings were thrown up by the bumping of the ship.

The Commodore then ordered the port guns to be thrown overboard (we succeeded in lightening the ship of four guns), and the starboard cutter to be manned and lowered, the paymaster and secretary to place in her his private signals, the public records, and the ship's books; but from the heavy lurching of the ship the men were unable to pass all the books they wanted; some were lost overboard. Mr. Fielding had orders to land what he had got and return. After great difficulty the cutter got clear of the ship. She was reported to be swamped two or three times. When seen on one occasion five hands were observed to be missing. It was about this time a steamer was seen coming out of the Heads. The Commodore next ordered the pipe, "Hands, out boats," yards and stays having previously been triced up. The pinnace was the first boat out. As I was returning from the maintop Commander Burton ordered me into the pinnace to go to the assistance of the cutter; the Commodore then came to the starboard gangway, and on my telling him that I had seen the cutter all right when on the mainyard, he ordered me to take Mr. Amphlett, paymaster, who was well acquainted with the place, on shore, for the purpose of getting assistance. Mr. Amphlett was then and there told to jump into the boat; this was at 2h. 30m. We shoved off, and with great difficulty,

* As in our copy.

from the strong ebb, cleared the ship. As we proceeded I observed the smoke of a steamer to the southward, going seaward. After a two hours' pull against a heavy rolling sea, we neared the Ninepin, when I spoke Mr. Wing in the pilot boat. We learnt from him that the steamer in sight (now seen coming up the South channel) was the *Wonga Wonga*, returning to the Heads; that he had no boat to send to the *Harrier* to report our distress; that there was a lifeboat hauled up on shore, but no hands or means to get her afloat—it would take twelve men a considerable time. The cutter now came up with us. Mr. Wing and his Maories came into the pinnace, while Mr. Amphlett, two sick men, and two boys, and two others started off in the whaler to the *Harrier*.

We pushed on to the steamer, now between the Heads, waving, signaling, and making every effort to gain her attention; after some delay she turned round and closed us, taking pinnace and cutter in tow, proceeding to the wreck, which we reached at 6h. p.m. I found her very much lying over to port, the masts all standing, the crew in rigging above the tops, the sea at times sweeping as high as the futtock rigging, the sails had been cut away from the yards, it being impossible to furl them. Taking, in addition, the pilot boat's crew, four young Maories, with the pinnace, being to windward of the wreck, we dropped down to about thirty or forty yards on her starboard bow, hailed the men on her bowsprit and jibboom to jump off and swim for it. I picked up seven or eight; having drifted to leeward, the steamer came and towed me to windward. I dropped down a second time with the cutter in company. This time three or four more men were taken in in the pinnace, and the boatswain and four or five in the cutter. It was now about seven o'clock; the flood tide had made, the rollers soon became very high and dangerous on the change; the jibboom broke off short by the cap; it was quite impossible, with safety to the boats, to remain any longer by the wreck. As I was going back I shouted to the wreck to make a final attempt, but none would venture.

The steamer picked up boats and anchored close to the North side of the South Spit; distant from the wreck about three quarters of a mile. This was at eight o'clock. At 8h. 30m. the masts went. Boats returned to the wreck. The *Wonga Wonga* kept burning blue lights, blowing her steam whistle, and ringing her bell. The pinnace picked up six or eight, and returned to the steamer with one or two in the last stage of exhaustion. On again nearing the wreck I found the ship completely broken up. It was a beautiful clear moonlight night, and masses of the wreck kept passing in with the flood, clinging to which Lieutenant Yonge and six or eight men were saved. The cutter got so far to leeward that she made for the land, the pinnace returning to the steamer. We remained on deck the whole night, keeping a sharp look out. At daylight nothing could be seen of the ill-fated *Orpheus* but a stump of one mast and a few ribs.

From the commencement and during the whole proceedings nothing could exceed the coolness and decision of Commodore Burnett, C.B., the Commander, and the officers, all in their stations, sentries on the

spirit-room and store rooms; whilst the good feeling and steadiness of the men were beyond all praise, remaining at their posts until ordered by the Commodore to mount the rigging. Many were washed overboard in obeying orders.

I must not forget to mention the gallant conduct of the Maori crew; they were first and foremost in saving lives. On going ashore in the cutter, Mr. Hunt and Mr. Barkly (midshipmen) were picked up, one Maori taking Mr. Barkly on his back and carrying him along the beach to his hut. They afterwards gave them food, and put them in their own beds for the night.

William Johnson (captain of the mizen top) three times jumped out of the pinnace with a rope to the rescue, and was the means of saving three drowning men.

On board the *Wonga Wonga*, which officers and men reached cold and naked, the greatest kindness and hospitality were shown and continued by all on board until we were transferred to the *Avon*, where I had reported myself to you.

I have, &c.,

CHARLES HILL, *Lieutenant H.M.S. Orpheus.*

List of Survivors.

Officers.—Lieutenant Charles Hill, Lieutenant Duke D. Yonge, Mr. E. A. Amphlett (paymaster), Mr. Bernal W. Fielding (midshipman), Mr. C. George Hunt (midshipman), Mr. H. M. Barkly (midshipman), Mr. Wm. Mason (boatswain), Mr. Jas. Beer (carpenter).

Seamen.—Robert Carpenter, William Fisher, William Johnson, George Turtle, Charles Weir, Wm. Cooper, Wm. Clews, Alfred Pilbeam, Samuel Banister, Noah Wells, John Quinton, James Parsons, Henry Walker, John Nicholson, Joseph Jorden, George Roberts, Wm. Russell, Jas. Summers, Henry Holmes, James Taylor, George Ward, James Kennedy, William Langrish, William Pasin, Patrick Daley, Edward Briggs, Arthur Tilly, Thomas Smedden, George Seal, Charles Fox, Thomas Burton, Wm. Ollert, Wm. Ball, Henry Graham, Josh. Boland, Henry Portbury, James J. Brown, James Wilson, Thomas Herbert, John Cochrane, Alfred Ankett, Henry Bentell, Henry Brown, Frederick Butter (belonging to *Harrier*), Henry Stupple, James Graham, John Finnies, Edward Walsh, William Mayes, Henry Newman, Thomas Russell, George Young, John Hall, John Morby, Wm. Geary, James Sparshott, George Hurlestone, Richard Roe (marine), Josh. Crowson (drummer), William Herbert (boy second class), John Ideson (boy), William Horrigan (commissioner's servant), picked up at one o'clock on the 8th by a coaster off Peeponga.

List of Men left behind at Sydney.—Sergeant Carter (royal marines), George Monday (gunner royal marine artillery), Stephen Hodge (private royal marines), George Tarpler (boy first class), Jas. Ashwood (boy first class), Thomas Rees (able bodied seaman), William Barnes (boy first class).

CHARLES HILL, *Lieutenant H.M.S. Orpheus.*

Such was the report of the senior surviving officer of the *Orpheus* on this distressing event, but, added the Chairman, in reference to other particulars concerning it, we find His Grace the Duke of Somerset is stated to have said in the House of Lords, in reply to Lord Ellenborough's enquiry on this subject, that:—

"He was very glad the noble earl had put this question to him, as it enabled him to correct an error on the subject which was very generally prevalent, and into which it was not surprising that the noble earl had fallen, as it originated in the despatch of the Governor of New Zealand, Sir George Grey. In that despatch it was stated that the *Orpheus* 'was intending to make the passage across the bar, as laid down in the chart of 1853. Since that time the bar has shifted about three quarters of a mile to the northward. She was thus rather more than that distance too far to the southward.'

"Now," continued the Duke, "the loss of this fine vessel and her gallant crew was, of course, a most painful calamity; but it would have been an additional source of deep affliction if it had been caused by any neglect on the part of the Admiralty, in not communicating to the officers of the ship the changes which were known to have occurred in the harbour. So far, however, was this from being the case that the chart of 1853 was brought to the notice of the Hydrographer's office in October, 1861, if not before. A notice was then drawn up, of which printed copies were sent to the senior officer on the Australian station, to be distributed among the ships in that quarter. That notice contained the following observations:—

"'It appears from the remark book of H.M.S. *Niger*, 1861, by Mr. A. J. Veitch, master, that since the survey by Captain Drury in 1853, the main channel at the entrance of Manukau harbour has shifted; as also, that the code of signals noticed in the *New Zealand Pilot*, second edition, 1859, established to assist the navigation of that port, has been altered and improved. *The following directions will therefore supersede those heretofore in use;* but from the shifting nature of the entrance of Manukau Harbour, as also of all the bar harbours on the West coast of the North island, the seaman is cautioned to pay strict attention to directions that may be given from pilot stations; and it has been recommended as a general rule, in the absence of direct information of changes in the channel, that that portion which has the smoothest water between the breakers should be taken, as experience has proved that it will be the deepest part. The North side of the middle banks forming the southern boundary of the main channel to Manukau has extended to the northward since Captain Drury's survey in 1853; vessels, therefore, in crossing the bar of this harbour should bring the Ninepin Rock twice its base open to the southward of Paratutai, N.E.b.E. ½ E, which will lead about a cable northward of the breakers.'

"Thus seamen were first cautioned that the bar had shifted, and were also warned to pay attention to local information. When he first heard of the accident to the *Orpheus*, he was anxious to learn whether

the officers had ever received the notice he had referred to. He therefore sent for the issue book kept in the Hydrographic Office, from which it appeared that the New Zealand notice was sent to Portsmouth on the 13th of November, 1861, and placed in No. 5 Australian chart box. On the 23rd of November the *Orpheus* drew this No. 5 box, from the store at Portsmouth, and the receipt for it was in the Hydrographic Office at the Admiralty. Moreover, he had seen an officer on Saturday the 18th inst., who was saved from the wreck, and he believed he was correct in stating, that the master of the *Orpheus* had a copy of the very notice in question in his hand, at the time when the ship was approaching the bar. He mentioned these circumstances only to justify the Admiralty, and to show that they were not chargeable with neglect of duty. He would not go any further into the subject. Their lordships were doubtless aware that the *Orpheus*, which drew about twenty feet of water, was rather larger than most of the ships frequenting that coast, and he might observe that he had sent her out at the pressing instance of the Governor of New Zealand. The noble Earl had also asked what were the general orders of the Admiralty in regard to correcting charts. Those orders were very complete. The master was directed to note all inaccuracies in any of the charts supplied to the ship, but especially in those published by the Admiralty, so that the requisite alterations might be presently made. If the position of the dangers was materially altered, or if he should discover any new dangers, or if the inaccuracies he might have detected in the charts were of importance, he was to report them immediately to the Admiralty, by the very first opportunity, so that no time should be lost in applying the necessary corrections.

"Again, when a hydrographic notice of a newly discovered shoal, or rock, or other danger, or a notice to mariners of a new or altered light, buoy, beacon, or land mark was received on board, the master was at once to insert it in red ink in all the charts to which it referred, (these being always enumerated at the foot of the notice,) and to note the same in the sailing directions, reporting to the captain that he had so done. Further, all masters of Her Majesty's ships were required to report to the Secretary of the Admiralty, through their captain, the discovery of any new rock or shoal. The governors of our colonies and consuls constantly sent information, and harbourmasters and merchant captains did the same. The Hydrographic Office was in constant correspondence with all parties who could furnish information in all parts of the world. As soon as it was received, if considered of fair authority, it was printed and circulated, not only for the benefit of Her Majesty's ships, but of all navigators. He thought he had now shown that every care was taken to let the officers of the unfortunate vessel know the changes which had taken place in the harbour. He had only to add, that there would of course be an inquiry into all the circumstances connected with the loss of the ship, and then probably it would be ascertained how the vessel came to be lost. He could not omit bearing testimony to the gallant bearing of all on board, and of the crew of the vessel, who, seeing death coming upon them in

all directions, still remained steadfast in the execution of their duty. Such conduct afforded a fine example of the courage and bravery of British seamen."

This statement affords us reliable information, continued the Chairman. It is thus clear that the *Orpheus* actually possessed the means of rendering her chart of the Manukau Bar as available as it could be made. Whether a ship of her size was justified in attempting the bar at all is another question, and if so, whether on a falling tide with neaps at hand, are conditions for consideration which may not be prejudged.

The bar of this river, added the Chairman, is considered the most dangerous of New Zealand, an unfortunate circumstance, from its proximity to Auckland across the isthmus, a distance of about five miles, an additional reason for doing everything that could render the passage across it plain and unmistakable. It was altogether a most remarkable instance, in which it seemed as if, in the desire to get into the harbour, every other consideration was lost sight of, excepting those precautions that could be adopted in the ship, and which in themselves were but secondary to her safety. It is said that, although it appeared, in this instance, that Her Majesty's officers were unacquainted with the changes which had occurred, the merchant service were not ignorant of them, for there had been in the newspapers a letter from a gentleman commanding a vessel, stating that they were perfectly well known.

The breaking up of the ice of the Neva is at all times interesting to navigation, observed Albert, and warrants us in preserving the following :—

On the 16th of April, the ice on the Neva suddenly began to break up, all along that part of the river which traverses St. Petersburg. It was not expected to take place for some days yet, and such a sight as was presented has, perhaps, seldom been seen. The blocks of ice cracked and burst so suddenly that there was not even time to provide for the safety of the bridge of boats at the extremity of the Liteinaia. The bridge was swept away from its fastenings and driven away horizontally, all attempts of the workmen employed upon it proving unavailing to stop its course by means of cables. It was swept on as far as the Nicholas bridge, where three of the boats were carried through one of the central arches, where they were smashed against the stone piers, while others were driven in all directions by the masses of floating ice. Happily no lives were lost. The Nicholas bridge was ordered to be cleared by the authorities when the great body of ice was seen approaching ; despite the terrible shock it received, it was not damaged, and was shortly afterwards thrown open again to traffic. The bridge of boats near the exchange was removed in good time, but a number of small boats were swept away down the river. It was only yesterday that many persons had crossed the frozen Neva between Vassili-Ostrow and the church of St. Isaac.

The attention of the club was here suddenly excited by an observation of the Commodore, who hoped that what he had seen stated in reference to the American revolutionary war was not true; if so, it

seemed that our character for neutrality, which had suffered severely already, would indeed be still more seriously implicated. He had just learnt that one of our ships of war, he thought it was the *Phaeton*, had given convoy to a blockade runner. The *Aries* was stated to have been taken under her protection at St. Thomas, to be safe from Admiral Wilkes, supposed to be bound to Nassau, and had since been captured in attempting to break the blockade of Charleston. But as he had said, he hoped it would turn out to be a mere newspaper statement, although it was too well known that there were unscrupulous merchants in this country, who would not hesitate to plunge us into a war with the Northerners, by which, perhaps, they themselves would be the first to benefit. A war, indeed, with the Northerners! Alas for England's fair fame! to go to war with the benefactors of their starving operatives in cotton factories, impoverished by a glut of their market to convert raw material into gold, for the benefit of slave states, one result of which would be, to bring about the establishment of those states. But he hoped that his anticipations would prove to be groundless.

Come, gentlemen, interposed the Chairman, *cura quietem* may be a very good motto, but let us stick to our text.

Our system, observed the Commodore, of giving information on important matters, through the medium of the House of Commons, answers all the purposes required of it, although occasionally it may be late in its arrival. The committee system, for instance: what an amount of intelligence is elicited and given with a valuable report, and a mass of evidence brought together by no other means. Our late lighthouse report, although it sprang from the fact not being generally known, that a fixed light never is so brilliant as a revolving one, and thence the comparison of our Dungeness light with that of Cape Grinez seemed to be much against us. Still, one cannot regret the case, when one sees the result which it produced. Still, it is a pity, continued the Commodore, that deprecatory remarks are launched at public boards on some occasions, for they do no good, and are better kept down. It would almost seem that while other countries are highly busy on these subjects, that our Trinity House is doing nothing. Thus some person is reported to have been moving for a copy of the reports to the Trinity House of the South Foreland, Varne, and Dungeness lightkeepers; and of all reports from Professor Faraday subsequent to that of the 5th day of July, 1862, upon the electric light now in operation at Dungeness; and asked the President of the Board of Trade, whether it was the intention of the Trinity House to include the use of the electric light in the alterations contemplated at Portland? Then, of course, after remarking upon the importance of this subject to mariners, quotes reports of the captain superintendent of the packet service at Dover, and from Captain Smithett, the commander of the *Frederick William*, who were in the daily habit of witnessing the effect of these lights, and who testifies that the electric light is far more powerful than any other; and that the revolving light is fifty times more powerful than the ordinary light; and won-

ders, therefore, that its use has not been more extensively adopted by the Trinity House.

Referring to the example of foreign nations, he found that the Dutch had actually preceded us in the use of these lights, which had been known for about four years among us, and partially used during two. The little kingdom of Holland had not only invited the inventor to put up a light of this description, but had allowed him to build a new tower for its more efficient trial. He might be told there were financial reasons against its adoption; but it must not be forgotten always that frugality might degenerate into parsimony, and caution become something like cowardice. There were matters in which the withholding of the necessary funds was a positive crime. In conclusion, he might be excused for mentioning to the house an anecdote connected with this subject. At the late Exhibition, a sailor was examining the revolving light whilst it was being exhibited, and asked, "Why did they take this down from the South Foreland?" and upon the inventor telling him that the Secretary to the Trinity Board was the authority to whom to apply for information, the sailor replied "The Trinity Board are a pack of fools. What do the Trinity Board know about these things? It's we, who sail the seas, who know what's wanted in this matter." He hoped the matter would, without delay, receive attention.

Now, if such words as are here stated to have been used, had been used, what possible good could arise from their repetition. The veteran gentlemen of the Trinity House can afford to smile at such remarks, and, he considered, knew as much of these matters as those who made them. Here some one else added :—

The Dutch, who were not accustomed to take the lead in these matters, had anticipated this country, for they had erected a light at Scheveling, and had built an iron tower for the purpose at Texel. Then, again, Spain was not considered a very precipitate country, but he could speak from his own knowledge that the Spanish lighthouses were better than ours; and we had not a single light so vivid as that at Ceuta, near Gibraltar. He hoped the right hon. gentleman would stimulate the Trinity Board into action in this matter.

However, the President of the Board of Trade at once said :—

That although the person was not at liberty to move for these papers, he should have no objection to lay them on the table. They had the most recent despatch of Professor Faraday on the subject to the Trinity Board, from Dungeness, where the light was in operation. Some time since the Trinity Board suggested that it would be desirable to make improvements in the lighthouses, and the lighthouse at Portland was placed under new arrangements. It was necessary that all expenditure proposed to be made upon this head should be sanctioned by the Board of Trade. When they were asked to sanction the application of the electric light at Portland, they replied that as it was yet under trial, though considered by many scientific men to be

a great improvement, they thought it desirable to defer the expenditure till further experiments were made. That was the position in which the matter now stood. They did not think that sufficient time had elapsed to justify a reliance on this electric light. As to the brilliancy and intensity of the light there could be no doubt, and the person had spoken within the mark when he said, that it gave eight times the brilliancy of a first-class dioptric light. It possessed another advantage, that it was distinguishable from other lights at sea, and in such places as Dungeness, where vessels came up to anchor, it was of importance to be able to distinguish clearly the lighthouse from all other lights. But it was essential also that there should be certainty in the light, because if the light went out suddenly it might prove more dangerous than otherwise, It was to test this point particularly that further inquiry was wanted.

The electric light had been used for nine months at Dungeness, and during that time it had gone out for a moment or two, though he believed this occurred from want of attention. The electric light required constant attention, as a great deal of machinery was at work for its production. Then came the question of expense. There were some places where the advantage of a good strong light was so great, as to justify any expense, but there were other places where an inferior light would answer all useful purposes. Now, as the cost of lights was borne by the merchant shipping, he did not think they would be justified by fancy or caprice, in imposing on the shipping interest a greater charge than was necessary in supplying it with sufficiently good lighthouses. From the fund accumulated in this way they were able to reduce the tonnage on ships, whether coasters or engaged in the over-sea trade, from £100 to £40. Now, if they were to incur unnecessary expense, they would deprive themselves of the power of making those reductions which were required by the shipping interest. He did not want to disparage this important invention in the least, and should be glad to afford every opportunity for the fairest trial. He believed that the Trinity corporation were desirous of giving the new light a full and fair trial, with a view to its general adoption if successful.

Now, continued the Commodore, it is my opinion that the Trinity Board is not only desirous of giving this electric light a fair trial, but have been doing so for perhaps more than a year; and he did not for a moment doubt that the Trinity Board could disprove the statement attributed by another honourable gentleman, "that the Board had wasted ten times the money that would have sufficed for the cost of erecting electric lights through the country." But what he would ask was this—Why all this detraction of the Trinity House, who are just as anxious to give good lights as sailors are to have them. If a light is good enough, as those of the Trinity House are, to be seen just above the horizon, could the electric light be seen further? or could it be seen through a mass of intervening salt water. He apprehended not, setting aside the question of expense, and chance of failure.

Our friend, Mr. Glaisher, observed the Secretary, so well known as a meteorologist, had now become a celebrated aeronaut. But his last ascent, the tenth, was nearly come to a serious termination, but happily, for his own preservation and the ends of science hereafter, the tact and experience of his companion, Mr. Coxwell, saved him from imminent danger in the rather unpleasant proximity of the British Channel. He says, in his published letter,—

As the Crystal Palace remained some time in view, it was at first expected that the upper current was not so swift as the lower; after reaching the height of four miles, and we had determined we were moving directly towards the coast, Mr. Coxwell continually applied to me for the reading of the barometer, and directed our companion (Mr. I.) to keep a sharp look out for the sea.

Immediately after we attained an elevation of four and a half miles, Mr. Coxwell let off some gas, and said he felt assured that there was not a moment to be lost in getting within view of the earth.

Mr. Coxwell again let off gas rather freely, so that we descended a mile in four minutes. At 2h. 46m. we were two miles from the earth, the barometer reading 21·20 inches, when Mr. Coxwell caught sight of Beachy Head, and exclaimed, "What's that?" and then the coast through a break in the clouds, and exclaimed, "There is not a moment to spare, we must descend rapidly and save the land at all risks." It was a bold decision, but we were in a critical position, and I do not see what else could have been done. Mr. Coxwell now used the valve with a degree of freedom which would have alarmed any one who had not perfect confidence in his skill. I was requested to pack up my instruments as quickly as possible, and then to assist in getting ready a large amount of ballast to throw away at the last moment. On breaking through the clouds we appeared to be already over the water, but as the ground came up to us, or seemed to do so, we found there was land beneath. Mr. I. rendered important service in letting up the neck lines, and in clearing the ballast for immediate delivery, so as to lessen the violence of the descent. When orders were given to put out sand, we did so simultaneously, which gave a favourable check, and as the lower part of the balloon itself assumed a parachute form, the shock was not so bad as might have been expected. Most of the instruments, however, were broken, owing to their delicate construction and my attention being drawn from them, yet, strange to say, two large glass vessels of air, collected at the highest point for Professor Tyndall, remained uninjured, as did some bottles of lemonade which Mr. Coxwell had placed in the car.

We descended the last two miles in four minutes; and had we done so less rapidly, the land would have been missed altogether, and we must have fallen into the sea. The descent was within half a mile of the railway station at Newhaven.

Mr. Coxwell's decision and expertness were put to as severe a test as it is possible to imagine, and certainly he is entitled to my best acknowledgments.

Nautical Notices.

Particulars of Lights Recently Established.

(Continued from page 215.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
9. Wreck at Punchal	.....	.....	..	..	..	(*a.*)
10. Cape Rachado	Malacca Strait	2° 24·5′ N., 101° 52·7′ E.	F.	146	20	Est. 1st February, 1863. (*b.*)
11. Shortland Bluff	Port Phillip, Australia	High light	F.	180	17	Est. 19th February, 1863. (*c.*)
		Low light	F.	90	14	Est. 19th Feb., '63. A red and white light. (*d.*)
Swan Spit	Ditto	.....	..	..	..	10th Feb., '63. Changed from red to white. (*e.*)
Corsair Rock	Ditto	.....	..	..	..	(*f.*)
12. Cotinguiba Bar	Brazil	11° 1′ S., 37° 4·8′ W.	F.	115	6—9	Est. —, 1863. (*g.*)
13. Catania	Sicily. East coast	37° 29′ N., 15° 5·2′ E.	Ffl.	96	14	Est. 1st March, 1863. (*h.*)
Girganti	Sicily, South coast	37° 15·6′ N., 13°31·8′ E	F.	52	10	Est. 1st May, 1863. (*i.*)
14. Great Stirrup Cay	Bahamas	25° 49·7′ N., 77° 54′ W.	F.	70	15	Est. 1st May, 1863. (*k.*)
Port Spain	.....	.....	..	..	15	Improved. Visible fifteen miles.
Bermuda	St. David's Head	.....	..	..	..	Does not exist, nor at present contemplated.
15. Lonsdale Point	Port Phillip	Temporary	F.	..	4—7	Est. 19th February, 1863. (*l.*)

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

(a.) 9.—The wreck lies in about 23½ fathoms water, with Cape Garajoa bearing S.E.b.E. ¾ E.; Ilheo do Gorgulho, W.b.N. ½ N.; Pico da Cruz, N.W. ¾ W.; the Cathedral, N.E.; and the right extreme of the Loo Rock, N. ¾ E., and in a line with the house West of the flagstaff.

(b.) 10.—The light is a *fixed* white light, seen through an arc of 180°, or when bearing from S.E.b.E. round by East and North to N.W.b.W. The line of northern limit of the light passes over the centre of the Bambec Shoal, and touches the extreme point to the North-westward, and nearly a mile S.W. of the Diana Rock to the South-eastward. Between the bearings of S.E.b.E. ¾ E. and E. ¼ S. a more intense light appears, which is visible at a distance of about twenty-five miles. The former bearing leads about a mile S.W. of the Bambec, and the latter bearing in the direction of the Pyramid Shoal.

From the lighthouse, the Pyramid Shoal bears W. ¼ N., distant 21½ miles; Bambec Shoal N.W.b.W., 13¾ miles; and the light-vessel on the one-fathom bank N.W.b.W. ¾ W., fifty-nine miles. Magnetic variation 1° 35′ East in 1863.

(c.) 11.—The higher and inner light is visible to vessels in the offing on any bearing between about E.b.N. and North; if in with the Lonsdale land, it will be seen only when between N.E.b.E. and North. Within Port Phillip Heads the light will be visible from N.E.b.E., round by North and West, to S.W.b.W. The tower stands N.E.b.N., distant 352 yards from the low lighthouse.

(d.) 11.—The low light shows white when bearing from about N.E.b.E. to N.E., red from N.E. to N.N.E., and white from N.N.E. round by North to

W.b.N. Vessels entering between the heads at Port Phillip should keep the red light in sight, and steer in with it bearing N.E.b.N. and in line with the high white light. The change of colour from red to white indicates an approach to the Lonsdale or Nepean Reefs. The white light between the bearings of N.E.b.E. and N.E. shows over the dangers extending from Lonsdale Point. Between the bearings of N.N.E. to W.b.N., the white light shows over the Corsair Rock to a line passing from the lighthouse through the South channel, southward of Popes Eye and the black buoys, and to the northward of the white buoys, so that vessels during night with light winds or adverse tides will be aided by a bearing of the light.

(e.) 11—So as to show white when bearing from about E.N.E. to N.E. ½ E., red from N.E. ½ E. to N.E. ¾ N., white from N.E. ¾ N. to N.b.W. ½ W., and red from N.b.W. ½ W., round by the West, to S. ¼ W. The red light in sight between the bearings of N.E. ½ E. to N.E. ¾ N. indicates the entrance to the West channel, between No. 1. black buoy and the white buoy with perch on the Royal George Shoal.

(f.) 11.—To clear the Corsair Rock, keep the East end of the Telegraph Station open westward of the red obelisk, which is forty feet high, and standing near the site of the old lighthouse, until the white beacon on Nepean Point is open Northward of the red beacon. The beacon on Nepean Point open South of the red beacon leads to the southward of the rock. Variation 8° 20′ East in 1863.

(g.) 12.—The light shows *red* to the eastward, *white* to the S.E., and *green* to the southward. Vessels with the white or green light in sight, should not stand into less than five fathoms water; and should anchor with the red light in sight, in four fathoms, over fine sand and mud. The light will disappear whilst being trimmed.

(h.) 13.—The light is a *fixed* white light, varied by a *flash* every *three minutes*. The tower stands on the Sciara Biscari, at the South side of the port.

(i.) 13.—The light is *red*.

(k.) 14.—The light illuminates an arc of 280° from about S.W. as seen from the lighthouse, round northerly and easterly to about S.E.b.S.

(l.) 15.—The light is a *fixed green* and *red* light, showing green to seaward when bearing from about N.W.b.N. to N.W. ¼ W., and red towards Nepean Point and the harbour, from about N.W. ¼ W. to W. ½ N. The green light should be seen in clear weather from a distance of about four miles, and the red light at about seven miles.

The light is exhibited from a site close to the tidal flagstaff on Lonsdale Point, and is intended to warn vessels of their approach to the newly discovered dangers by the *Lightning* and the Lonsdale Point Rock, at the entrance to the port. Vessels having the green light in sight will be outside the dangers, and with the red light in sight inside the dangers. The blending of the two colours will indicate that a vessel is in the vicinity of the dangers.

AUSTRALIA,—*Queensland.*

The Treasury, Queensland, 9th January, 1863.

The following sailing directions and information respecting the Pioneer River, prepared by Lieutenant G. P. Heath, Portmaster, are published for general information.

T. DE LACY MOFFAT, *Colonial Treasurer.*

Sailing Directions for the Pioneer River.—Approximate Position off Settlement—Lat. 21° 9′ *S., long.* 149° 14′ *E.*

Vessels on nearing the Pioneer River, can always recognize its position, by its proximity to two islands lying N.W. and S.E., one mile apart; that to the S.E. being round-topped and moderately high, while that to the N.W., although about the same height, is flat-topped.

The entrance to the Pioneer is about one and a half miles S.W. of the flat-topped island. A bar extends across the mouth of the river, which nearly dries at low water springs, and from thence the depth of the channel, which has an average width of one cable, varies from one foot to seven feet at low water, until within about three quarters of a mile of the settlement, when it again almost dries across, and from thence the depth gradually increases until abreast the settlement, which is about four miles from the bar, and where there is about seven feet at low water in the centre of the channel.

There is a rise and fall on the bar of from ten and a half feet to sixteen feet, and at the settlement, of from nine feet to thirteen feet, so that most of the vessels trading on the coast can enter the port without difficulty.

The Directions for Entering, until the River is Buoyed and Beaconed, are as follows:—

To cross the bar, keep a double hummock, which is about eight miles distant, its own width to the southward of some low sand hills on the beach. A vessel may haul up when the island to the S.E. of Slade Point is well shut in with the trees on the extreme East point, but should be careful not to stand over so as to shut in L Island with that point. The channel then runs in a N.b.W. direction, towards the steep shore on the West side of East Point. As that point is neared, the edge of the banks is more clearly defined. They are there steep to, and may be approached within a reasonable distance. The channel then runs along the starboard shore, until a sandy cliffy point is passed, and the settlement opened out to the westward, for which a vessel may then haul up and steer, being careful, after passing the point on the port hand, to keep that shore on board until abreast of the settlement.

Vessels intending to enter the Pioneer River, should not run down on the lee shore when it is blowing hard from the East or S.E., but should anchor under some of the islands off the coast until the weather moderates. In moderate South-easterly weather a vessel would find sufficient shelter under the lee of the flat-topped island, being careful to avoid a sand spit running off the South extreme of that island, towards the East point at the entrance of the river. There is a good passage, about half a mile wide, between this spit and the shoal water off the main land. When in mid channel, the island to the S.E. of Slade Point is on with the peak of M Island. The entrance of the river is sheltered by the islands during North-easterly winds.

Vessels should carefully avoid the dangerous reef to the northward

of the two islands off the Pioneer, and lying nearly midway between those islands and the island to the S.E. of Slade Point. There is, however, a clear passage between this reef and the main land, and also between Slade Point and the small island lying off the shore. There is also a clear passage between the round and flat-topped islands.

The tides in the Pioneer River run from three to upwards of four knots. High water, full and change, 11h. 7m.

Vessels, if drawing more than six feet, may lay aground at low water, abreast the settlement, in safety, on soft sandy bottom; the river at that time of tide forming a perfectly sheltered basin there.

On entering the river while any tide is running, the banks are generally visible, and there is little difficulty in navigating the river if proper attention is paid, and the lead kept going. From the narrowness of the channel, the port is not well suited for vessels of any great length.

A plan of the river will be in the hands of the lithographer in the course of a few days.

G. P. HEATH, *Lieut. R.N.*,
Portmaster and Marine Surveyor.

New Books.

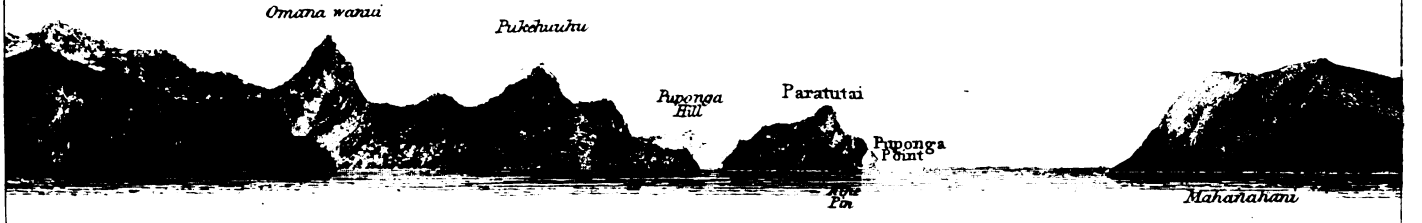
THE SCIENCE OF SHIP-BUILDING—*considered in its relations to the laws of Nature, with numerous illustrations. By H. B. Willson, Esq., of Canada.* Potter, Poultry, London.

It is Gay, we believe, who said that—

> "He who studies Nature's laws
> From certain truth his maxim draws,"

and were the observation more frequently followed than it is, there would be less failures than there are where success is looked for. Mr. Willson lays no claim to a close acquaintance with mathematical reasonings, but justly complains that those who are considered to apply them are widely opposed to each other in the proper form to be adopted in a ship to secure certain conditions,—and he very justly says, give us more experiments. He considers our naval architects are all abroad on the subject of form, accounts for the excessive rolling of our *Black Prince* and others, why the *Great Eastern* is as bad as the rest in bad weather, and looks to the subject of waves as not having been properly considered in relation to the depth of ships or the important question of stability. If we are to judge by our recent productions, Mr. Willson may fairly be allowed to be right when he declares naval architecture to be yet in its infancy. He does not spare the faults he finds still persevered in on this side the Atlantic, coming himself as a fresh water observer of this important subject from the fresh water ocean lakes of Canada. Our architects will find his precepts are founded on facts from Nature's own workshop, and though few, are well worth *their* consideration.

VIEW OF THE ENTRANCE TO MANUKAU HARBOUR.



Nine Pin, S.P.t of Paratutai and Puponga P.t in line *(bearing N.E. b E. dist.e 4 miles)*

(This is not now the leading Mark over the Bar.)

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

JUNE, 1863.

Excursion to the Lake of Nicaragua* up the River San Juan.—*By Mr. George Lawrence, Assistant-Surveyor of H.M.S. Thunder, Commander E. Barnett, in March*, 1840.

On the 8th of March, at 4h. p.m., we left H.M.S. *Thunder*, at St. John's, in a canoe, manned with five stout Indians of the Rama tribe, who are considered the best boatmen on this coast, and an intelligent Columbian padrone or pilot.

After touching at the town we proceeded on our voyage up the River San Juan, having been supplied with provisions for seven days.

For the first few miles up the river we found the stream apparently

* Mr. Bailey having ascertained the possibility of constructing a railroad from the head of the lake of Nicaragua, across the isthmus to the Pacific, the government voted him 2,000 dollars to undertake the examination of the River St. John, with a view to ascertain the practicability of constructing a canal, which would avoid the rapids, to obtain the difference of level between the lake and the Atlantic, and how far the river could be made available to steam navigation. To assist him, were appointed his son, a captain of engineers, and from twenty to thirty native pioneers; however, so arduous was the undertaking, that it appears the only thing done was, the survey of the river on an extensive scale; at the conclusion of which the party was nearly all disabled by sickness, their funds expended, and consequently their expedition at an end, and from the wretched state of affairs, there is no prospect of Mr. Bailey receiving any further encouragement from his government.

With respect to the mode of navigating this river, Mr. Higgins, the American traveller, and several others who have frequently made the voyage of it and the lake, say, that nothing can be more correct than the description given by Roberts in *Constable's Miscellany*. As to the possibility of cutting a

flowing at the rate of one knot per hour: the banks low, swampy, and difficult of access, thickly clad with a high coarse grass, called by the natives Gamalooti,* and lined with trees. At sunset we were about a mile above the lower mouth of the Juanillo, where the width varies from a half to three fourths of a cable. At 7h. 30m. p.m. we landed on a dry sand-spit to give the Indians their supper, and then resumed our paddles, keeping up a rate of two miles and a half per hour through the water, but probably not more than one and a half over the ground. The river was here exceedingly shallow, as our canoe, which only drew a foot and a half, and steered by the padrone, who

canal, although several report favourably, it is merely because they are interested in the success of such an undertaking, their opinions being given from what they have seen in passing to and fro, as fast as the rapids would permit, and the impenetrable woods which line the banks would allow them to see.

As to navigating it by steam-vessels at the present moment, it is out of the question.

From some cause or other, the force of the stream appears to have taken the direction of the Colorados branch, where it sweeps every thing before it. The consequence is that the shallows are growing in the other, and so rapidly that the bongos (trading canoes) are now frequently left aground for several days; and it was with some difficulty that we could find a passage over the bar for our yawl to water.

There is a rapid deposit taking place at the entrance point of the harbour, which clearly shows that if the whole force of the stream is not soon turned in this direction, not only will the river become unnavigable, but the harbour filled in.

The damming up of the Colorados could no doubt be effected, although at a considerable cost and immense labour; yet it should be borne in mind the country is subject to severe earthquakes. On the 22nd of May, two shocks were felt at the village, the last of which so alarmed the inhabitants that they were on the point of quitting their huts; we were at sea, about thirty miles North of the harbour, and felt one of them distinctly.

From Mr. Higgins's account, Mr. Bailey has also examined a part of the southern shore of the lake between Grenada and Nicaragua; and if he could be furnished with a small decked boat of light draught, he would still carry on the work, the rude bongo and canoe employed by the natives being perfectly unadapted for such a service. This could be easily sent to him in frame, or indeed already constructed, either by the river or across the narrow isthmus which separates the port of St. John in the gulf of Papagayo from the Nicaragua, only a distance of fifteen miles on a cart road; so that it would appear access to the lake is more easily attainable from the Pacific than the Atlantic.

Mr. Bailey is said to have been employed by a company of American speculators: this, however, is not the fact; although the merchants concerned in the South Sea fishery are extremely anxious to effect a communication, but nothing will be undertaken by them unless they are convinced it can be accomplished by the way pointed out in Mr. Bailey's mission, which by affording the means of rapid transport of the cargoes and supplies, would enable the whalers to remain entirely in the Pacific. Of course the spur which would be also given to the commerce of Central America is not lost sight of, but the anarchy, confusion, and distrust which now so ruinously degrades this disruptured republic, throws the prospect of such desirable results to an immeasurable distance.—*Commander E. Barnett.*

* Spelt as pronounced.

appeared to be well acquainted with the navigation, grounded several times on the soft muddy bottom.

Several small islands composed of alluvium were passed, overgrown with grass and trees, the former ten or twelve feet in height, the banks about eight feet, consisting of the same material.

The moon favouring us, we continued our course till 10h. 30m. p.m., when we hauled the canoe up for the night on a dry sand-spit near the Island Canon, where the banks of the river, though densely clad with grass, afford an indifferent footing. The river appeared to have subsided recently, by the sand which was still wet at some distance from the margin. This the padrone ascribed to the sudden fall of the Serapequi River, which had lately been swollen by the rains. The numerous low flat sand banks of the different points and islands, on which landing at present can easily be effected, are said to be completely overflowed in the rainy reason.

Monday, 9th.—At 5h. a.m. we launched our canoe and commenced paddling against a stream of two knots in the centre of the river, the shallows obliging us frequently to alter our course, the width varying from 100 to 200 yards. Off Vanilla Point (or Juanillo) I got the bearing of Juanillo Hill, which we subsequently ascertained by trigonometrical measurement to be 1,249 feet above the level of the sea. Here the grassy islets have a very imposing appearance. At 9h. 15m. we landed to breakfast on the island of Colorado, distant from Point Arenas, at the mouth of the river, nineteen miles. Below the Colorada branch the bed of the river is most encumbered with islets and sand banks, which in the rainy season are partially overflowed; but in dry weather are formidable obstacles to navigation, and would ultimately block up the river altogether but for the occasional freshes which keep the channels clear.

The average height of the trees on the island of Colorado is about eighty feet; on which we saw a few monkeys and macaws. The banks of this part of the river are more defined, and apparently composed of rich alluvial matter.

The River Colorado, at its junction with the San Juan, appeared wider, deeper, and freer from obstruction than the latter, the stream running at the same rate about two knots per hour.

Abreast of the Isla de Concepcion, the northern banks of the river are a little steeper than those of the South, being nearly fifteen feet in height, at the base of which, as well as in the centre of the river, we observed for the first time, in detached masses, boulders of trappean rock, showing themselves above the surface of the water: they have evidently been washed down in the rainy season, when the stream is so violent that the native boats or bongos, manned by a dozen able hands, find it impossible to get up thus far, and are often obliged to return to Boca de San Juan, not being able to make headway. Above Concepcion the river attains a breadth of about a quarter of a mile or more, but in many places we found it still very shallow. About a mile above it, two or three rivulets empty themselves into the northern

side of the river. This morning we caught a glimpse of the Manati, and saw some alligators and guanos.

At noon we were midway between the Culebras and Gigante Islands, and soon afterwards passed the upper mouth of the Juanillo, which appeared to be small and nearly blocked up.

Since we passed the Colorado we have found the banks gradually more prominent, and still composed of the same material, in some places partially stratified, and more indurated; the trees had also attained a greater magnitude; those on the small island of Gigante being not less than 100 feet high. The only human habitations we had hitherto seen since entering the Boca, were two or three huts, the temporary residences of sarsaparilla gatherers, situated on banks between Isla Gigante and the place from which we started this morning.

The sea breeze had been blowing fresh all day at N.E., and would have enabled up to carry sail, but to avoid the current, which was now running rather strong, we were obliged to keep close under the banks, where the overhanging branches would not allow us to step our masts.

We here found the depth of the river to vary from eight to ten and fifteen feet, the stream going at the rate of two knots, or a knot faster than below the Colorado branch.

At 5h. p.m. we landed on a small dry sand bank about three quarters of a mile below the mouth of the River Serapequi, which is twenty-nine miles distant from Point Arenas. The mean height of the banks between the Colorado and the Serapequi is about ten feet, and that of the trees including the bank between 100 and 150 feet, the largest of which was the eboo and cotton trees. Suspended from the branches of the latter we observed in great numbers the curiously constructed nest of a bird, which the natives call "yellow tail," a species of hangnest, or cassicus of Swainson.

The width of the Serapequi at its entrance is about 150 yards, at present very low, but not entirely dried up.

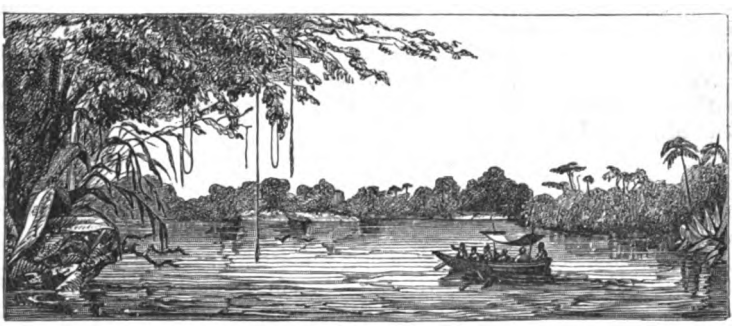
At 6h. p.m. we started, and continued paddling against the stream of two knots till 10h. p.m., when we came to another dry sand shoal, and remained for the night, about a quarter of a mile above the Isla de San Francisco, thirty-seven miles distant from Point Arenas. Our reason for always landing on such bare isolated spots in preference to the banks of the river was, that the latter are so completely overgrown with grass, and infested with noxious reptiles and insects; we, however, always slept in the canoe, while the Indians, divested of any clothing they might have worn during the day, and collected in a heap, preferred a sandy couch in spite of sandflies or any other annoyance: the jaguars howling dismally, and dew falling heavy,

Tuesday, 10*th*.—At 5h. a.m. the Indians rose without being called, and commenced their paddling labours with the greatest alacrity and good will. The morning exceedingly fine and tranquil, and the river looking beautiful.

About a quarter of a mile above the spot of last night's bivouac,

there are three remarkable cliffs on the South side of the river, composed of red ochreous earth, about fifty or sixty feet in height. The contiguous parts of the bank are about twenty feet high, prominent and well defined, lined with trees of large growth, and clothed with vegetation the most luxuriant.

About a half a mile above the Isla de San Francisco, we passed a point round which the stream sometimes rushes with great violence, forming a kind of whirlpool; and hence called Ramillino, where there is a small island of the same name. This phenomenon when passed was scarcely perceptible. At 9h. a.m. we arrived at the Island Careinja, where we hauled up the canoe (always taking the precaution to have the chronometers carefully deposited in some shady place). After breakfast we proceeded, paddling along the banks, which now in many places rise to forty and fifty feet, consisting of the same material. The Gamalooti grass growing on the lower parts of the bank contrasted beautifully with the darker tints of the forest; sky overcast; weather sultry. Thermometer in the shade 82°; river water 85°.



⌣ ⌣ ⌣ Grassy islands and banks.

Appearance of the river eastward about three miles above San Francisco.

The river when most swollen in the rainy season, which generally happens in October, is, according to the padrone's account, at least six or seven feet deeper than at present; and in the dry season next month (April) it is so shallow below the Colorado branch that for miles the bongos are obliged to be dragged over by main force through temporary channels.

Our Ramas were willing hard working fellows; but we found it necessary to give them extra rations, and with so much exertion I think they required it.

About half an hour past noon we passed the Rio Machado, where we first saw the San Carlos Hill, which is certainly the most remarkable one we had yet seen, its base terminating on the southern bank, its summit and contour not to be mistaken, affording an excellent landmark to distinguish the river of that name, beyond which it is situated about two miles; its estimated height is about 2,000 feet.

The general features of the river, as far as the San Carlos, were not different from what we had observed since yesterday. At 2h. p.m. we landed to dine on the island of San Carlos, situated opposite the mouth of the river of that name, distant from Point Arenas forty-six miles: its mode of formation and materials are the same as those we had hitherto seen. The width of the San Carlos River is here about two hundred yards, and its rate of stream, equal to that of the main river, in fact is (the padrone says) the chief cause of its increased velocity, as the River San Juan above this conflux becomes at once slack. After getting sights for longitude, we again took to our canoe at 3h. 30m. p.m., when the heat was excessive and breeze light, paddling along at a greater rate over the ground than we had hitherto done.

Beyond the San Carlos the river is more picturesque and beautiful, its waters gently gliding along at the rate of less than a knot, deeper, darker, and more in accordance with rivers of magnitude. Its sluggish motion I am rather inclined to attribute more to the suddenly increased depth of its bed than, as the padrone supposes, to its being above the junction of the San Carlos. Here the banks are bold, precipitous (ten, thirty, and forty feet high), and less encumbered with decayed vegetable matter; the hills in the distance rising to three or four hundred feet, and densely overgrown to their summits with trees of most majestic appearance. The breadth of the river is here about a hundred and fifty yards.

At sunset we were about a mile below Chorero Creek, and saw the hills of that name rising about 1,500 feet on the North side of the river. We remained for the night on a small dry sand shoal, situated above the Isla Campana, at the foot of the first rapid.

Wednesday, 11th.—At 6h. a.m., we attempted the first rapid, called the Machuca, sixty-two miles distant from Point Arenas, by poling and paddling along the northern bank; its velocity does not at any part exceed five knots, so that we had not much difficulty to overcome. The bed of the river is formed of small rocks, and at present very shallow, but in the rainy season these are covered.

At 6h. 40m. we were again in still water, where the stream was running at the rate of 2½ or 2¾ knots, the banks gradually rising as we approached the Balas Rapid from six and eight to twenty and thirty feet on the southern bank. At 8h. 20m. a.m. we arrived at the foot of the Rapid de los Balos, where the Indians laid in their paddles and commenced poling; by which means we ascended with equal facility, and almost immediately came to another, the Rapid del Mico, which does not require a distinct name, as they are evidently only continuations of each other, and as the maximum velocity of these so called rapids does not exceed 5½ knots, and the bed of the river is pretty clear of rocks. I may further add that the phrase "acceleration of stream" would convey a better idea of this part of the river than the word "rapid," which, although synonymous, has, as a conventional term, too strong a meaning, at least in the present state of the river.

By this time the morning mist, which barely enabled us to see across the river, had dispersed, and we ascended the Mico Rapid as easily as the two preceding ones, and by the same means. At 9h. 30m. a.m. we reached the Rio Bartolo, and stopped to breakfast, the Indians so voracious after their morning's exertions that we found it again necessary to give them a further additional allowance. There is no perceptible stream in this river. We cut a few light spars for the canoe, preparatory to entering the lake, and then resumed our progress up the river, having beautiful weather and little wind till nearly noon, when the sea breeze set in at S.S.E. At noon we were about one mile and a half below the Rapid del Castello Viejo. Temperature of the air 82°,—of the river nearly the same.

⌣ ⌣ Site of the Old San Carlos Fort, now entirely covered with bushes.

Appearance of the banks at the Rapid Del Castello Viejo.

Above the River Bartolo the strength of the stream appeared to be from one to one and a half knots; the banks much the same; beyond which, at a short distance inland, hummocks of fifty and one hundred feet may be seen, covered with trees of moderate size.

It was nearly one in the afternoon when we saw the point on which the old fort San Carlos once stood, and soon afterwards passed the Island Juana, where a temporary hospital was established for the sick in Nelson's memorable expedition against the Spaniards. Here we met a large bongo, which had left Granada seven days previous, and overtook another which had started from the town of San Juan about the same time: mutual greetings were exchanged by the padrones. At 1h. 15m. p.m. we commenced to ascend the Rapid of the Old Castle, and in the course of fifteen minutes had got beyond it by means of tracking along the South side of the river. This rapid has a mean fall of nearly five feet, runs at the rate of eight knots, and extends across the whole breadth of the river, which is here about a cable's length. By holding the chronometers (which I may here mention were placed in a painted canvas covered box, and packed in saw-dust) suspended in our hands while the canoe was tracked up the side of the river, they sustained less jerking motion than if we had carried them along the banks. The bongos, in ascending this rapid, are obliged to be lightened of part of their cargo.

The site of the fort is visible at the distance of 1½ or 1¾ miles; but soon it is shut in by a point, and by keeping on the northern bank of the river will not open again till abreast of that point, when you will be within a cable's length of the castle, now so entirely overgrown with jungle that we could not discover any portion of its walls. This being the scene of our gallant countryman's early career made it to us peculiarly interesting.

As soon as we had fairly got beyond this most formidable of all the rapids, which in my opinion well deserves the name, we resumed our paddles with good effect, the stream now running not more than one knot in the middle of the river, and on the margin scarcely perceptible. The banks are again low, and lined so thickly with the same grass, growing to the water's edge, as to render landing almost impossible. The heights of the trees were now between 70 and 130 feet.

At 2h. 50m. p.m. landed on the North bank, at a place called Santa Cruz Chica, about two miles above the Castello Viejo, where we stopped to dine under a delightfully shady tree. Here we found a fire already burning, which had probably been left by the bongo we met this morning. The heights of the banks are here about eight feet. At 3h. 50m. p.m. we resumed our paddles, Indians working admirably. The banks very low as far as the Toro Rapid, in some places nearly on a level with the water, lined with the same grass and a species of palm. The larger trees fifty or sixty feet high. The stream still running at the rate of a knot in the middle of the river, but not at all near the banks. At 5h. 30m. p.m. found ourselves beyond the Toro Rapid, seventy-seven miles from Point Arenas; which is, I think, the smallest and least violent of them all, the acceleration of stream in the centre being not more than four knots, and few rocks presenting themselves above water. The width of the river at the head of this rapid is about a cable's length from bank to bank.

Beyond the Toro Rapid the banks of the river are still lower, and in many places the trees are growing out of the water, and lined by palms on each side in such close and compact order as to form an almost impenetrable barrier, conveying not a bad idea of a well set hedge. The highest trees do not exceed forty feet. The stream is here very slack.

At sunset we were about one mile and a half above this rapid, where, owing to the swampy nature of the banks, we found the musquitos very troublesome.

I may here remark that from the River Machuca as far up as the River Savalos, which we had just passed, the bed of the Rio San Juan is studded with fragments of rock, while all below is chiefly composed of sand and mud.

At 8h. 30m. we passed the Isla Chica. At 9h. the Isla Grande, where there are hills of 800 feet altitude adjacent to the northern bank of the river. Being very anxious to get to San Carlos in time for morning observations, we gave the Indians an extra allowance of

grog by way of encouraging them to paddle till midnight; when we found ourselves nearly abreast of the River Melchorezto, and anchored in the middle of the stream, there being no landing, and the musquitos very troublesome.

To-day we passed two creeks, where there are settlements of Palo de Arco or Ajo Indians; why so named I have not been able to learn, unless from the circumstance of their using the garlic wood (as the latter name would seem to imply) with which the Indians sprinkle their huts in their exorcisms. This tribe has been much persecuted by the Nicaraguans, and still maintain their independence. One, whom we concluded to be a chief, from his fantastical head-dress of macaws' feathers and general appearance, was loud in his professions of friendship towards us as "Englishmen," and insisted upon knowing our names, which it appears is a practice among them to adopt of every stranger they take a fancy to. The padrone said he was in the habit of meeting one on this river, whom he identified as the same individual, but never under the same name; in the short space of a month he had assumed no less than four or five cognomens.

The banks of the river since we left the Toro Rapids were low and swampy; more particularly so abreast of the Isla Grande, where the thick grass and palms render landing quite out of the question. There are a few trees on the South side.

To level this part of the river would be a work of great labour; in fact, I doubt if fit spots could be selected for stations without having recourse to artificial foundations. Here we saw numerous birds of the grallator tribe. Much dew and little wind all night.

Thursday, 12th.—Away at daylight; general features of river the same as yesterday; stream flowing three-quarters of a knot. At 7h. 10m. reached Isla de Canon; an hour after, passed the Isla Padre. Here we first caught a glimpse of the lake and the low point of San Carlos. Stream at the same rate as yesterday; river about a cable's length wide.

At 9h. a.m. we landed near the huts of San Carlos, distant 140 miles from Point Arenas, and immediately got observations. On inquiring for the commandant, I was gravely informed by a ragamuffin looking soldier, who received us, that he could not at present be seen, having, with his wife, made too free with the bottle! Surely, thought I, there is a time for all things, and we had recourse to patience. Finding that our voracious Ramas had reduced the salt provisions to a solitary half piece, I sent the padrone to purchase some jerked beef and plantains.

With the exception of a long nine and a half feet brass 18-pounder lying dismounted on the beach, we could not discover any appearance of a fort on this point till, conducted by our padrone through a wilderness of bush, we came to the castle of San Carlos; once considered the Gibraltar of the lake, but now a heap of ruins, and so entirely overgrown and surrounded with trees, that it cannot be seen from any point in the neighbourhood, although only a few yards distant

from the beach. When first built and in good order it must have been a formidable little place, having commanded the river for at least two miles; but the motto "*Tempus edax rerum*" was here verified. Its guns are now quite unserviceable. The walls appear to have been composed of small stones, gathered near the spot and cemented together. The general figure is oblong; it is surrounded by a ditch and strengthened with piles. The officers' quarters appear to have been situated within the walls.

There are also three dismounted guns, two of which are brass, and several piles of shot, lying strewed about in all the infamy of inglorious rust. This appears the most commanding position of the river, although its elevation is only about fifty feet, while that of the fort is one hundred.

On our return from visiting these remains of Spanish grandeur, we were met by a coloured man, saying that the commandant wished to see us. I immediately repaired to his quarters, and found him extended on his cowskin couch, looking very "seedy" and debauched, attended by his wife, who grew extremely loquacious in prompting the questions which her poor bewildered husband put to me. Having explained to him the object of our visit, he appeared to be quite satisfied, and insisted no longer on a passport, which he at first demanded. Such a burlesque on military authority I never saw.

While breakfasting on the beach we were highly amused and not a little surprised to see half a dozen decent looking women, escorted by two as respectable men, deliberately strip themselves of all their habiliments in the most unblushing manner, and then commence their morning ablutions, totally regardless of us, or of their own companions;—a proof, perhaps, that innocence knows no shame, rather than a want of modesty. The whole village does not contain more than six huts, tenanted by only four families; so that, with the exception of the old commandant and his better half, we must have seen the whole population on this interesting occasion.

From the Morro Point we distinctly saw the peaks of Madura and Ometape rising abruptly from the lake, conical and well defined; the heights of which we subsequently found by calculation to be 4,190 feet for the former, and 5,050 feet for the latter.

In the afternoon the sky was completely overcast, and we had to wait till the next day for equal altitudes. My attention this afternoon was attracted by a sudden reflux of the waters, the lake having fallen nearly a foot since we landed. This, the padrone said, was owing to the wind, which during the day had been blowing rather fresh at S.E.b.E. At night, musquitos very annoying; dew falling heavy.

(To be continued.)

Journal of Captain Cracroft, C.B., of H.M.S. "Niger."—*New Zealand.*

(Continued from page 248).

March 5th.—A falling barometer and threatening look in the weather sent us to sea yesterday. Steamed out of the roads in the forenoon, and at 3h. p.m. set the close reefed maintopsail and banked fires. There was a tremendous swell from W.S.W. During the night both wind and sea moderated, and we steamed in this forenoon and anchored between the buoys as before. The *Victoria*, *Fawn*, and *Tasmanian Maid*, had put to sea also, and all returned in the course of the day; but although the wind gradually subsided, the swell continued very heavy, rendering communication difficult. A pleasant coast this is to be employed on!

8th.—The *Airedale* arrived this morning from the Manukau, and reports the Armstrong guns and mortars arrived safe at Auckland. The weather was very threatening, (in fact, the *Fawn* and *Tasmanian Maid* had gone to sea again,) but seeing us still at the anchorage she stood boldly in, and succeeded in landing, at some risk, a very large cargo, chiefly hay for the commissariat. In the afternoon the *Victoria* stood in within signal distance, and telegraphed orders to me to return to the Waitara, off which river we anchored at 8h. 30m. p.m.

Sunday, March 10th.—I landed yesterday morning in one of the surf boats, the bar being unusually heavy, and received orders to return immediately to the Manukau, to repair the boilers, which are in a very bad state. Colonel Warre, C.B., of the 57th, took a passage with me. We got away at 5h. p.m. under steam and sail with a fine fair wind, and moored off the White Bluff at half past ten this forenoon. The *Victoria*, which left at the same time, anchoring soon after us. She has been sent for the Armstrong guns, which, together with the mortars, are ready for shipment, and the *Cordelia* starts with the latter to-morrow, proceeding afterwards to Sydney to repair her fresh water condenser, which has broken down, and requires new tubing.

* * * * *

On the 16th the *Victoria* returned with the important intelligence that the natives had sent a flag of truce to our lines on the 12th. The near approach of the "safe and scientific" sap to their supposed impregnable pah has probably warned them that their position will not be long tenable; but it may be only a *ruse* to gain time while they prepare another stronghold still further removed from our base of operations. At all events Mr. M'Lean went down in this vessel the next day to inquire into the matter.

On the 19th the *Fawn* arrived for a cargo of ammunition, shot and shell, and some of the gear belonging to the Armstrong guns, which had unfortunately been forgotten. The news by her is important.

Hapurona's terms had been formally refused by the General, and hostilities had recommenced; almost the first shot fired by the natives causing the death of a most promising officer, Lieutenant M'Naughten,

Royal Artillery, whose loss will be severely felt, indeed there is no one to fill his place. He was shot dead while laying a cohorn in the demi-parallel in advance of No. 8 redoubt.

The flag of truce turned out, as I anticipated, only a ruse, for while the General was debating the terms, which were quite inadmissable, the natives were reaping a harvest of bullets, of which, it is said, they are much in want, having latterly fired only plugs of hard wood. On our side we were not idle, and all the artillery were got into position. A grand display there is, consisting of "mortars," two ten-inch, two eight-inch, and five cohorns; two eight-inch guns (from the *Iris*), two 24-pounder howitzers, and one 9-pounder field gun, besides the 12-pounder Armstrong battery, and rocket tubes. With such an armament surely something ought to be achieved.

22*nd*.—The *Victoria*, which took down Mr. M'Lean and some friendly chiefs last week, returned from the Waitara to-day, bringing intelligence of another truce between the belligerents, which it is hoped may be permanent until peace is restored. The Waikatos, with Thompson at their head, had recrossed the Waitara and retired northward; William King's party had marched back to their stronghold, "Mataitawa;" whilst the Taranakis and Ngati ruanuis, having plundered and burned up to the last hour, had moved off southward to their homes, carrying with them the sheep, cattle, and other booty, the obtaining of which seemed throughout to have been the object of these miscreants. Hapurona was the only chief of any importance left to confront us. Notwithstanding this altered state of affairs, Colonel Warre decided that the ammunition, &c., demanded shall still go down to Taranaki. * * *

Unfortunately, on her passage up the *Fawn* had her machinery disabled, owing to the bearings of the crank shaft being allowed to get red hot, which of course fused the soft metal, and cold water having been sagely applied while it was in this predicament, the result was a very pretty diagram upon the shaft; which, after a survey had been held on it, was sent over to Auckland to be turned down, there being fortunately a lathe at Messrs. Dove's, in Queen Street, large enough. The consequence of this misfortune, however, was, that our ship had to take the cargo intended for her, consisting of two hundred and fifty barrels of powder and between sixty and seventy tons of ordnance stores. Our engineers worked hard day and night to get the boilers finished, but it was not till 3h. p.m. on the 23rd that we succeeded in getting away.

The rain was falling heavily, but we had a smooth bar and a fine night; and at 1h. p.m. the next day I anchored off the Waitara, landed part of the cargo in the surf boats before dark, and the following morning the *Tasmanian Maid* came alongside and took the rest, excepting the powder, which we landed at Taranaki in the evening.

Found two vessels here with coal for the commissariat, which, in the altered condition of things, the authorities are anxious to get rid of, so I was enabled to complete from them. One, a schooner, was induced to lay alongside; the *Reta* brig we worked with the surf boats, and by

sunset on the following day we had taken in more than a hundred tons. Not bad work considering the swell. * * *

Good Friday, March 29th.—On Wednesday morning the weather looked very threatening, the barometer falling steadily, and the harbour-master signalized in the forenoon to the colliers to put to sea. I followed in the afternoon with the schooner in tow, and took her to a good offing. Banked up and made sail; about 7h. p.m. we had a tremendous storm of rain and a shift of wind to the westward, from whence it drew gradually round to S.W., blowing strong in the squalls, with a clear sky overhead; and I returned to the anchorage yesterday. It has blown very hard ever since, but being sheltered by the Sugar Loaves, we rode the gale out very easy, with the topgallantmasts housed, and yards pointed to the wind.

Easter Day.—The *Victoria* came up last night to complete coal from the commissariat stores; and at daylight this morning I anchored off the Waitara in readiness to embark the Commodore, and the seamen and marines who have been employed on shore so long in this bootless campaign, and truly unprofitable it has been!

To obtain a barren result (for this truce or armistice evidently does not mean submission) we have expended little short of half a million of money, and the lives of two or three hundred gallant men, among them some valuable officers, and succeeded in advancing just *five* miles during a whole twelvemonth into the enemy's country; whilst the natives, if they have had their reverses, have returned to their homes with the consciousness that they have not been vanquished, and that they have inflicted more injury than they have received. They have carried off their booty and their arms, and they have only to build another pah and resume the war whenever it pleases them, or when the spring shall make fighting a little more agreeable in the open air.

Monday, April 1st.—This afternoon the naval brigade, consisting of 154 men of all ranks, came out in the *Tasmanian Maid*, and at 3h. p.m. we started with a fine fair wind for the Manukau. We had a capital run, and anchored off the White Bluff at 12h. 45m. the next day. The men were landed at the Bluff and marched over the hills to Auckland. * * *

Commenced what I hope is to be our last refit, and made every preparation to start for England directly the *Miranda* arrives.

On the 4th the *Fawn* left for the Waitara with Lieutenant-General Cameron, who arrived by the last mail steamer to supersede Major-General Pratt, and whose nomination to the command has been hailed with the utmost satisfaction by every one. He has doubtless been selected by the Horse Guards as a man suited to the emergency, with a full knowledge that bush fighting is absolutely necessary to ensure success, and that the policy of secret, sudden, and constant attack is the only one that can be effective in New Zealand. He ought to have come here earlier!

April 14th.—The terms offered by the Governor have been accepted by the insurgents and the war is terminated. Nothing now remains

but to bring back the troops and munitions of war, the last cargo of which was sent down in spite of my remonstrances. * *

At nine this morning we got away; crossed the bar at noon, and anchored off Taranaki at 10h. a.m. the next morning. Found the *Fawn* here waiting to embark the Governor. Landed and paid my respects to his Excellency, whose conditions of peace have excited such astonishment here,—and no wonder. Not the slightest compensation is demanded for all the losses and sufferings of the settlers,—not the least retribution for the deliberate murders perpetrated by the natives. All the honours of war remain with the enemy. The *victorious* troops are left with an empty pah as a war trophy for all the lives that have been sacrificed. In this state of affairs, Governor Gore Brown blandly tells the enemy that he wishes things to return to the state in which they were before the war. The survey of the Waitara block of land, which was so *rudely* interrupted by Wiremu Kingi, must be allowed to proceed; but the title is still to be left an open question, and all are to be allowed to state their claims freely, subject to the decision of the Government. All guns captured by the natives are to be returned: and all plunder restored—including, I presume, the houses that have been burnt, and the sheep and cattle that have been long since devoured. The Ngatiawa must promise to behave well and submit to the laws in future. The land occupied by the troops is to be forfeited to the Governor, *pro formâ;* but his Excellency hastens to inform the natives that this is only a makebelieve, and that he intends at once to restore all the territory to its former owners, reserving only the right to build block-houses and make roads. Instead of punishment, the belligerent natives are to have rewards. The land which they have dyed with the blood of our countrymen is to be restored to them with all the advantages it has gained from the presence of the civilization they have scorned and trampled on!

These very easy conditions being complied with, the late enemy are to "come under the protection of the law, and enjoy their property, both land and goods, without molestation." No wonder that people are astonished, and ask for what purpose all our "blood and treasure" have been expended; and the "Queen's" name invoked. Truly we have been making war for an idea with a vengeance.

I had sent my despatches for the General to the Waitara by a horse express, and at four o'clock anchored off the river in readiness to embark the troops.

Tuesday, 16th.—At high water the *Tasmanian Maid* came out full of men, and with the help of a surf boat, which made several trips, I embarked Lieutenant-Colonel Young and 369 officers and men of the 65th regiment; and before 3h. p.m. we were on our way to the Manukau. Crossed the bar at 7h. a.m.; moored at noon below the White Bluff, and before dark the troops were all ashore. Colonel ——, who is a red tapist, being highly indignant that they were not kept on board until his leave for them to land had been obtained from Auckland!!! * * *

Prepared immediately for another trip to the Waitara. Completed coal from our brig, and at 1h. 45m. p.m., on the 18th, stood down the Manukau; crossed the bar at 4h. p.m., and the next morning at 7h. 30m. anchored off the river. The *Fawn*, which left a few hours before us on the same service, anchoring also.

The weather looked very threatening, but I went on shore and made the necessary arrangements with General Cameron. Some of the troops came off in the afternoon, and I succeeded in getting the *Fawn* away at 7h. p.m. with 120 of the 65th regiment. * * *

The following morning a heavy swell set in from the westward, rendering the embarkation very difficult; but with the help of gratings slung over the side, and bowline knots, we succeeded in taking on board Colonel Wyatt and 350 of the 65th regiment, and at 7h. p.m. on Saturday, April 20th, started on our return. The barometer had been falling steadily, and I knew well what to expect; but the wind still held in the N.E., and we were enabled to lay our course (N. ½ W.) with the fore and aft sails set. We got up to the bar on the following morning, but had to wait for the tide until 1h. 30m. p.m. before venturing to cross it. I must confess that this detention was a most anxious time. The barometer was tumbling down, and the wind, which was coming off the land in fitful gusts, burst at last into a fierce gale before we were half over the bar: but by hard stoking we managed to drive the old craft ahead against it, and she crawled slowly in, several wicked-looking rollers shaking their white crests at her almost within arm's length, fortunately they did not break on board. On this occasion we found it necessary to keep much further to the northward than we had ever done before, owing to the heavy breakers in the old channel, and there can be little doubt that the bar is extending in that direction, so that Captain Drury's marks are now entirely useless.

The course as laid down on the chart is N.E.b.E., with the Ninepin Rock, Paratutai, and Poponga in one. But I found the proper course to be steered, N.E.b.E. ¾ E., with the Ninepin Rock a full breadth open to the southward of Paratutai, Poponga being of course shut in. We moored off the White Bluff at 4h. 30m. p.m., and I landed to report my arrival; but it was impossible to do anything towards getting rid of our live cargo that night; the rain came down in torrents, and the condition of the poor soldiers was most deplorable, although everything in our power was done to lessen their discomfort; but the scuppers were so choked by the baggage that the water could not run off the deck, which was full ankle deep in consequence. Nor, when they landed in the morning, was their condition improved; for the barracks at Auckland being occupied, they had to pitch their tents upon ground thoroughly saturated, which, from the nature of the soil, was speedily converted into mud, and there was no fern forthcoming for a carpet, as at the Waitara. Then, as it was impossible to cook in the open air, owing to the torrents of rain, the men had to go to the public-houses for food, and were to be seen wandering all over the settlement at Onehunga in search of it, in a most pitiable state, and with no means of drying their wet clothes.

For three days this weather continued, until the settlement was almost impassable; the roads were quagmires, two or three feet deep in mud. On the 26th, however, there was a shift of wind, and a slight change for the better, and the *Fawn*, for whose safety serious fears were beginning to be entertained, arrived. She was followed the same afternoon by the *Miranda*, which left England on the 10th of December, and the services of all three vessels were put into requisition to bring up more troops. * * *

Saturday, April 27th.—I got away this afternoon; but dreading the heavy sea which there must still be upon the bar after all the late bad weather, I anchored for the night under Poponga, and on Sunday afternoon crossed it, the *Miranda* and *Fawn* following close up. Most fortunate it was that we did not attempt the bar on Saturday, for in the worst part of the channel the spindle of one of the slide valves gave way, and we got clear with some difficulty, being obliged to work the engines very slow. When safe outside the defect was soon made good by our ever ready and zealous chief engineer, Mr. Rock. * * *

Monday, April 29th.—At 9h. a.m. we anchored off the Waitara, *Miranda* in company, and Captain Glyn went ashore with me in the surf boat.

Colonel Leslie, of the 40th, was in command of the camp, and such expedition was displayed by both him and the Brigade Major (Paul) that before 3h. p.m. we were away once more with no less than 474 of the 14th and 40th regiments on board. The *Miranda* got away in the evening with nearly as many, leaving very little for the *Fawn's* share. The next day before noon we were moored off the White Bluff, and before 3h. p.m., with the help of Mr. Powell's lighters, which were hired for the occasion, the ship was cleared. Hauled the *Moa* alongside immediately, ready to commence coaling in the morning.

The *Miranda* arrived in the afternoon and landed some of her troops, but fortunately not all, for the weather during the night changed again to wet, and the condition of those we landed was even more deplorable than that of their predecessors, and every barn, stable, and outhouse in the neighbourhood, even unfinished cottages, were hired by the commissariat and occupied, tents being perfectly useless.

On Thursday the *Fawn* arrived with a half battery of Armstrong guns, and this completes the force intended at present to be removed from Taranaki.

The rain prevented our coaling till Friday, when ninety-six tons were taken in in about six hours, the men having had more than a hint that this would probably be their last coaling in New Zealand.

Tuesday, 7th.—Received orders to-day to return to England, and the joyful tidings seem to have turned every one's head. Only those who have been five long years from home, and whose return has been delayed for a twelvemonth after their recal, can fully appreciate the effect that such an announcement would have on a ship's company. I thought the band would never cease playing "Homeward-bound" this evening. * * * *

Thursday, May 9th (Ascension Day).—At 10h. 20m. the anchor was lifted for the last time, I devoutly hoped, in this hemisphere, and we moved slowly away, giving the *Miranda* three hearty cheers as we passed her; which were as heartily returned. We had scarcely got round "Cape Horn" when the feed-pipe burst, and we crawled ignominiously down the Manukau; most fortunately the ebb tide had made.

It was a lovely day, almost calm, and the whole of the range of the hills South of the Waikato, as well as those to the eastward and North of Drury, were distinctly visible, a magnificent panorama! Many of the settlers, to whom the ship's name has been long a household word, and with whom the most friendly relations had been established, were down on the beach, waving their adieus as we passed.

At noon we discharged Captain Wing, our pilot on so many occasions, for the last time, and the engineers having succeeded in patching the feed-pipe up, we crossed the bar.

Shaped a course South under steam only, for the light air we got outside soon died away, and no land wind came off to assist us. At daylight the Burning Mountain and lofty Alps to the southward of it were distinctly visible. The peak of Mount Egmont looked superb in the early dawn,—but we were soon past Taranaki and the well remembered Sugar Loaves! We coasted along all day, keeping about four or five miles from the shore, and had a good view of Te Nama, the only spot on this wild coast where a boat can beach without running the risk of total destruction. The weather was beautiful; most favourable for seeing the chief features of this splendid country, which is still, notwithstanding our truce with the natives, closed against us. Indeed, the latest intelligence received from this quarter by no means favours the hope of tranquillity which recent events seemed to promise, for the mail to Wanganui had been turned back already by a Ngati-ruanui chief. * * * *

Saturday, May 11th.—A light breeze sprang up from the westward yesterday at sunset; but not feeling at all sure that we should get through Cook Straits without the aid of steam, I set the screw vertical and banked up. This morning, however, the breeze was so steady, and gave such promise of lasting, that the propeller was lifted, fires let out, and every stitch of sail set in hopes of getting through before dark. At noon we were abreast of Kapiti Island, and had a good view of the entrance to Queen Charlotte Sound.

It was a lovely evening and the rays of the setting sun reflected from the distant Kaikoras was a sight not easily to be forgotten. About dusk we entered the narrowest part of the straits. Both shores here rise in bold headlands, that of the Middle Island being particularly grand. The wind now freshened considerably, and soon carried us out clear. Wellington light, a very good one, was in sight soon after 8h. p.m.; and at midnight we took our departure from it, bearing N.W., and with a fine strong breeze nearly aft, bade farewell—a long farewell for most of us—to New Zealand!

This breeze, which promised so much, lasted scarcely more than

twelve hours, and was evidently only local; but we cannot be becalmed long in this latitude, and getting clear of Cook Strait so easily is a subject of much congratulation after the storms we have experienced in its vicinity.

And now, before the incidents of the long voyage before us occupy attention, and more or less throw into shade even the stirring events of the last twelvemonth, I shall recapitulate the number of trips the ship has made while occupied in the conveyance of troops and military stores between Auckland, or Onehunga, and the seat of war, viz.:—

1860.—February 26th.—Auckland to Taranaki, with artillery and ammunition.

March 5th.—Taranaki to the Waitara: baggage of 65th and stores.

March 24th.—Manukau to Taranaki: troops, provisions, and stores.

April 5th.—Manukau to Taranaki: military stores and provisions.

September 30th.—Taranaki to the Manukau: *Iris's* (naval) brigade.

November 12th.—Taranaki to the Manukau: 65th regiment (one wing).

November 30th.—Manukau to Taranaki: 65th regiment (one wing).

1861.—January 5th.—Manukau to Taranaki: 14th regiment (one wing).

February 20th.—Manukau to Taranaki: 57th regiment (one wing).

March 23rd.—Manukau to Taranaki: ammunition and ordnance stores.

April 1st.—Waitara to the Manukau: *Pelorus's* (naval) brigade and stores.

April 16th.—Waitara to the Manukau, with 65th regiment (370 men).

April 20th.—Waitara to the Manukau, with 360 of the 65th regiment.

April 29th.—Waitara to the Manukau, with 474 of the 12th and 40th regiments.

Making fourteen trips in all in fourteen months, and the inconvenience all hands were put to, the annoyance they had to endure on some of these occasions, may be easily imagined. I will only add that the ship crossed the dangerous bar of the Manukau no less than twenty-eight times during this period, and, with the exception of a fore-royal-mast, which the soldiers carried away in their eagerness to assist in housing it, without a single casualty of any kind occurring to her on this exposed and tempestuous coast. Thanks to a most merciful Providence!

(To be continued.)

A Trip to Tananarivo:—*Madagascar.*

(Continued from page 253.)

Some days after my arrival at Tananarivo Radama invited me to an official dinner, excusing himself for being unable to preside at it in consequence of the death of his mother,—making Rainilaiarivony his substitute; at whose house it took place in a style truly picturesque. A gallery *a l'Indienne* ran round the room, ornamented with small *facettes* of glass placed in groups and figures, which the lights that were placed inside of them rendered brilliant with all colours of the prism. Beneath the gallery was a series of paper hangings on which were represented, in paintings, episodes of the French wars. I cannot say whether the tone of these pictures harmonized with the rest of the ornaments of the room, or if I was disposed to view them in a favourable light. But on entering, the whole effect on me was that of being introduced suddenly into some extraordinary place, where nothing shocked the feelings, notwithstanding the oddness of the details. It seemed to me as if the architecture, with its singular ornaments, corresponded perfectly with the whimsical uniforms of the officers, as well as the extravagant toilettes of the ladies.

The soirée was pleasant and agreeable, in spite of a day in the middle of winter, and the open doors left a free circulation of air in every respect. The guests were necessarily composed of the high functionaries of the government, attended by some of the ladies and French gentlemen of Tananarivo, to whom I know that I am much indebted for having made a point of accepting all their invitations while I was there, with the view of making the time the more agreeable to me.

Dinner was served neither *a la Francaise* nor *a l'Anglaise*, but quite in Malgache style, one which among us would have its little inconveniences. The table was covered with fruits and flowers and indigenous spices of all sorts; the wine, of considerable variety, was equally adapted to meet the tastes of the guests, but there was not a dish upon the table. As soon as we were seated a number of assistants came and offered a number of dishes, of which they told us the contents. The greater portion of the dishes were similar to our own, but this courtesy could not extend so far as to omit a heap of rice, the foundation of the Malgache repast. Only by a special care it had been generously aromatised with native condiments, which would even place it within the profane reach of a European courtier. I certainly do not depart from truth when I say that more than thirty dishes succeeded each other without intermission.

But if they were numerous the toasts which were to wash them down were still more so. All those who could have any pretensions to the honour of a health under circumstances of this public display had their turn, and if any were forgotten it might have arisen from Rahaniraka, who was placed as near as possible to me to hear the

conversation which passed between me and my two neighbours, M. Laborde and Rainilaiarivony.

The affair was to terminate with a ball; but a sitting of three hours at table had sufficiently tired me, and I did not consider it necessary to honour it with my presence. I retired therefore early, with the sound of music in my ears, that had never ceased playing all the time of our meeting.

Two days afterwards I was attacked by the first fever I had had, and which I attributed to the fatigues of the journey and the unhealthiness of the winter season. For three days after this it returned with much regularity of hour, in spite of the quinine, which I did not fail to take in large doses. Throughout fifteen days afterwards I was attacked by the same fever; and if I have now entirely thrown it off it is owing to the change of climate and a proper attendance to diet, however well I may have been inured to that of the island.

Europeans who are attacked by this fever, which is bilious and of a very persistent nature, are treated principally with emetics and purgatives, giving very little attention to the febrifugal action, to which they do not even have recourse. They have the greatest confidence in Le Roy's medicine, and there is not a practitioner in the whole country who has not got it at hand, as much for himself as for his patients. In my experience I did not find the blood rush to the head. The contrary rather took place; for sometimes, suddenly reduced by the action of the bowels, without suffering at the same time in the head, I lost both memory and reason. Taken with an immoderate desire for talking, words failed me, and my tongue, dry and parched, remained as it were paralysed. Under these circumstances some spoonsful of spiced wine happily did not require long to renew the circulation.

The people here have a great many medicinal plants, which I abstain from mentioning lest I should be wrong. They obtain infusions of roots and leaves of different kinds. The *Palma christi* is found here, and others of a poisonous kind in great numbers. But the most celebrated of all is the taughin bean, or fruit of the *Taughinia venenifiua;* the employment of which in matters of jurisdiction has had so many victims in Madagascar, and which Radama the Second ordered to be discontinued as soon as he came into power. This measure of reform, proceeding from himself alone, ought to obtain for him the gratitude of philanthropists much rather than the emancipation of the slaves, who die from hunger or live by plunder as soon as they have no master who is interested in looking after them.

Every one who knows anything about Madagascar is aware that from time immemorial, even up to last year, those persons who were accused of a crime of which there was no proof, were subjected to that of the *tanghin.* But its especial victims were those who were suspected of the imaginary crime of sorcery or witchcraft. Against these it was considered the judgment of God would be directed, and cases have been known, where there was a doubt of an evil spirit possessing a person, that of his own accord he would undergo the

terrible ordeal, and ask for the ampan anghin to quiet the scruples of his own conscience.

Perhaps there might have been at different periods different modes of administering the tanghin, for authors by no means give the same account of the subject. Nevertheless, for my part, here is what I have been told in a few words about it by my guide Rascolo, the Hova officer whom the Governor of Tamatave gave me as a companion, and he is a relative of Radama.

Rascolo, in his younger days, was employed in the service of an Arabian merchant trading to the western coast of the island, and he had the unhappy weakness of appropriating to himself a packet of coral which had been confided to him, and to spend the produce of it in some foolish expences. He was soon arrested and placed in confinement to pay the sum. But not having the means of doing so, he was condemned (notwithstanding his relationship) to serve as a slave to his old master until he had redeemed the debt by his labour. When he was about to recover his liberty, without the means of living and to be banished from the capital, he could see no other resource than that of the ampan anghin, to which his birth permitted him to appeal; and he decided on submitting to the proof,—that is, to take himself the ampan anghin, and thereby to acquire the post of administering it to others.

He had the good fortune to resist the poison, obtained the place at Tamatave, and there exercised the terrible functions of his office with humanity. Without employment since the accession of Radama the Second, like all his brethren of that station, he has been nominated to the eleventh honour for the services he rendered to me, and expects in a short time to have a command on the coast.

But to return to the tanghin. This is the course of proceeding of late years. The patient, after a rigorous fast of twenty-four hours, is stripped naked before the ampan anghin administrator, who endeavours uselessly to induce him to acknowledge the crime with which he is charged, for the punishment would then be certain, and generally more cruel than the proof by poison, which at least leaves some chance of escape. During this examination the administrator is bruising the poison on a stone, and mixing with it the juice of the banana fruit and forming a bolus with it, about the size of the end of the little finger. This process being concluded, the patient is then compelled to swallow a large spoonful of rice and then a ball of rice containing three small pieces of skin cut from the back of a fat fowl, then follows the tanghin pill, and then another spoonful of rice. After this he is left to his friends and relatives, who induce him as soon as possible to swallow a large quantity of rice water to produce immediate and plentiful vomiting, and they often succeed in relieving him of the poison before it has passed into circulation. But this is not all. In order to be pronounced really innocent, it is necessary, besides all this, that the three pieces of fowl skin should reappear, that they should be perfect, and that he should not sicken at the

sight of them. If any one of these conditions be not fulfilled, the poison is only escaped for the patient to be assassinated on the spot.

It is perhaps not matter for surprise that the superstitious faith of the Malgache population should remain so long victimized by the tanghin; for the Government found in it one of its best sources of revenue, and therefore good reason for preserving this barbarous custom. In fact, the heritage of a man who has died from it is thus partitioned: one third goes to the State; another third to the accuser, and the other to the family of the victim. The cupidity of accusers is thus much excited; they form an active police, and by their zeal replenish the coffers of the state while they make their own fortune. If by chance one of their victims escapes through this judiciary tribunal with honour, the accuser is merely condemned to pay him as an indemnity some few dollars, and all is over.

Other modes of victimising are in use among the Hovas that are scarcely a year old. That which is known by Europeans as the Tarpeyan Rock at Tananarivo, is the vertical precipice of the hill on which the town stands, near the present palace of the Queen, and fronting the *Champ de Mars:* the condemned person is thrown from the top of this precipice in presence of the people collected on the plain. By the mode of torture by hot water, the victim is placed head lowest, with the arms tied down to the body, in a narrow pit, about four feet in depth. The victim is then let down gradually into it, until death relieves him of his sufferings. But I do not enter into the details of these horrors, which have all now happily been abolished, thanks to the enlightened mind of Radama the Second.

The religious feelings of the Malgaches appear as yet to be but little developed. They are said to believe in a good spirit and also in an evil one; but having nothing to fear from the first, their object is to propitiate the second, with the view to escape the evil it can inflict on them. They have sorcerers and prophets, who make much by fortelling the future; for after having consulted one of these, he can protect you from dangers that threaten you; pointing out to you whether at any time it is propitious or not to execute a project. I have not yet found myself in communication with these oracles so as to judge of their powers; but these have not saved them from being expelled from the capital on the death of Ranavalona, whose reign was their own.

I had but few opportunities of seeing the superstitions of the Malgaches; but I may cite two instances of them. At Ambodising, not far from Tamatave, the sacred urn of which G. de la Combe speaks is still to be seen, although the lower part is broken. This urn is a vase of a kind of clay, in form nearly spherical, from twenty-four to thirty inches in diameter; but the mouth of it rather small. It was the custom of the natives on setting out on an expedition to pass by this urn and throw a piece of money into it as an offering, which the people of the town did not hesitate to appropriate to their purposes as soon as possible. One of these finding his arm not long

enough to reach the bottom of it, or perhaps from some other motive, broke it at the lower part, since which event it very rarely happens that a believer has been found so devoted as to invoke the favours of a deity which can put up with such indignities from his votaries.

In the province of Emirne travellers invoke the aid of other saints. They have a remarkable predilection for certain blocks of granite, to which they fervently pray; they will say,—"Stone, beautiful stone, if you will grant success to my enterprise, I will thank you abundantly on my return." And it is a fact that many of my men, who probably had made a vow when passing it the first time, thanked each of these stones on returning most scrupulously. They are in general one or two yards long, lying on the ground, where they shine with all the glitter which the care of their worshippers produces on their surface.

In the same province are found long narrow stones standing in the ground on one of their ends, some of which are five yards in height, and some surrounded by smaller ones. I never could ascertain the religious meaning of these monuments. There are tombs also in the same province in different places about the country. These have generally the form of a pyramid, with steps on the sides, from five to six yards high, but without any inscription to give them either date or notice of their origin. Some tombs, like that of Radama, contain, it is said, considerable fortunes; and the care which is taken by relatives to deposit in them some utensils of this world, proves their belief of a future existence.

Notwithstanding the intolerance, and thence the persecution to which Christianity has been subjected in the last reign, we have now at Tananarivo missionaries who not only live there in the most complete security, but also who are at full liberty to instruct the children committed to their care. Guided by good discretion, they endeavour above all things to dispense the benefits of education, and among other means by that of music, to which the Hovas are very partial. They are made to sing in very good style and in several parts, canticles and hymns, as well as little pieces to which Radama is partial. The missionaries have formed several elementary works for teaching our language, and some important persons do not fail to profit by their instruction. Religious services are also performed, and all this cannot fail to have a good effect. Perhaps these lessons may be the means of inducing these people to learn that the results of labour are more advantageous to them than those of idleness: it will be a great victory gained over the general immorality of the country, and their success will much enhance their merit.

The illness of Rabodo seems to have something more than a natural tendency, and I began to despair of obtaining an interview after all my inquiries for him, when I received the information that he would see me. I apprehended, moreover, as I had been informed that the Queen was averse to the liberal views of Radama, and disposed to support the old retrograde policy of former times. However, on proceeding to her palace I was received with the same honours which I had previously experienced from the King. Radama was by her,

and our conversation took a turn which enabled me to comprehend the control which Rabodo has over her husband. Far from appearing hostile to progress, it seemed to me that there is but one principle, that of consummate loyalty, prevails under her roof. She did not plead ignorant of the proceedings which have been attempted about Radama in favour of Marie and her son, and was indignant that the promoters of this unpopular idea were absolutely the warmest partisans of progress. She is by no means disposed to descend from her station of Queen and abandon to her former servant the rights which she has to reign if she survives her husband.

There was perhaps a little bit of emulation in letting the people see the good understanding which existed between her and myself. So, by way of making it as public as possible, she made her husband ask me to give her my arm for a walk round the palace. Radama and all the persons present did the same with the ladies and followed us. The troops and all the people that were assembled at the palace watched this with much enthusiasm, and the impression on me was that Rabodo wishes to make herself popular, that she is inclined to dominate over her husband, but that she understands as well as he does all the advantages of a liberal and progressive policy.

On the following day or the next M. Laborde wished me to give a *fête* at his country house, outside the town, the house in which the celebrated conspiracy of 1857 was concerted, in which Madame Ida Pfeiffer found herself compromised without a doubt. After a sumptuous *déjeuner*, at which Mlle. Juliette and the French merchants at Tananarivo assisted, M. Laborde showed us over his studio and displayed the means which he had employed to attract the attention of Ranavalona and induce her to admit some useful applications into her dominions, and among others lightning conductors.

Having no motive for staying longer at Tananarivo, and indeed feeling the necessity of returning as soon as possible to France, I fixed my departure from the capital for the 31st of January, and in the morning of that day set out, accompanied by the same escort as on my arrival. The cannon of the place paid me the honours that they would do to a crowned head. I departed, in fact, with every demonstration of sympathy. Rahaniraka only, with whom I had differed, did not show himself, and shut himself in his house out of a little revenge on my departure from Tamatave. I took leave for the last time of all who had accompanied me; the national air was played on seeing the last of Radama's house above the horizon of Tananarivo, and I took my road homeward, the same by which I had entered it. Nothing of importance marked our return to Tamatave. The rains had only swelled the greater part of the water courses. We were obliged to wait two days before we could cross the River Audrama Waafana, and had to traverse in a canoe part of the plains in its vicinity, which twenty-four days previously we had crossed dry footed.

The Hova character, during my stay among them, appeared to me much less excitable than it had been represented to me, for I do not honour Rahaniraka so much as to take him as a sample of his coun-

trymen. But I may say that I found in him a specimen of vanity which seemed to me hereditary. I will cite some well known instances of this. Radama the First was fond of comparing his conquests with those of Napoleon under the first empire. He placed himself on a parallel with the first Napoleon, and never could divest himself of the fear that he would some day meet the fate of the unfortunate Louis XVI. Ranavalona, when speaking of our success in the Crimea, would only admit that if the Russians were conquered by us it was because they were not so strong as the Hovas; for France and England had been beaten by them at Tamatave. Radama the Second himself, although under a sanguinary system which was at the bottom of the policy of his predecessors, like them also had his little share of vanity. After he had suppressed the collection of dues at Tamatave, he naively asked whether all the merchants of Reunion and Mauritius, struck with so much liberality on his part, would not at once come and settle in Madagascar? Nearly all the higher class reason much in the same way. Ignorance and isolation magnify to an enormous degree in their eyes the most insignificant acts, and depreciate those which go on at a distance; and again, being among those who import European fashions, by imitating their habits they believe at the same time that they have acquired their state of civilization. But they have decidedly an intelligence and a desire to learn what they do not know, along with that thirst for imitation which will have the happiest effect if only they have good examples set before them. At present, blinded by flattery, by loose manners, sensual and voluptuous, they are passionately fond of music, they abandon themselves to luxuries, and feel no shame in bartering their opinions in state affairs. But in spite of their warlike origin, or the torrents of blood which have flowed from their barbarism, I do not believe them to be naturally given to falsehood or cruelty, nor that they are so bad as to be capable of compromising the safety of a visitor. A Hova dare no more lift his hand against a white man than a Malgache would do so against a Hova.

(To be continued.)

The Western Division of the Mediterranean.—*Winds and Weather.*

(Continued from page 241.)

The easterly winds of winter are always severe and trying from the gloomy thick weather by which they are attended and the heavy sea that they raise, being, in fact, the scourge of the Spanish and African ports. After some days of a northerly wind an easterly wind may be expected, and also after a clear land wind on the coasts of Spain.

The commanders of coasting vessels having a common saying, "*terral en España, levante en campoña,*" the land wind in Spain, the *levanter en campaña,* a saying that is often realised.

After the vendaval has been prevailing for many days and the weather has become settled, from the natural veering of the gales the wind shifts round to the land, some two or three days, or perhaps more, may be expected of clear sky and fine weather. The wind veers then to the N.E. quarter, blowing from N.N.E. and N.E., clear and fine for the first few days; but in proportion as it veers eastward, clouds gather about until it settles at East, accompanied with dark cloudy weather and rain. It continues thus for two or three days; veers to E.S.E. and S.E., then passes rapidly to South and S.W. In February and March it does not remain long there, for it soon becomes West, and settles at N.W., clearing up the atmosphere.

One of the most certain signs of the easterly wind in winter is, after the wind for several days has prevailed from the land, that of clouds being seen gathering in the horizon to the N.E., originating in the gulf of Lyons,* driven before the N.W. wind, compact and white, and called by navigators packs of cotton, and by meteorologists *cumulus.* At the same time a hollow sounding sea is observed, which runs on the Spanish coast as if it came from the N.E., but flows into the harbours as if from the S.E. That kind of sea, the more observable the nearer to the gulf of Lyons, shows the strength of wind there is in it, and which more or less rapidly runs on the coast, changing insensibly to East or E.S.E.

Las Tascas (a local expression) of the port of Barcelona are often seen breaking in the midst of fine weather, which waves originate in the gulf of Lyons, the precursors of the N.E. or E.N.E. wind, which will set in perhaps in less than twenty-four hours. Even in the coves and bays of the coast of Alicant these are observed, and are an infallible sign of a norther in this gulf, and one also of an easterly wind in the gulf of Valencia. When the *cumulus* clouds are observed in this gulf beyond Cape Oropesa in the direction from the land seaward, a N.E. and easterly wind may be looked for.

On the Spanish coast the winds from N.W. to N.E. bring clear weather. They are generally announced by the still condition of the atmosphere, and also by its transparency, which admits of distant objects in the interior being distinctly seen. If it appears that the clouds collected over the land to the eastward are dissipating or dissolving, or those on the western sides of the summits of the mountains are passing to the eastward, these are signs that in the upper regions of the atmosphere a westerly wind is prevalent.

On the African coast N.W. winds are attended by dirty weather, especially in January and February; they bring heavy showers and raise a heavy sea, very detrimental to coast navigation. The worst gales on this coast are those which, beginning at S.W. with dirty

* Or Leon, as in last number.

weather, shift to West, and settle at N.N.W. Nor are those from N.E. anything less trying to navigation when they back round to North, especially from Cape Tenez to the eastward, on which part of the coast they throw all the heavy sea that is raised by them in the gulf of Lyons, producing great trouble in the coves and bays. The waves driven by the furious northers in this gulf, are not less than 33 feet high in the opinion of Admiral W. H. Smyth.

In March and April the easterly winds are already established on the coast of Africa, with which there is better weather there than with westerly winds. The northers have become less severe there, and may be said to be over in April. If in this month, which is generally rainy, easterly winds predominate, there will be fine weather.

A heavy sea from the northward, running on the African coast from Algiers to the eastward, is an infallible sign of a norther originating in the gulf of Lyons, that sooner or later will come down on the coast. The heavy gale which took place on the African coast in January, 1833, gave four days' notice of its approach by a heavy swell showing itself in different streams of current. It commenced from the N.W. with an overcast sky: shifted to the North, bringing heavy showers of rain, and then veered to N.E., but hauled back again to North. The swell which was raised was so high that in breaking over the pier at Algiers it washed over the magazines. Eighteen vessels were dismasted, as well in the port as in the roadstead, without reckoning other damages; and eleven were lost in the anchorage of Bona.

The northers begin to be felt in December and January, the season when the Pyrennees and the Alps are covered with snow. In the few years when snow has fallen in Africa, the northers have not been so severe, so that only the swell reaches the coast.

It may be said that the months of March and April being past, (which are those of transition from winter to summer,) fine weather is established in the Mediterranean. During these months, and particularly in March, the wind is variable, and sudden changes occur, which produce heavy rains. If a gale springs up suddenly it is generally of short duration, the weather soon clearing up again. In April the contests between the northerly and southerly winds become less, the northerly winds prevailing; the effect of the sun getting into the northern hemisphere.

It must be observed that there is by no means a regular recurrence of the same winds at each particular season, as just observed; for many years might be cited when easterly winds constantly prevailed throughout them, and others in which westerly winds did the same. With good reason navigators designate such years as *año de levantes* in which the easterly wind has been the most tenacious; and *año de ponientes* those in which the westerly winds have been so constant as to detain vessels for months consecutively in the eastern part of the Strait of Gibraltar, without allowing them to pass its narrows.

Barometrical Changes.—The barometer must not always be considered as an infallible index of the weather; but should undoubtedly

be consulted for warnings, particularly at night, when its falling is very remarkable. It is well known that it generally rises with westerly winds changing to North and East, and falls with the winds from the opposite quarters. But instances of the contrary are known, which are not surprising in so confined a sea as that of which we are treating, in which opposite winds are blowing at the same time.

When the barometer falls to 29·45 inches, bad weather must be expected, especially if large massive clouds are collected, or dark gloomy weather comes on, with ash coloured clouds; while, when it rises to 30·35 inches, it is a promise of fine weather. Its mean height ordinarily is 30·00 inches.

Most frequently a great fall in the barometer indicates only that there will be a heavy fall of rain. The mercury will be seen to fall as the sky clouds over, inducing the navigator to take all kinds of precaution against a severe gale; and instead of blowing, heavy showers come down without the least breath of wind; and the mercury rises again in proportion as the sky becomes clear. It is true that occasionally clouds which presented the appearance of rain are resolved into wind. For this reason, without placing an implicit reliance on the movements of the barometer, it should be consulted, to obtain an idea at least of the winds which may probably prevail.

In the gulf of Lyons the barometer is nearly always high with winds from East to S.E.; but low with the same winds when they are rainy. It is also high when light westerly winds prevail. The maximum height which it reaches at Toulon is 30·50 inches, and this is generally in February with S.E. winds, attended with fine weather and a low condition in the height of the sea. There was a year when the barometer rose to 30·70 inches, remaining stationary for many days, with an extraordinary low state of the sea in the harbour. This low condition of the sea is experienced every year in January and February at the port of Mahon. The natives call them *secas de Janer*, and it generally continues fifteen or more days, in the midst of fine weather.

In Algiers the mean maximum height of the barometer for a period of six years' observations was 29·58 inches, occurring in December with winds from S.W. to N.W. The maximum height was 30·40 inches, occurring in February with N.E. and easterly winds, and coinciding with the same observations at Toulon. The mean height generally is 29·95 inches. The highest state of the barometer ever known was with easterly winds, and the lowest with westerly.

In the gulf of Valencia it is generally high with easterly winds and a clear sky; and low with the same winds when increased to a gale. The highest state of it observed at Valencia was 29·75 inches in April, with easterly winds, fine; the lowest was 29·28 inches in October, wind N.E., foul weather.

In the Strait of Gibraltar the highest observed was 30·45 inches, in December, January, and February, with N.W. winds; and the lowest 29·90 inches in April, with winds from the S.W. quarter.

Thunderstorms.—The barometer usually falls when the atmosphere is charged with electricity, and in this case its falling is the forerunner of thunderstorms. These mostly occur at the changes of the seasons, when the strong opposite winds and rains take place. They are common in the Strait of Gibraltar, off Cape San Antonio, and in the vicinity of the gulf of Valencia and that of Lyons. According to some statements of Admiral W. H. Smyth, in his work on the Mediterranean, the severest and most numerous disasters produced by lightning on board ship have occurred in September, October, and March; and two thirds of these at night, between midnight and sunrise; mostly falling on the mainmast. They occur in summer in the gulfs and bays both of Spain and Africa when the sea breeze encounters the land winds; by these contacts forming waterspouts, which in some parts are tolerably frequent, especially in August and September. These waterspouts usually go off in rain and heavy electrical discharges; but they also produce severe squalls, on which account ships should be prepared for them with reduced canvas.

In these conditions of weather waterspouts are not uncommon, and although they commonly occur at any time of the year, they are more so at the change of seasons, especially in the autumn. They are generally formed when clouds meet together, brought by opposite winds, and are more frequent off projecting capes and places where these opposing winds meet; and thus they are common in the Strait of Gibraltar, off Cape de Gat and San Antonio, off Cape Creux and the Balearic Islands, and are tolerably frequent on the coast of Africa. Occasionally several are seen at once, and a vessel has been becalmed with no less than seven around her at once, all seen moving in different directions.

They will form sometimes part of the heavy storms of rain which are driven against the prevailing wind. The brig *Invincible*, while cruizing on the coast of Spain, on her way between Cadiz and Algeciras, in the end of December, 1834, met an easterly wind in the Strait of Gibraltar, blowing hard, while in the Atlantic the S.W. wind was blowing, with rain, evidently passing over the former. The brig reached the narrow part of the strait with close reefed topsails over reefed courses and foretopmast staysail. With each storm of driving rain from the S.W. which passed over the vessel from to leeward to windward the force of the easterly wind increased to that degree that she was obliged to take in the courses, and a waterspout was formed at the same moment to windward, appearing as if it came from the side of the vessel, moving rapidly to the eastward. In proportion as the waterspout moved from her the wind slackened, and allowed the vessel to set her courses again. A quarter of an hour had scarcely passed when another rain squall came on her, producing the same phenomenon of forming a waterspout on the weather side of the vessel, which was observed as it passed away from her as before. As the squall passed over, a large amount of heavy rain was discharged, and so violent was the wind that it was necessary to take in the

courses again and run for shelter under Cape Espartel. The strength and violence of the levanter (the easterly wind) kept on blowing against the hard S.W. wind for twenty-four hours; and no squall came up from the S.W. into the strait that did not produce a waterspout, until the levanter suddenly ceasing left a free passage for the vendaval (S.W. wind) and its heavy clouds, but without the formation of any more waterspouts.

When the vessel, on the previous day, was off Cape Trafalgar, the wind was not steady, notwithstanding the contest between the two winds. But off Cape Spartel several of these meteors were seen, hanging from compact masses of cloud of the *nimbus* order, the rain cloud.

If there is a steady wind it is easy to avoid a waterspout, because it occupies but little space as it moves on its course. But if a vessel remain becalmed, and the meteor appears to be coming upon her, nothing remains for her but to clue up every sail and secure the yards. If she has any artillery on board she might try, as some have advised, to break it by their discharge, or with some to pierce it, a mode of disposing of it practised with success sometimes.

It is not probable that a waterspout would produce the mischief that it is generally considered it would in a large vessel, nor that it would cause her to founder, unless she received its whole mass unprepared and with all sail set. It is more probable that it would carry away her sails. Small craft should indeed avoid contact with them; and when they do not care to do so should receive them with as little sail set as possible and present the stern to them.

Sometimes they will form rapidly and are suspended from a cloud over a vessel; in which case she should manœuvre quickly to avoid them, taking in all sail. When a case of this kind happens at night the meteor is not perceived, and the first notice the ship has is generally the loss of her sails from the whirling force of the wind. But an experienced eye knows well the clouds that will produce waterspouts, and does not lose sight of them when they are likely to be forming.

Most frequently when these phenomena occur it is in calm or very light variable winds; and consequently, at night, the noise which they make on the surface of the sea is distinctly heard as they move onward, and apprises the navigator of their proximity and the direction they are taking.

The clouds which produce this singular meteor are generally *nimbus* and *cumulostratus*, which are generally well defined at their base (called by the Spaniards *cejas*): and from this the syphon proceeds, which continues extending downwards until it reaches the water. And as generally beneath it there is a clear, the meteor is very distinct, and its whole form may be traced from its origin to its dissolution. Sometimes it appears to conceal itself within the cloud, to return apparently after a little time in more extended proportions.

Of the producing causes of this meteor we are still ignorant, al-

though there are some who ascribe them to electrical currents, combined with aerial. It is probable, or at least the effects on the surface of the sea seem to render it probable, that a waterspout appears to have its origin in a cloud on which different winds are blowing, and that on leaving the cloud it descends vertically to the surface of the sea, and by its falling brings with it a portion of the cloud, the ends or outer parts of which disappear until acquiring the form of an inverted cone; that if the waterspout does not bring with it watery particles, its effect is only seen on the surface of the sea by the water of it being forced upwards from round the furrow which is formed where it entered vertically, and that the phenomenon lasts until the cloud is exhausted of the whirling aerial matter which it contained. The waterspout progresses onward with the cloud which produced it as it glides along, and vanishes as soon as this becomes dispersed. If we imagine all the wind which accompanies a cloud to be combined in a waterspout, an idea may be formed of what it is.

Sometimes whirlwinds, composed of wind only, in the midst of a calm and clear sky, are observed moving over the surface of the sea, and would pass invisibly to the navigator if their progress were not indicated by the water which they disturb and the noise proceeding from them, this being heard when they are near. But these whirlwinds, never so violent as the waterspouts are, still resemble them in their effects, the only difference being that they are invisible.

It is considered by some that waterspouts draw up water from the sea when they descend down to it, founding their supposition on the effervescing water observed round it on the surface of the sea. The agitation which the water acquires is the effect of displacement occasioned by the force of the whirlwind falling vertically on the water, and producing a circular dell tolerably deep and sometimes from forty to fifty feet in diameter, according to observation. This dell may be compared with that produced on a small scale in the water of a basin, when it is blown down through a tube held vertically from the mouth. Waterspouts have not always the same violent motion, and it is probable that their strength bears proportion to the degree of wind which the cloud contains. A waterspout may pass at a very short distance from a vessel without harming her; and instances might be quoted as having occurred at sea and in port of their passing only twenty fathoms from vessels under sail or moored in harbour without doing them the slightest damage.

The presence of waterspouts indicates always great opposing currents in the atmosphere, some taking one direction and some another, according to the direction of the wind acting on the cloud which produces them, and with as much swiftness in that as in this. The clouds which produce these meteors are generally at low altitudes and of great density.

(To be continued.)

THE SEA COASTS BETWEEN ANTWERP AND BOULOGNE.—*The Causes which have Changed the State of the Coast of the Scheldt to Calais.*

(Continued from page 230.)

In the time of Julius Cæsar the interior country near these coasts was full of marshes, a condition which accounts for the presence of turf in a great portion of it. It appears also that these marshes were covered with a bed of clay, which has transformed them into fields of astonishing fertility. Lastly, that the soil of this part of the country is scarcely level with the sea; that the bed of clay is seven or eight feet thick; and that the turf is nearly the same thickness below it;—making the marshes the depth of fifteen feet below the level of the sea.

Where, then, is the cause of all this remarkable change? Let us first consider the possibility of fresh water marshes existing so near the sea and at fifteen or twenty feet below the surface, and how it happens that after a long succession of centuries the sea has penetrated this part. It is proved by the reeds found in the lower portion of this turf that the former marshes were caused by fresh water. We know that turf is generally formed in marshy ground and, although some have advanced the contrary, that it is not formed with marine plants Turf has been formed in a low pasture, although it might have been dry from the month of March; and this turf was recent, because the bottom of the pasture belonged to the bed of clay previously mentioned. It is constantly formed on barren heaths and in places which are never under water.

Marshes having existed below the level of the sea, it follows that during the number of centuries necessary for the formation of turf, there must have been between these marshes and the sea some obstacle to prevent the invasion of the latter. This may be thus accounted for:—The basin in which these marshes are found, and which, as we have seen, forms a plain composed of a bed of fine sand, while below this turfy and marshy stratum bears numerous proofs of the former presence of the sea. During its presence the N.W. border will have formed a succession of banks similar to those now off the coast. Some event, the cause of which is unknown, must have lowered the level of the sea or raised the level of the bank several feet, accounting for these banks being dry. These banks being once dry, downs would soon form, raising them still higher, and opposing a new barrier to the progress of the sea. This having no access into the basin, the sea water which was there would evaporate, and be in a measure replaced by rain water; which, uniting in the lower part with the other, would form those marshes spoken of by Cæsar, which have produced the bed of turf.

But the sea, which has only a slight effect on anything entirely submerged in comparison with that on the surface, will not have found in these new limits an obstacle opposed to its violence which it

could overcome. The N.W. wind also constantly moves the downs towards the interior by transporting the sand in that direction. These causes united, in the course of a series of years would make all this elevated plateau disappear, nothing remaining but the downs; which, not being defended by a strand high enough to prevent the sea from reaching them, also would not resist it.

Here then would commence a new era in the physical geography of this coast. The sea in many places washed away the downs, rushing through these openings and covering the land beyond them with several feet of water, undermining the habitations of the people along the coast, and washing them into the plain, with their domestic implements. But the ebbing tide would terminate this for a time, and it would retire by the way it came, to return again with the next tide. Twice in the day would the water reach the walls of those towns, situated several leagues from the coast, forming beds and creeks. These creeks being considerably enlarged by the continual ebbing and flowing of the tides, ports capable of containing the largest fleets of those times were formed in several places. But all this had only a short duration. The sea itself contains the cure of the evil it produces. On reaching these lands the waters contain a great quantity of mud and clay, brought by the adjoining rivers, depositing it here and there. Each day fresh tides bring up other layers to this bed, and in time it has acquired the depth of several feet.

It may be supposed that however small each layer of these deposits may be, yet they are made twice in twenty-four hours, the amount being greater in winter, when the sea is more agitated, than in summer; and that they must be larger when the water is deep, the thickness of the layer diminishing in proportion to the distance from the part where the sea entered; for it could not reach the farthest parts without leaving by the way some of the clay it contained; Besides which, the more elevated would not have been covered with so great a quantity as the lower would receive; the tide only remaining a quarter of an hour at its highest point, the higher level will hardly have been attained before the tide will ebb. Thus we find the ground higher along the downs than in the interior.

The raising of the soil may then be effected in a short time. Several portions of the ground will appear to have been only slightly covered in the marshes. The upper creeks only receiving a small quantity of water, would in their turn be filled with clay. The openings also communicating with the sea would be enlarged; and these inundations, according to history, seem to have been frequently repeated, especially when human industry was advanced enough to repair the effects of the storm, or to assist by dykes the natural effort of the downs. However, the winds and tides have not ceased their action on the downs. The latter have continued to form.

Such is an outline of the revolution effected by the overflow of the sea on these parts, and the causes which led to it. The effects of the

invasion by the sea are too evident, and are too continually renewed before our eyes, to admit of a moment's doubt of their reality. If we cannot ascertain the real cause which kept the sea beyond the basin alluded to, and afterwards allowed it to return, we may see the probability of those that are here advanced, and how far they agree with our knowledge of the revolutions of the sea and its action on the shores.

There are many proofs of the former presence of the sea in the part bordering on the German Ocean. Petrified wood still bearing the marks of the perforation of the worm, and shoals of sea shells are found at Alteren, between Ghent and Bruges. But the bed of sand, otherwise so even, being covered here and there with slight elevations like banks, would show that this land, exactly similar to that of the sea which borders it, has been formed by it, and that it is only recently, owing, perhaps, to a gradual rising of the ground, that it has retreated from these parts.

In this retreat the sea has not only abandoned the elevated portions of the basin, but the entire basin itself, which was more than twenty feet below its last level, and which is proved by the existence of turf in these places, as has already been alluded to. It is true that the popular opinion, which is very prevalent in these countries, attributes the turf, not to a vegetation renewed annually, but to a great quantity of vegetable matter, accumulated by the sea in one of its great inroads. But where could the sea obtain this quantity of vegetable matter? for even supposing the ground here to be covered with trees, it would only have formed a bed of a few inches in thickness. Again, the forests Cæsar met with in the country of the Morinis and Menapiens, did not extend so far as the borders of the sea, which were formed of marshes: and the trees found from time to time in the turf are still whole and in a state of preservation. The smallest branches of heath also retain their form; so that the turf has not been formed by means of trees.

If the turf was the result of an overflow of the sea, which had collected in the low parts all the vegetable matter found on its passage, we should not constantly meet with plants and aquatic roots below, and heaths above. We should not see the turf separate in layers; but it would present a confused mixture of all the substances composing it, and would not separate more in one part than in another; for it is a general rule that when a mineral substance is divided into layers, these layers are generally formed in succession.

It cannot be pretended that the sea has deposited a part of this vegetable matter daily, in order to form these successive layers; for the retreating waters would have carried it away on account of its lightness. But in the turf we find no trace of marine plants, which would have been there in great abundance if the sea had brought it, as it would constantly throw great quantities of these plants on the strand, especially in storms.

It is evident that the turf has accumulated by degrees, without the

intervention of the sea. It has accumulated there as it does elsewhere. It has begun to form in a large marsh, the lower part of the bank being composed of reeds and other aquatic plants. The bottom of the marsh has become a meadow, only covered with water during winter, where reeds no longer grow, but which produces luxuriant grass, the remains of which keep adding other layers to the turf. Fibrous plants then appeared and have grown in large quantities. While this is continually going on in fields which have long produced grass, in many places moss only has covered the ground, which in its turn has contributed to the formation of more moss.

If turf is a substance entirely foreign to the sea, it is clear that this latter had no access to those places where it was formed: for the fresh water plants would not grow in sea water. Besides, the former bottom of the marsh being fifteen or twenty feet below the sea, would prevent all vegetation in that quarter, if it was daily covered with fifteen or twenty feet of salt water. The only thing it would do would be to transport thither sand or clay.

It is hardly possible to determine in a satisfactory manner the time it has taken to form the turf. The accumulation of turf does not operate everywhere alike. In some places it takes place quickly. For example, in the environs of Aire, the turf is extracted every eighteen years, and is then nine or ten feet thick. In other parts the formation is infinitely slower. Thus at Trouchienne, near Ghent, where Roman antiquities are found from time to time in the turf; in 1811, at a depth of six feet, a dish of red terra cotta was discovered with some Roman characters in the middle, and about the same time and place some Roman medals of the reigns of Augustus and Adrian. From this we see that since the time of this last Emperor only a six feet depth of turf has been formed there. In the same marshes, in 1812, but at the depth of eleven feet, a statue of Anubis in oak was found, having the head of a dog. This statue must have been previous to the Roman period, if we may judge by the depth at which it was discovered. But before arriving at any conclusion with regard to this, let us look a little more into the subject. As to the turf in the maritime basin, a certain number of years were required for the sea water which remained after the retreat of the ocean to evaporate. Supposing, that reckoning from the time the turf appeared it increased at the ratio of the one fourteenth of an inch a year, this corresponds very well with the thickness of the strata of the Oppermoere or upper turf, and taking the greatest height of the bed, namely, fifteen or sixteen Flemish feet, about thirteen or fourteen English feet, about 2,250 years would be necessary to the formation of this bed.

It is remarkable that, supposing the sea to have reentered this tract during the Roman dominion or shortly after, as we shall endeavour to show hereafter, this calculation would bring us to the time at which the deluge took place. So we may possibly be right in concluding that the sea retreated from these parts in consequence of the deluge, which perhaps also disconnected England from the continent. M.

Mann, in his *History of the Academy of Brussels*, also thinks that these changes took place shortly after the deluge, and during the 1000 or 1200 years which followed that event; but he does not give us his reasons for this conjecture.

(To be continued.)

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*Report of the Royal National Lifeboat Institution—Wreck of the "Anglo-Saxon"—Atlantic Mail Steamers Lost—Proposed Steam Whistle on Cape Race and Lightship off that Cape—The Suez Canal: its Progress—Advantages of a Railway or Canal across the Isthmus of Kraw—Steam Navigation in the Pacific—Regulations to Prevent Collisions at Sea.*

The Chairman called on the Secretary for the last monthly report of the Royal National Lifeboat Institution. He referred with much feeling to the lamentable loss of life from the wreck of the *Anglo Saxon*, near Cape Race. He felt sure that if our large emigrant ships were provided with efficient and suitable lifeboats, a very considerable proportion of lives lost on distant shores on these distressing occasions would be saved. He however believed that until the example had been set by her Majesty's ships to carry lifeboats, it would be almost hopeless to expect that our shipowners would supply lifeboats to their vessels. However it was gratifying to find that on the coasts of the British Isles the provision now made for saving life from shipwreck was maturing every year, thanks to the noble exertions of the National Lifeboat Institution.

He (the Chairman) was glad to find that Captain the Prince of Leiningen, R.N., Admirals William Ramsay, C.B., Sir George Back, Bart., Edward Collier, C.B., James Wigston, Sir George Sartorius, and Captains Sir F. L. M'Clintock and R. S. Howlett, R.N., and others had lately sent liberal contributions to the Lifeboat Society; and he hoped that many others would follow their example during the present year, so as to assist the institution to keep up in an efficient state its large life-saving fleet.

The Report commenced by stating that a reward of £11 was voted to the crew of the Seaton Carew lifeboat, belonging to the institution, for rescuing, in reply to signals of distress, on the night of the 12th April, the crew of seven men from the brig *Regalia*, of Whitby, sunk during stormy weather off Seaton Carew. This valuable lifeboat had been the means of rescuing the crews of the following wrecked vessels:—brig *Eliza*, of Middlesborough, 7; brig *Mayflower*, of Newcastle, 8; brig *Providence*, of Shields, 8; barque *Robert Watson*, of Sunderland, 5; and brig *Regalia*, of Whitby, 7: making a total of 35 lives saved by that lifeboat alone. Its cost was

the gift to the institution of William M'Kerrell, Esq. On being informed of the last service of the boat on the 12th of April, Mr. M'Kerrell transmitted to the society a contribution of £10, and at the same time stated how very much gratified he was to learn that the lifeboat had providentially been the means of saving so many lives from shipwreck, and that those services had been performed without a single accident occurring to her brave crew. The silver medal of the institution was also voted to Mr. Robert Hood, coxswain of the Seaton Carew lifeboat, in testimony of his long and valuable services in saving life from wrecks with that boat.

A payment of £7 7s. was also made on the Fraserburgh lifeboat, for going off with the view of rescuing the crew of the ship *Genoa*, of Liverpool, stranded, during a dense fog and heavy sea, on Rattray Head, near Peterhead, on the night of the 12th April. Before the arrival of the boat the vessel's crew had been rescued by other means. The lifeboat had to proceed a distance of fifteen miles to the site of the wreck, against a heavy sea and head wind. The cost of this lifeboat, which is called the *Havelock*, was also presented to the society by Mr. M'Kerrell.

Voted, the silver medal of the institution and a copy of its vote, on parchment, to Mr. Thomas Rowlands and Mr. George Lewis, and £3 to others, in admiration of their brave services in rescuing from the surf the crew of three men from the sloop *Francis*, of Cardigan; which, during a heavy gale of wind and high sea, had sunk on Newport Sands, near Fishguard, on the 17th March. Mr. Rowlands and Mr. Lewis had incurred great risk of life in wading into the surf. Mr. John Harries, Receiver of Wrecks at Newport, had also rendered valuable assistance on the occasion. The thanks of the institution were given to that gentleman.

Voted, the thanks of the institution, inscribed on vellum, to Mr. William Nicol, Officer of Customs, Appledore, and a reward of £2 to his boat's crew, for putting off with the view of rescuing the crews of two smacks, which had stranded on Bideford Bar during squally weather on the 15th March. A heavy sea had struck the salvors' boat and washed overboard one of the crew. While endeavouring to recover him, a second sea struck the boat and carried away three of the oars. She was thus completely disabled, and her crew had a very narrow escape of their lives. The crews belonging to the smacks fortunately afterwards succeeded in reaching the shore in safety.

A reward of £2 10s. was likewise granted to five men for wading into the surf and rescuing, at some risk of life, a man who had been capsized from his boat, and had got entangled under it in a heavy surf, off Great Yarmouth, on the 19th of March. It was stated that had it not been for the prompt and valuable services of the salvors, the poor man must have perished.

Various other rewards were also voted to the crews of shore boats and others for saving life from wrecks on our coasts.

During the month of April the institution had sent a new lifeboat

to Fishguard, in lieu of one previously stationed there. The new lifeboat had, on her way to the coast, been exhibited at Bath, where the cost of a lifeboat, to be called the *City of Bath*, is being raised. The lifeboat, since her arrival at Fishguard, had been tried in a heavy gale of wind, and had answered admirably. A free conveyance had, as usual, been readily given to the old and new boats by the Great Western and South Wales Railway Companies.

It was reported that Mr. Thomas Clayton, of Wakefield, had presented to the institution £250, to enable it to place a larger lifeboat at Lytham, a most dangerous locality on the Lancashire coast.

Captain Ward, R.N., the inspector of lifeboats of the institution, was directed to proceed to Ireland to examine its lifeboats on the coast of that country.

An interesting report was read from Captain David Robertson, R.N., the assistant inspector of lifeboats of the society, on its Welsh lifeboats, which he had recently visited. He found them nearly all in good order.

Messrs. Peacock and Buchan, of Southampton, were again ordered to provide their excellent composition to paint all the lifeboats of the institution, their paint on the boats having been found last year to answer admirably.

Payments amounting to nearly £800 having been made on various lifeboat establishments, the proceedings terminated.

The report of the Lifeboat Institution being read, the Chairman observed—Wreck, more wreck, spreads sorrow and gloom among the friends and relatives of those who venture on the ocean. The sad accounts of the *Orpheus*, and the loss of 180 British seamen on the bar of the Manukau, are scarcely recorded, when another, of greater loss of life still, by the wreck of the *Anglo-Saxon*, comes to us from Cape Race. The former were seamen of a ship of war, who met their fate as might be expected of British seamen; the latter were composed of emigrants—men, women, and children—seeking their homes abroad, blindly confiding their lives to one who perished with them. He would not trust himself to comment on this event—the dreadful scene that must have been presented by those unhappy people struggling with their cruel fate as the *Anglo-Saxon* went to pieces. But he would ask when were such events to cease? or is it ever to be a reproach to the mercantile marine of this country that we drown our emigrants in taking them to their foreign homes?

Happily, said the Commodore, such losses as that of the *Anglo-Saxon* do not frequently occur. At our last meeting we had the still rarer catastrophe of about 180 lives lost by the wreck of the *Orpheus*, and now still more by the *Anglo-Saxon*. None of this fearful sacrifice of life would have occurred if good discretion had been exercised. Where was the lead in the latter case? He had looked for the mention of it in vain; and yet in a ship approaching a rocky coast, well known for its currents, and in a fog, with smooth water, not knowing where they were, the lead was allowed to be idle. He would refer

any one to the account to point out a single word about the lead being used.

It was here observed that its use was directed in the orders to the captain, and the following letter was read by the Secretary :—

Liverpool, May 13th, 1863.

Dear Sir,—In reply to your inquiry relative to the report in this day's papers, that the *Anglo-Saxon* was ordered to call at Cape Race, we beg to give you the following explanation. Having received information from Canada shortly before her sailing, to the effect that the ice in the St. Lawrence was likely to be rather late in breaking up, we deemed it prudent, although the direct sailings were not commenced this year any earlier than usual, to have full information as to the state of the ice, waiting for Captain Burgess at the various telegraphic stations between Cape Race and Quebec, so that he might learn whether it was safer to proceed to Quebec or to steer for Portland, and we have since heard that such information was sent down by our agents in Canada. Cape Race being the nearest station, and being in the direct track for the St. Lawrence, Captain Burgess was informed that if he found no ice in the way, and could approach the cape without running any risk, it would be desirable to do so; but if he could not safely do so, he should proceed to some other station on the route to receive information.

An erroneous idea having apparently entered the public mind that owners of steamers in general order their captains to endeavour to make rapid passages at all hazards, we can safely assert that such is contrary to fact. Enclosed you will find for your perusal an extract from the original instructions to Captain Burgess, on his appointment as commander, which are similar to those given to all our captains; from which you will observe that the utmost care and caution are impressed upon them, and that they are specially directed rather to be a day or two longer on the voyage, than run any risk whatever to make a speedy voyage. These cautions are renewed every trip, and the last words spoken to Captain Burgess before sailing were to the effect that the safety of the ship was the first thing to be attended to.

We are, &c.,

ALLAN BROTHERS AND CO.

Thomas Court, Esq.

In the instructions alluded to, among other stringent rules, appear the following:—"When you meet with fog or ice, or when, owing to the darkness of the weather, there is any risk in proceeding, the safest course is to lay to till daylight, or until the weather clears up. The lead should be used frequently, and the utmost care exercised when you are in any doubt as to your position. It is of course satisfactory to us when quick and safe passages are made, but you will bear in mind that it is of far more importance to make a safe voyage, even although it should take a day or two more to do it, rather than to run any risk whatever to make a speedy passage."

Those instructions, continued the Commodore, may be all very well in their way as to incurring danger and avoiding risk, and one of the ways to do this is by saying that "the lead should be used frequently," mixing up in fact the mere naming of the lead with the avoidance of any risk. Was this the way, he would ask, to obtain for the lead that attention which it should have? Would not the vessel, being in the vicinity of land, claim special attention to the lead? the uncertain position of the vessel itself should have warned the *Anglo-Saxon* to feel her way as she went, to obtain by the decreasing depth as she approached the land, some clue with the chart to her distance from it, in fact some clue to where she really was. Had this been done, in his opinion that vessel would not have been lost, and the enormous sacrifice of human life would have been averted. But there are certain calamitous events that are provided for and attributed in certain documents to the Almighty Disposer of human events, instead of the culpability of man. He hoped that when inquiry is instituted into the cause of this distressing event, a searching investigation will show whether the lead was used or not as the vessel approached the land. The story of the wreck runs thus:—

The *Anglo-Saxon* left Liverpool on the 16th of April, at 5h. p.m. She experienced strong westerly gales until Saturday, the 25th, at 8h. p.m., when she fell in with ice and a thick fog. The engines were immediately slowed. At 10h. p.m., the ice being so thick and heavy, the engines were stopped altogether, a light breeze from the South forcing the ship ahead about one knot an hour. At 5h. a.m. on the 26th the fog lifted, and the ice having slackened we set the foretop-sails and head sails, running the engines occasionally at a dead slow. At half-past 10h. a.m. the fog cleared away altogether, and we saw clear water to the W.N.W. from the mast-head. We continued our course towards clear water. At 2h. p.m. we got the ship clear of ice and steered N.W.b.W. with full speed and with all possible sail. A moderate breeze was blowing from the southward at this time. At noon lat. 46° 57′, long. 57° 24′, by the chronometer. At 10h. p.m. the breeze freshened and blew strongly from the S.S.E., and a dense fog set in.

We took in all sail at 8h. a.m. on the 27th. The fog still continued to be dense, and supposing the ship to be forty miles off Cape Race, we altered her course to W. ½ N., and slowed the engines to half speed, which we supposed would have taken us seventeen miles South of Cape Race. At ten minutes past 11h. a.m. breakers were reported on the starboard beam. Captain Burgess immediately ordered the engines to be reversed at full speed; but before her headway could be stopped she struck flat on the rocks off Clam Cove, about four miles North of Cape Race. A heavy sea rolling in drove her quarter on the rocks, carrying away her rudder, sternpost, and propeller.

Finding that there was no possibility of the ship coming off, the order was given to let go both anchors, to hold the ship on the rocks. The carpenter was forthwith sent to examine the forepeak, and found

it filling fast with water. He also examined the forehold, but found no water there. The chief engineer, coming up directly afterwards, reported the forward stokehole filling fast. He opened the valves and blew the steam out of the boilers. The boats were all immediately lowered successfully except No. 1 and No. 3. The ship was so close to the rocks that these could not be got out. Boat No. 2, with some of the crew and passengers, commanded by Captain Crawford, was sent to find a place to land the passengers. Some of the crew being landed on the rocks by means of a studding sail boom, with the help of some of the passengers got a hawser secured to a rock to keep the vessel from listing out. We then commenced to land the female passengers on the rocks by means of the fore yardarm. The first class passengers were put into a boat. At about noon the ship's stern swung off from the rocks and she settled down very fast, listing to port at the same time, and sunk in deep water. The captain and a great many passengers were on deck at the time, and, with a part of the crew, were all lost.

Mr. R. A. Allen, third officer, gives the following version of the occurrence:—

Up to Saturday, April 25th, we had experienced fair westerly weather. At eight o'clock that evening we encountered ice about the outward edge of the Banks, and the speed was reduced. At ten p.m., we fell in with heavier ice; the engines were stopped altogether, only a light breeze forcing the ship gently through. The fog was very thick. About ten a.m. on Sunday the fog cleared up, and we set the fore-topsail and head sails in order to force through faster. At twelve we could see clear water ahead. The ice not being so thick, we now let the engines go ahead slow, occasionally stopping as the ice got thicker. At two p.m. we were clear of the ice altogether; the engine was turned ahead full speed, and all plain sail set, the weather being fine and clear.

At daybreak on Monday morning it again became very foggy. We took in all sail and slowed the engines. We got an observation the day before, (Sunday,) the position of the ship being then 46° 54′ N. lat. and 47° 24′ W. long. At ten minutes past eleven on Monday morning we saw the breakers, and in a few minutes the ship struck. According to our calculation, and judging from the course steered since taking the observation yesterday, we believed the ship to be seventeen miles South of Cape Race. I was on deck when she struck, and was a good deal with the captain, assisting him and taking orders. [Mr. Allen here confirms the account given by Mr. Little as regards the landing of the passengers in the basket, and continues:—]

The captain went upon the saloon deck, and I followed him. The ship was lying over very much, and the captain was putting on a life-buoy. I tried to get into the main rigging, but the ship went over so fast that the captain and myself were precipitated into the water and went down together. While under water I got hold of the captain's coat, thinking it was one of the sails, and commenced hauling

myself up by it, and presently I got hold of his whiskers. We came to the surface together, and when I saw it was the captain I let go of him and got hold of a piece of wreck. The captain said to me, "Now, Mr. Allen, let's strike out clear of the wreck as soon as we can." A sea washed me against the main rigging, and I got into it, up under the maintop. The chief steward was there, Captain Hyler, the ship's cook, and two passengers, one a boy. When I got into the rigging I looked to see where the captain was. I saw him in the water, surrounded by small pieces of floating wreck, and so hemmed in that he could make no exertions to save himself. When I looked again, he was gone. He must have slipped through the buoy, for that was floating. He was not seen afterwards. We hailed a boat not far out, but they didn't care to come to us. Soon after that the main-topmast was carried away, just above the topsail yard. A portion of the saloon deck was floating near the mizen-mast, and sometimes came near us. Captain Hyler succeeded in getting on it, and it then floated away so that the rest of us could not. In a few minutes the main-mast was carried away, and I fell with it. When I got into the water, I struck out for the raft, and got on it, but the chief steward was drowned before he could reach it. Captain Hyler and myself hauled the ship's cook and the boy on the raft. Three or four others were on the raft before. We now cut the raft clear of the wreck, and it floated away. Towards evening the fog cleared, and we saw a man floating on the after part of the saloon deck. We soon got near him, and thinking our own raft might not hold out, we took the other in tow, trying to row them with a couple of oars we had picked up, but we could not make any headway. We drifted about all night, and soon after sunrise saw the steamer, but thought she was standing away from us, and despaired of being seen. I got a staff and hoisted a woman's dress upon it. They saw the signal, and came down and picked us up.

Such was the history of the disaster which has befallen another of our mail steamers, and it may be interesting to preserve here a *resumé* of these losses since our mails have been carried by contract, as it may form a useful reference hereafter.

There are now 130 Channel and ocean mail steamers subsidised by the British government. The mail steam packet service has been in existence twenty years, and during that period about thirty packets have been wrecked, in which upwards of 2,000 persons lost their lives, and through which £3,000,000 worth of property was destroyed. Our Channel and ocean mail steamers traverse nearly three million miles and carry a couple of million of passengers in the course of a year. Since the Atlantic has been crossed by steam, twenty steamers (mail packets and others) have been lost in that ocean, viz., the *President*, *Columbia*, *Humboldt*, *City of Glasgow*, *City of Philadelphia*, *Franklin*, *Arctic*, *Pacific*, *Lyonnais*, *Tempest*, *Austria*, *Indian*, *Arago*, *Hungarian*, *Connaught*, *United States*, *North Briton*, *Anglo-Saxon*, and two named *Canadian*. In the Atlantic two steamers have been

burnt, the *Amazon* and *Austria*, and two foundered, the *President* and *Pacific*.

It is worthy of notice that there is no record of any great inhumanity practised at any of the wrecks of the great ocean steamers on the part of crews over passengers, or of man over women and children; but there are records of many deeds of heroism and humanity by men in supreme peril. There is scarcely any record of cowardice on the part of the officers of ocean steamers; but numerous instances of skill, daring, self-command, and self-denial. There is scarcely an instance of crews or the lower order of passengers in mail steamers breaking open spirit stores and getting drunk in time of shipwreck, such as we read of in old chronicles. There has hardly ever been an instance of a commander leaving any one behind in a wrecked steamer: but many commanders have lost their lives by remaining to the last and trying to save those under their charge. The horrors, therefore, of many shipwrecks have been less than they used to be, showing an improved spirit and humanity from the spread of education amongst seafaring men, and the great power of public opinion. Even common sailors now prefer to risk their lives in acts of humanity for the sake of the good opinion of the world, rather than have the finger of scorn pointed to them for saving their lives by acts of cowardice or inhumanity. The wreck of an ocean steamer, with sometimes 600 or 700 souls on board, is sufficiently horrible, without disgraceful accompaniments.

The most dreadful loss of an Atlantic steamer, was that of the *Austria* by fire, in the middle of the ocean, with the greater part of 1,000 persons on board. Whole families first embraced each other and then, joined hand and hand, jumped overboard, and perished. The most melancholy losses on the Atlantic were, perhaps, the foundering of the *President* and *Pacific*, no one knows precisely when or where, or whether those on board were unconsciously engulphed or endured the agony of seeing the approach of death. Two of the most singular wrecks in connexion with mail packets were that of the *Tay*, in the West Indies, which was abandoned by the captain as a certain wreck, while an engineer and one or two of the crew insisted upon remaining behind, and succeeded in saving the steamer, and her owners £50,000; and that of the *Tyne*, which had made a fine passage of 4,000 miles from the South Atlantic, and when in sight of its haven, and the passengers had voted an address of congratulation to the commander for their safe arrival, the ship was wrecked on the iron-bound coast of Dorset. Almost all the wrecked mail packets were lost in fogs or in the darkness of night, through steaming on to keep time with the mails.

The following are the names of the ships lost by the owners of the *Anglo-Saxon*, viz.:—The *Canadian* (No. 1) in 1857, the *Indian* in 1859, the *Hungarian* in 1860, the *North Briton* and *Canadian* (No. 2) in 1861, and the *Anglo-Saxon* in 1863. Owing to the loss of the latter, we shall rarely receive news from Cape Race. At an immense expence the telegraph has been extended to that point from New

York, and a staff is kept at the Cape for the reception and transmission of news. It is in contemplation, however, to keep a fast steamer there to run out to sea and communicate with the European and American packets.

Referring to the loss of the *Anglo-Saxon*, said the Commodore, some remarks in connection with it have been made on a steam whistle, an account of which he saw was in the May number of the *Nautical*.

For a long time past it has been the practice of the American press to use all its exertions for receiving and publishing the news brought from Europe by these fast ocean steamers with the slightest possible delay. In order to facilitate this design, they have for many years kept a news boat at Cape Race, which goes out to meet the steamers that pass this dangerous coast, and thus obtain the news for transmission by telegraph long before the vessel that brings it can reach her destination. The Associated Press have even considered the propriety of keeping a fast steamer at the cape, for the purpose of anticipating these European steamships—a purpose which they may yet carry out.

The continual danger incurred by the mail steamers which pass by this route, from the precipitous cliffs and dangerous breakers which exist all along this part of the coast, as well as from the impenetrable fogs which so frequently prevail there, induced the Associated Press some time ago to propose that one of Daboll's powerful steam whistles, or air trumpets, should be purchased and erected at Cape Race. The proposition was made in the interest of humanity, of European and American commerce, as well as for the advantage of the press. This invaluable apparatus, it was intended, should have been connected with a caloric engine, by which it would be put in motion and sounded during foggy or perilous weather—the power of the whistle being such that it can be heard ten miles out at sea. To secure against unforeseen accidents it was also agreed that an extra engine should always be kept on hand, in case the other should be at any time temporarily disabled.

The project was generally admitted to be an excellent one, and met with the warm support of all the European and American steamship lines. On the application of the Associated Press, the Cunard line, the Montreal Steam Navigation Companies, the Inman line, and the Bremen, Hamburg, and other Companies, all concurred in the idea, and, with the Associated Press and underwriters, readily subscribed the amount of money necessary to put the scheme into practical application.

When everything was ready to carry out this wise precaution, it was decided that, in order that this improvement should not assume too much the appearance of Yankee enterprise, and as the steam whistle was to be placed on British territory, the consent of the British government should first be obtained. This they positively re-

fused to give, alleging as a reason that they could take care of their own coasts, with sundry other objections. Therefore, for the time, the matter had to be set aside.

Now we are once more confronted with an awful catastrophe—one of those terrible evils which might have been prevented if the humane proposition of the press had been carried out. But the English government would not permit the precaution of the steam whistle, although two-thirds of the expense was to have been paid by the subjects of Great Britain, who are more interested in the safety of ocean steam navigation than we are. We firmly believe that if this powerful alarm whistle had been shrieking off the coast when the *Anglo-Saxon* became enveloped in the fog, we should not have had to record the loss of that noble ship. In view of the fact, however, and of the constant danger of shipwreck incurred by all vessels coming by Cape Race, we hope that the British government will either place one of these warning whistles on the coast themselves or allow the original projectors of the idea to do so. No time should be lost in so serious a matter; and if the matter be left in the hands of the press it will be attended to at once, for the money is ready and can be instantly applied.

The usual sequel to these events follows, said Albert. Measures of prevention follow instead of preceding, so as to avert disasters,—commencing with the Eddystone down through the course of time to the *Orpheus* and the *Anglo-Saxon*. Buoys and lights will follow these as they have done others, and it appears that we are about to follow the exertions of the American press by the formation of a company to anticipate the progress of ships towards Cape Race by a floating light. The project is worthy of the cause,—worthy of the two countries which are to be brought into safer communication through its means, and every one on both sides of the Atlantic must heartily wish it success. It is said that—

The preliminary announcement has been made of a new project, bearing the title of the Cape Race Electric Telegraph and Lightship Company (Limited). It is intended to construct, equip, and station a steam lightship off Cape Race, Newfoundland, in the track of steam and sailing ships bound to and from the North American Colonies and the Northern ports of the United States. The light ship will have telegraphic communication with the shore by means of a submarine cable, one end of which is to be worked on board the vessel. It is urged that by these means there may be obviated throughout one half of every year an unnecessary delay of three days, which now occurs in the receipt and exchange of news between Europe and America. Various other useful services are to be rendered, with the aid of a steam tender. The capital proposed is £100,000.

There is a subject observed Albert, which has occupied attention in this country, and which has been more than once referred to in our *Nautical*, that he thought should not be lost sight of in its progress,

whether that progress led to final success in the main object in view, or whether it should turn out to be futile. He alluded to the Suez Canal, the works of which appeared to be gradually extending on an enormous scale. They were aware that the ultimate success, which mainly depended on preserving a harbour at Port Said, was pronounced by our engineers, and some experienced naval officers, as chimerical. The last notice he had seen of it was in a letter from Captain Mansell to the Hydrographer of the Admiralty, which appeared in their *Nautical*; but that which he had seen in the *Daily News*, signed F.R.S., took a comprehensive view of the subject, and was deserving of attention, not that they would entirely agree in the views of its author. It says, what is very true, that—

So long as India is the brightest gem in the crown of England, so long the readiest passage for her commerce to India must command the interest of every reflecting Englishman.

Whether that readiest passage will ever be efficiently supplied by the Isthmus of Suez Canal is a question on which counter opinions are expressed with equal confidence. I do not profess to resolve this question; but having just traversed the whole length of the proposed line of the canal, from the Mediterranean to the Red Sea, in the capacity of a traveller equally unconnected with politics, commerce, or speculation, I may possibly be able to give some information regarding it which may be new to a portion of your readers.

I will not enter into the engineering or financial question, as I understand that a very able and elaborate report will shortly be published by the President of the Institution of Civil Engineers in London, who has gone over and made a minute inspection of the works, and fearing also that it might occupy too much space in your valuable columns.

A boon of great value has been conferred on the company by the late Pacha, namely, the concession of as much land on both sides of the canal as they can irrigate and bring under cultivation. At present, owing to the nomade habits of the Bedouins who alone occupy the desert, the number disposed to settle down and till the land is comparatively small. Year by year, however, they will increase, and as there is no limit to what may be cultivated, except the number of hands and the water, which, coming from the Nile cannot fail, the future possessions of the company may rise to a value now little anticipated.

A purchase recently made by the company, comprising a large portion of the land of Goshen, famous as the fertile dwelling place of the pastoral Israelites, has already been let to a tribe of Bedouins who have settled there, and 20,000 acres of desert are now converted into fields, waving with corn, and cotton, which grows here as if indigenous to the soil. It is impossible to look on the rich crops covering the land without feeling that the speculations of man are, however unintentionally, fulfilling the word of God, and "making the desert to blossom as a rose."

At present the great desideratum is to allure the Bedouins to the spot, and to tempt them by self-interest to exchange their wandering habits for an agricultural life; as no European colonists could live and labour under an Egyptian sun.

Nothing in this excursion interested me more than the discovery of the fact that the desert, so called, is not such by any irreversible decree of nature, and that the sand which characterises and constitutes it is underlaid at a depth of only a few inches of sand by a rich alluvial soil, the deposits in past years of the Nile. This fact presents the operations of the Canal Company under a new aspect. Looked at from a political point of view, in connection with war between the great powers of Europe, they may be supposed to have one or another tendency, but regarding them in the interests of humanity alone, it is manifest that to convert tens and hundreds of thousands of acres from desert into fields of corn and cotton, is to confer an inappreciable boon on the population of this country, and by increasing its production, more especially of cotton, to extend the same to future thousands of Lancashire operatives. The children of those would not now be starving had Egypt been irrigated, and cotton grown there last year, as it may be hereafter, under influences now set in action.

Should the maritime canal turn out a total failure, the fresh water canals which have flowed out of that enterprise may prove the regeneration of Egypt, and commercially a valuable accession to the wealth of England. As far as I can ascertain from parties favourable and parties hostile to the canal, there do not appear to be any insuperable difficulties in the way of its formation. As far as present experience can show, it appears that the sand and soil through which the water is now flowing bind well, and that very little is lost by filtration.

But these are questions, as is that of raising the necessary capital in case more than eight millions sterling be required, which time only can solve, and which affect more nearly the shareholders than the British public.

The subject of paramount interest to us is, how will the canal, if completed and maintained, affect England? Admitting that none are competent to decide this question but those who know much which private individuals cannot know, I am free to confess that, as far as I understand the question, I can see nothing to dread in the canal itself, provided always a treaty be made in conformity with the terms of the Viceroy's original concession, that the canal shall be constituted in perpetuity a neutral passage, equally open at all times to the vessels of all nations.

While it remains open and practicable twenty English ships will probably pass through it for every one pertaining to France and all the other nations of Europe combined; and if the worst come to the worst, and it be desirable in time of war to close it, a couple of vessels sunk at Port Said will do so effectually. While England's navy is in the ascendant in the Mediterranean the embouchure of the canal is in her hands.

The only thing which appears to affect us prejudicially is the influence

the French may gain with the Viceroy and his subjects, by means of their possessions in land and buildings and other property. But this it is impossible now to prevent; all we can do is to counteract it by strengthening our own interests with both the Viceroy and the Porte, by every practicable means. The canal, and the possession of land by the company, chiefly French, are now facts, and there can be no doubt that the Emperor of the French, who has as yet accorded no overt patronage to the undertaking, would defend it as he would any other in which so large a capital is invested. But the company is not exclusively French; it is open to all nations. Its name is "Universelle," and it invites English capital. If our caution and foresight have rightly prevented us from entering into a losing game, we are gainers, and shall be such by keeping aloof from the speculation. If timidity has hitherto deterred us from venturing a large stake in that which is likely by its success to give national influence, the shares are in the market at or perhaps under par, and it is not too late, by a judicious investment of superfluous gold, to obtain any portion we please of the possessions and influence which we esteem perilous if left in French hands.

One fact is worthy of special notice. There is no effort on the part of the company to deter Englishmen from visiting their canal, their lands, their towns, or their machinery. On the contrary, they court such visits, and with a liberality very unusual they place at the disposal of travellers of all nations, their own boats and camels, and other means of conveyance, and this they do without remuneration; all the *employés*, from the highest to the lowest, vie with each other in their readiness to answer questions, and give information regarding their finances, proceedings, and intentions; and if it be a fact that truth and honesty court investigation from which falsehood and deceit shrink, then no candid mind can refuse to concede what is due on this score to the promoters of the canal. One of the administrateurs of the company is an English gentleman of great energy and probity, Mr. Daniel Adolphus Lange. He has had freqnent interviews with Lord Palmerston and other English Ministers, on the affairs of the company, and he accompanied Sir Henry Bulwer, our ambassador at the Porte, in an excursion similar to my own in December last, to inspect the works. I am told that Mr. Lange is the recognized representative of English interests, and that one main object he has in view in retaining his seat at the administrative board is, that he may be enabled to keep the English government *au courant* at everything which is going on.

M. de Lesseps and his co-administrateurs are perfectly cognisant of his loyalty and uncompromising devotion to his country's interests. Still they retain him as their colleague in their esteem and confidence. M. de Lesseps, himself the originator of the scheme, and the president of the company, holds a high reputation in Egypt among the English as well as the French.

Absorbed as he is in his grand project, he has the credit of singleness of purpose, and of personal freedom from political motives, while his courtesy and kindness secure the regard of all who know him.

The fortnight I spent in visiting from North to South the canal, in which I have no personal interest, has impressed me, as I find it has every one who has similarly inspected it, with a much higher sense than I before entertained of the grandeur of the undertaking, the probability that it may realize the hopes which have originated it, and the future beneficial results to Egypt and the whole commercial world, if if it can be successfully completed and maintained.

England ought no longer to evade the truth that the Suez Canal will, in the course of four or five years, be a *fait accompli*—whether repaying the shareholders or not remains to be seen—and that the Compagnie Universelle, now in the hands of Frenchmen of ability and enterprise, but open to the whole world, has secured in Egypt large landed possessions, which may one day become the emporium of a vast trade between Europe and Asia. It is now too late to prevent this, should we desire to do so. The only alternative open to us is either at once to unite with the company, and so participate in their gains and influence, or else lay aside all fears of a speculation which we have decided must fail, and the losses incurred in which we profess to be thankful to escape.

The Commodore observed,—

Now, although this country is considered as hostile to the undertaking, still we could well afford to see it succeed. It will be, should it do so, a highway for myriads of small craft, and experience will soon show whether that kind of transit by navigation will pay.

There is another isthmus of importance, though not of so much as that of Suez, in the tongue of land which separates the gulf of Siam from the bay of Bengal, said Albert, called the isthmus of Kraw. It is in the way of navigation, but may yet give way to engineering enterprise. It appears that by the construction of fifty miles of railway across the narrow strip of Siamese territory which divides the bay of Bengal from the gulf of Siam, the detour round the Malayan peninsula, which takes a sailing vessel from three to six weeks, may be avoided. Even steamers are from four to five days in making the circuitous route of the Straits, but by the railway the passage may be made in two hours. The government of Siam is favourable to the work, and besides conceding the right of navigating the rivers by which each end of the railway will be approached, has agreed that the land required for the line shall have a boundary of one English statute mile in breadth throughout. There are no physical engineering difficulties of any kind, so that the line can be easily and cheaply constructed. In a report by Captain Alexander Fraser, of the Bengal Engineers, and Captain J. G. R. Forlong, ex-engineer of the Tenasserim provinces, the following conclusion is arrived at :—

We have thus laboured to prove (and we think have done so satisfactorily) that as a mere speculation the construction of a railway across the Isthmus of Kraw will be profitable; that the communication may be established for one-third of the capital the interest of which is

now being expended yearly on mere fuel and establishment of running steamers, and that a vast amount of time will be saved over present routes. Of the political bearings of the subject we have said nothing; but, holding in view that the line from Ceylon to Cochin China is nearly straight, we are convinced that if Great Britain does not take it in hand France must, with every chance of a profitable opposition to the Peninsular and Oriental Company, in their line with Europe to Calcutta *via* Madras.

Are we ever to have steam across the Pacific? asked the Commodore. He was surprised that favourable routes had not been selected where smooth water for steam and fair winds for sail had not been yet found.

Albert could not say that we were making much show yet, but he observed that the Americans were alive to the subject. At the Sandwich Islands they were rejoicing in the prospect that—

At last there is a glimpse of hope that a permanent line of steamers will soon be established between San Francisco and China, the first of the line being already advertised. The steamers selected as pioneers appear, from the description given, to be about the required capacity and rig best suited for the trade. It is the intention to touch at Honolulu only on the trips from San Francisco to China. This will not interfere much with the trade of our regular packets to the coast, except perhaps in the passenger traffic, and not in this, if the price by the sailing vessels is reduced to about sixty dollars, which will retain to them the bulk of the travel. Indeed there would now be more travel were the rates lower. But whatever decrease there may be in the number of passengers by the packets *from* San Francisco, they will be sure to gain, and perhaps more than make up, in their *return trips:* for all who come here must get back again in some way. The first of these steamers, the *Scotland,* will be along in a few days, if she left San Francisco by the 1st of January, as the passage hither ought to be made in ten days. So far as we can learn, the vessels are an English line, laid on through English capital, but to be officered by Americans and sail under the American flag, and to receive the subsidy voted by Congress. We find the following in the S. F. *Bulletin* of the 17th:—

And it further appears that the steamship *Scotland,* now expected from Hongkong, *via* Kanagawa, Japan, is one of three large steamers built by William S. Lindsay of London, and named by him the, *England, Ireland* and *Scotland.* They are full-rigged, iron-screw steamships, and register 874 tons each, English measurement. The *England* was sold some months ago to the Japanese Government, for some 125,000 dollars. The *Scotland* was one of a line of steamers that formerly ran between Sydney and Singapore, and to other places in the East Indies. Parties, whose names do not appear, have purchased two other steamers, very similar to the *Scotland,* that are to run in connection with her across the Pacific. They are the *Tyne-*

mouth and *Robert Lowe*. This last vessel is now on her way here from England, and will be due in about one month, and the other, we understand, is now in China, and will leave for this port sometime after the sailing of the *Scotland*. The line will stop thirty-six hours at Kanagawa, on their way here, and returning, will stop at Honolulu, Sandwich Islands, the same length of time. The bunkers of each of these steamers are large enough to carry sufficient coal to make the entire trans-Pacific passage without stopping any where; and being, as stated above, ship-rigged, they will be enabled to take advantage of fair winds; and with both steam and wind, will probably make the passage between Hongkong and San Francisco in about four weeks. Each steamer will have room for about forty first class passengers, and quite a large number of steerage passengers. The agents in Hongkong are Russell and Co. The *Scotland* is officered by Americans.

I am glad to perceive, remarked Rodmond, that the Board of Trade are up to their work and are making every exertion to prevent those collisions at sea of which we have lately had so many melancholy examples; and with the view of stirring up other countries to assist them in the good work, they have published in the French language the following rules for the prevention of collisions.

The Board of Trade has published the following regulations for the prevention of collisions at sea. The importance of this subject can hardly be estimated when it is remembered that during the past six years some hundreds of persons have perished from these accidents in British waters alone. No one can tell the number of those who have been lost during the same period from collisions at sea in different parts of the world; and we regret to find that collisions are on the increase in British waters. No calamity is more fearful than that of a collision at sea during a dark stormy night. Its destructive effects are instantaneous, and frequently a large number of persons go down with either ship. The collisions in British waters were in 1859, 349; in 1860, 298; and in 1861, 323; the account of those which have occurred in 1862 has not yet been published by the Board of Trade. But what is very remarkable in regard to these fearful collisions is the fact that during the past six years, 750 have taken place in clear and fine weather, 378 from bad look out, 264 from neglect of rule of road at sea, and 61 from actual want of seamanship. The gross total of collisions during the past six years has been 1,864. But on the other hand, we observe how happily the efforts of the Board of Trade, the National Lifeboat Institution, and kindred bodies on the coast, have been blessed during the past six years. During that period alone, 16,119 persons have been saved from shipwrecks by means of the lifeboats, the life preserving apparatus, shoreboats, and other appliances. He must be less than man who can read unmoved and without a glow of admiration the account of such services, and of those given in that institution's report.

The following regulations have been published by the Board in the French language:—

Preliminary.

Art. 1.—In the following rules every steam ship which is under sail and not under steam is to be considered a sailing ship; and every steam ship which is under steam, whether under sail or not, is to be considered a ship under steam.

Rules concerning Lights.

2.—The lights mentioned in the following articles, numbered 3, 4, 5, 6, 7, 8, and 9, and no others, shall be carried in all weathers, from sunset to sunrise.

3.—Seagoing steam ships when under way shall carry: *(a.)* At the foremast head a bright white light so fixed as to show an uniform and unbroken light over an arc of the horizon of 20 points of the compass, so fixed as to throw the light 10 points on each side of the ship, viz., from right a head to two points abaft the beam on either side, and of such a character as to be visible on a dark night, with a clear atmosphere, at a distance of at least five miles. *(b.)* On the starboard side a green light so constructed as to throw an uniform and unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the starboard side, and of such a character as to be visible on a dark night, with a clear atmosphere, at a distance of at least two miles. *(c.)* On the port side a red light so constructed as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the port side; and of such a character as to be visible on a dark night, with a clear atmosphere, at a distance of at least two miles. *(d.)* The said green and red side lights shall be fitted with inboard screens, projecting at least three feet forward from the light, so as to prevent these lights from being seen across the bow.

4.—Steam ships, when towing other ships, shall carry two bright white mast-head lights vertically, in addition to their side lights, so as to distinguish them from other steam ships. Each of these mast-head lights shall be of the same construction and character as the mast-head lights which other steam ships are required to carry.

5.—Sailing ships under way, or being towed, shall carry the same lights as steam ships under way, with the exception of the white mast-head lights, which they shall never carry.

6.—Whenever, as in the case of small vessels during bad weather, the green and red lights cannot be fixed, these lights shall be kept on deck, on their respective sides of the vessel, ready for instant exhibition: and shall, on the approach of or to other vessels, be exhibited on their respective sides in sufficient time to prevent collision in such a manner as to make them most visible, and so that the green light shall not be seen on the port side, nor the red light on the starboard side.

To make the use of these portable lights more certain and easy, the lanterns containing them shall each be painted outside with the colour of the light they respectively contain, and shall be provided with suitable screens.

7.—Ships, whether steam ships or sailing ships, when at anchor in roadsteads or fairways, shall exhibit, where it can best be seen, but at a height not exceeding twenty feet above the hull, a white light, in a globular lantern of eight inches in diameter, and so constructed as to show a clear uniform and unbroken light visible all round the horizon, and at a distance of at least one mile.

8.—Sailing pilot vessels shall not carry the lights required for other sailing vessels, but shall carry a white light at the mast-head, visible all round the horizon,—and shall also exhibit a flare-up light every fifteen minutes.

9.—Open fishing boats and other open boats, shall not be required to carry the side lights required for other vessels; but shall, if they do not carry such lights, carry a lantern having a green slide on the one side and a red slide on the other side; and on the approach of or to other vessels, shall lantern shall be exhibited in sufficient time to prevent collision, so that the green light shall not be seen on the port side, nor the red light on the starboard side. Fishing vessels and open boats when at anchor, or attached to their nets and stationary, shall exhibit a bright white light. Fishing vessels and open boats shall, however, not be prevented from using a flare-up in addition, if considered expedient.

Rules concerning Fog Signals.

10.—Whenever there is a fog, whether by day or night, the fog signals described below shall be carried and used, and shall be sounded at least every five minutes, viz.:—*(a.)* Steam ships under way shall use a steam whistle placed before the funnel, not less than eight feet from the deck. *(b.)* Sailing ships under way shall use a fog horn. *(c.)* Steam ships and sailing ships when not under way shall use a bell.

Steering and Sailing Rules.

11.—If two sailing vessels are meeting end on or nearly end on so as to involve risk of collision, the helms of both shall be put to port, so that each may pass on the port side of the other.

12.—When two sailing ships are crossing so as to involve risk of collision, then, if they have the wind on different sides, the ship with the wind on the port side shall keep out of the way of the ship with the wind on the starboard side; except in the case in which the ship with the wind on the port side is close hauled and the other ship free, in which case the latter ship shall keep out of the way; but if they have the wind on the same side, or if one of them has the wind aft, the ship which is to windward shall keep out of the way of the ship which is to leeward.

13.—If two ships under steam are meeting end on or nearly end on

so as to involve risk of collision, the helms of both shall be put to port, so that each may pass on the port side of the other.

14.—If two ships under steam are crossing so as to involve risk of collision, the ship which has the other on her own starboard side shall keep out of the way of the other.

15.—If two ships, one of which is a sailing ship, and the other a steam ship, are proceeding in such directions as to involve risk of collision, the steam ship shall keep out of the way of the sailing ship.

16.—Every steam ship, when approaching another ship so as to involve risk of collision, shall slacken her speed, or, if necessary, stop and reverse; and every steam ship shall, when in a fog, go at a moderate speed.

17.—Every vessel overtaking any other vessel shall keep out of the way of the said last-mentioned vessel.

18.—Where by the above rules one of two ships is to keep out of the way, the other shall keep her course, subject to the qualifications contained in the following article.

19.—In obeying and construing these rules due regard must be had to all dangers of navigation; and due regard must also be had to any special circumstances which may exist in any particular case rendering a departure from the above rules necessary in order to avoid immediate danger.

20.—Nothing in these rules shall exonerate any ship, or the owner, or master, or crew thereof, from the consequences of any neglect to carry lights or signals, or of any neglect to keep a proper look out, or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

Nautical Notices.

Particulars of Lights Recently Established.

(Continued from page 277.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
16. La Houle	Cancale, France	48° 40·3′ N., 1° 51·2′ W.	F.	30	6	Est. 1st March, 1863. *Red.* On the rock.
Dunkerque	.....	51° 3·4′ N., 2° 21·5′ E.	F.	26	3	Est. 1st June, 1863. *Green.* (*a.*)
17. Patras	.....	.....	..	..	..	Defective and not to be trusted.
18. Thorn Knoll	Buoy	Solent	..	..	..	Est. 1st June, 1863. (*b.*)
19. Spithead	.....	.....	..	..	..	(*c.*)

F. Fixed. Fl. Fixed and Flashing. R. Revolving. I. Intermitting. Est. Established.

(*a.*) 16.—Two buoys have been placed to mark the shoals extending from the shore N.E. of Cape Grisnez—one off La Barrière, the North extreme of Banc à la Ligne; and the other a bell buoy off the N.W. extreme of Les Quenocs.

(b.) 18.—A *chequered black and white* buoy will mark the Thorn Knoll, in the main channel to the entrance of Southampton Water. The buoy, with the words Thorn Knoll painted on it, will be in 4¼ fathoms at low water, on the N.W. part of the knoll, with the North end of the large chalk pit on Portsdown Hill in line with the North end of the Coast Guard Station near Hill Head; two remarkable trees on Calshot beach touching the North end of Netley Hospital; and the N.W. Bramble buoy bearing S.E., distant two cables.

(c.) 19.—Notice is hereby given, that on and after the 11th day of May, 1863, *fixed blue* lights will be shown from the scaffolding erected for the purpose of preparing the foundation of the new forts at Spithead, on the Horse, No-Mans Land, and Sturbridge Shoals, instead of the red lights which have hitherto been exhibited thereon.

Reported Shoal in the Atlantic.

We preserve the following from the *Shipping Gazette*, but can come to no other conclusion than that it was ice which was supposed to be a shoal.

London, May 16th, 1863.

Sir,—On the 22nd of June, 1858, in the ship *I O*, from Cadiz for Newfoundland, I passed alongside of a very dangerous shoal in lat. 46° 24′ 54″ N. and long. 35° 40′ W. by chronometer and lunar observations. It appeared to have three heads, with the water breaking over them, and laid E.S.E. and W.N.W. from each other, the centre one the largest, and their extent about half a mile. I reported it to Lloyd's Agent at St. John's (N.F.) on my arrival there; and again to my chart agent here, who reported it to the Admiralty. But seeing no notice of it in any way made public, I trust you will give this a place in your valuable paper, as a warning to captains passing that locality, as I have no doubt many a large vessel that has never been heard of has been wrecked on the above shoals, as, from the heavy swell, they cannot be more than three or fathoms below the surface. Had it not been for the heavy swell, I should have gone on them myself.

Yours, &c.,

Henry Job,

Master of the barque Christabel.

To the Editor of the Shipping Gazette.

We meet with the following on Pacific hydrography, which we preserve for the benefit of our charts—for future investigation.

Farrallones.—Vessels are engaged in searching for Noonday Rock, on which the clipper ship *Noonday* struck and sunk, near the Farrallones. As yet, however, its location has not been discovered, leading to the conclusion, before advanced in this paper, that it is simply a spur of rock rising from a great depth, with deep water all round it. Unless a vessel is directly over the rock when the sounding is made, the lead would not be likely to find lodgement, or the top of the

rock may be so sharp or pointed as to prevent the lead lodging on it. One good derived from the searches made will be that other shoals or rocks may be discovered. Here is one discovered in January last,—which should be set down on the chart:—

A new shoal has been discovered S.W. from the South Farrallone Island, eighty miles distant. There are but from 5 to 7 fathoms of water thereon, and it is directly in the track of vessels bound to San Francisco.

MARIA SHOAL.—The schooner *Maria*, Crane, reports.—Left Honolulu October 16th, and arrived at Howland Island November 1st. October 24th passed over a sunken shoal, (not down in any of the charts on board,) lat. 5° 55′ N., long. 164° W. The water about this spot was much discoloured, but the rocks were visible, with about 4 fathoms of water.

New Books.

SEAMANSHIP. *By Lieutenant George Nares, R.N.* Portsea, Griffin; London, Longman and Co.

Since the days of D'Arcy Lever, when John Hamilton Moore produced a work on navigation most considerately suited to the "meanest capacity," there has been a vacant niche left for a successor that Lieutenant Nares aspires to fill. True we have had guides and manuals for the young sea officer, but none exclusively devoted to seamanship. Although iron is warring against hemp as it is against wood for preeminence in the affairs of a ship, seamanship must hold its reign, the sea must be dealt with by masterly hands, and work to be done must yet be done in the most approved style—ship-shape and Bristol fashion as it was done—whether it would be in iron or hemp.

The gradual decrease of opportunities for acquiring seamanship, by the introduction of more iron continually into a ship, has determined Lieutenant Nares to seize the opportunity at once of preserving the art and giving the young neophyte of salt water the means of studying the principles of his profession on shore, and mastering their intricacies against the time he has to practice them at sea. The result of his labours forms a goodly octavo (as the bookworm would say) of between two and three hundred pages, and let us add in all its favour, enriched abundantly with illustrations. Indeed, such a work, from its very nature, is imperfect without such ornament as Lieutenant Nares has taken good care to supply. Beyond the domain of seamanship the author does not pretend to go; but he treats his subject in a masterly way, and his work, already in its second edition, will not want patronage, adopted, as it appears to be, by our naval cadets in their training ship. While seamanship ranges on the ocean, as it always must do, the means of acquiring it are called for, and the demand can be duly supplied by the work of Lieutenant Nares.

HOLME'S MAGNETO-ELECTRIC LIGHT *as Applicable to Lighthouses.*

Those of our readers who are curious as to the mode of applying the electric light to lighthouses will find it fully described in this neat little brochure.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

JULY, 1863.

Remarks on the Straits of Magellan,—*By Captain M. Connolly, H.M.S. "Sutlej."*

I must begin my Remarks by observing that the *Chart of the Eastern Division of the Straits*, as well as the *General Chart*, are so correct, and the information and directions contained in the *South American Pilot*, although perhaps too concise, so very instructive and reliable, that it may be deemed presumptuous in any one adding to what has been so admirably described. Still, in these days of steam navigation, the importance of the Straits of Magellan as the great highway between the Atlantic and Pacific Oceans is such that any information or suggestions, however slight, that experience can point out to future navigators of a strait that is not yet thoroughly explored, must be as welcome as it would have been to us, had any one been able to make us better acquainted than we were with its furious gales and difficult anchorages, for so large a ship as the *Sutlej*, as we found, to our rather dearly bought experience.

Catherine Point.—A ship, then, making the Straits from the eastward too late in the day to reach the anchorage in either Possession or Lomas Bay, would find excellent shelter for the night under Catherine Point, the southern entrance of the strait, rather than by lying to outside with the chance of being blown off during the night; or, if she came further in, encountering the dangerous vicinity of the Sarmiento Bank. We anchored here in the *Sutlej*, after being blown out of the First Narrows—the bottom composed of dark sand and mud, and good tenacious holding ground—with the following bear-

ings, viz.:—Catherine Point, S. 45° W.; Cape Possession, N. 45° W. It is well sheltered from westerly winds, and forms a capital starting point to enable a ship to reach Gregory Bay next day.

Straits' Entrance.—After entering the Straits, as there are no landmarks wherewith to avoid the Great Orange Bank, Wallis Shoal, Narrow Bank, &c., a ship has to trust entirely to cross bearings; and we found Mount Dinero and Mount Aymond most useful, and thus far, apparently, very correctly placed for this purpose.

Mount Aymond.—On approaching the First Narrows we found Orange Peak and Direction Hills very useful; but here Mount Aymond did not cut in well with the other bearings, being apparently placed too much to the eastward.

Direction Hills.—The Direction Hills are rather vaguely described, as there are three or four of them,—low, detached-looking hummocks; but we took the centre of the largest—*i.e.*, the *northernmost* one,—which appeared to give us our correct position.

First Narrows.—The First Narrows offer no subject for remark, as by keeping in mid-channel you cannot go wrong. But on entering into the large sheet of water between the First and Second Narrows, the want of bearings is very much felt to avoid the Triton Bank and the large bank of kelp running to the westward of Barranca Point. The only mark given in the chart is "Gap Peak," which may be any gap you choose to take in a range of high hills bearing S.E. of the ship. We chose, however, the right hand peak of a kind of saddle. But we had not time to verify its correctness, for when somewhere to the northward of Triton Bank, the wind, which had been fresh all day, increased to such a perfect tempest that with all our powers of steam we could not even face it, although Gregory and St. Jago Bays were in close vicinity to offer shelter. But from the want of bearings and the weather thickening, or rather, I should say, the whole sea being one sheet of foam, the spray from which soddened the officers even on the bridge, we bore up, and passing Possession and Lomas Bays, where it would have been madness to have attempted to have brought up against the fury of the storm, we found shelter, as I have already described, under Catherine Point.

Gregory Bay.—We reached Gregory Bay next day, having again encountered a very strong gale nearing our turning point of the day previous; but being closer in shore, and somewhat sheltered by Cape Gregory, we managed to hold on, and came to in nine fathoms, soft, muddy bottom, with the following bearings, viz:—Cape Gregory, S. 15° W.; hummock, S. 65° W. In coming to, with all our care, and keeping her head to wind by the steam, the wind caught her on the bow and the cable ran out to the clinch, having broken the compressor pendant in attempting to "bowse to."

Gregory Bay is sheltered in some degree from the prevailing (westerly) winds, but the wind sweeps down in heavy gusts over the low land W.N.W. of the anchorage. I doubt if the bottom is as good holding ground as described in the book; for although it certainly held us during the night, still we hove the anchor up in the morning

without a single check, or without our being aware it was away, except by the drifting of the ship.

By following the track marked in the chart from Gregory Bay to our next place of anchoring (Port Famine) a ship cannot go wrong, as there is lots of sea room and marks and bearings are plentiful. We appeared to have a strong current with us when approaching Elizabeth Island, as we passed the land so rapidly.

Port Famine.—Port Famine ill deserves its name, compared at least with the other most inhospitable parts which we visited. As an anchorage it is certainly the best and most commodious in every way of any that we went into; and as a place for supplies, in this most desolate region, a ship will find it indeed a most welcome haven. Abundance of well seasoned driftwood of all sizes is piled up all round the beach, and any amount of excellent timber, fit for steaming or other purposes, is to be obtained by cutting it; and water of excellent quality runs out of the small river at the head of the bay, or is to be obtained in almost any place by digging a well.

But its supplies of other kinds are equally abundant. In three hauls of our seine near the mouth of the small river above mentioned we caught more than enough of excellent fish, chiefly bass, mullet, and remarkably fine smelt, to satisfy our whole ship's company; while the shore abounds with wild celery, carrots, cranberries, and doubtless many other useful herbs and fruits, which our amateur botanists had not time to discover. Black currants and wild strawberries were found, however, in abundance, in addition to the above. The following amount of game also was shot by our sportsmen during the day we remained at anchor, viz., fourteen geese, one duck, ten teal, twenty-four snipe, and four plover.

River Sedger.—I pulled in my gig about two miles up the River Sedger, and doubtless might have gone much further; but the object of our party being rather game than science or exploring, and the river affording none of the former, we did not prosecute our researches further. The various turns and windings of the river, however, with its thickly wooded banks, were extremely pretty and picturesque, and made us regret that the shortness of our stay prevented us making further explorations on the morrow.

We left Port Famine at 5h. a.m. (February 14th) and could only get as far as San Nicholas Bay, where we anchored at 9h. a.m., the strong breeze that was blowing in the Straits preventing our attempting to round Cape Froward.

San Nicholas Bay.—San Nicholas Bay is a very convenient anchorage, and being well sheltered from westerly winds, and having plenty of sea room, offers every inducement for vessels to take shelter there, should the next anchorage, Port Gallant, be too distant to reach before dark. We anchored in twelve fathoms, with the following bearings:—river entrance, N. 26° W.; islet, N. 16° E.; Nassau Point, N. 48° E.

Long Reach.—Our passage up Long Reach next day was most interesting, the scenery picturesque and in some places magnificent in

the extreme, and the shore within a mile or two on either side of us. We passed some most tempting looking places for anchoring, snug little bays with shelving sandy beaches; and I cannot but think that anchorages must be numerous in this but half explored reach. The large and spacious bay of Guirior especially seemed to invite us to enter, and I should strongly recommend a further exploration of this magnificent bay and the whole reach, with a view of discovering a place of shelter for large ships, where it is so much required as in this part of the Straits. Glacier Bay also, and numerous inlets on the South shore, seemed strongly indicative of places of refuge.

Playa Parda Cove.—We anchored in the outer bay of Playa Parda at 2h. p.m., and I was much disappointed with the size of the anchorage, which is ill adapted for a ship of such extreme length as the *Sutlej*. The inner cove is far too small for a large ship to swing in, and the outer anchorage so confined, from the fact of its shoaling suddenly from thirty fathoms to fifteen and eleven fathoms, that should an accident occur, or the ship drive off the bank, she must inevitably go on shore. And this we found to our cost. The weather was squally when we anchored, but not so much so then or during the early part of the night as to cause any apprehension.

At 2h. 30m. a.m., however, a violent squall brought a sudden jerk on the cable and (as we afterwards found) broke the anchor short off near the crown, and although the other anchor was let go instantly, and she was partly brought up, her stern tailed on the shore (tide about quarter ebb), and we remained there until the rising of the next tide. Neither did the holding ground seem particularly good, as we hove home both stream and sheet anchors, which we laid out to haul off shore by. Bearings of anchorage in Playa Parda:—South point of Shelter Island, S. 38° W.; Turtle Rock, S. 67° W.; Wooding Point, N. 79° W.

Harbour of Mercy.—The Harbour of Mercy, the last of our anchoring places, only remains to be described; but it proved anything but a "harbour of mercy" to us. We arrived abreast of it at 5h. a.m. (February 18th), and a strong westerly gale preventing us continuing our course through the Straits' entrance, we bore up and anchored about half way between Misericordia and the inner point at seven o'clock, with the following bearings:—Mercy Head, N. 81° E.; East end of Eastern Observation Island, N. 7° W.

We let go both anchors ahead, as the weather was exceedingly squally, and the experiences of Playa Parda giving us some idea of what we might expect from the strength of the squalls. Nor were we long left in doubt as to the power of those in the Harbour of Mercy. Violent gusts of wind sweeping round the sea point on one hand, and down a deep gully on the other, forming a complete whirlpool around us, and striking the ship at the same moment on the bow on one side and on the quarter on the other, caused her to yaw about most violently, and to bring most sudden and unequal jerks and strain upon the cables; and at 1h. p.m. a blast of even greater fury than its predecessors snapped the small bower cable in the compressor nip,

and it flew out of the hawse hole, in spite of three deck-stoppers, which were apparently well secured. The sheet anchor was immediately let go, which probably saved the other cable. Thinking we should ride quieter more inshore, we tripped and steamed further into the bight, and let go only one anchor, determining to ease the violent strains on the cable by the aid of the screw. But we passed an anxious and fatiguing night. The ship yawed about almost as much as before, and but for the engines, which were certainly set in motion every five minutes, we should probably have lost our third anchor. Providentially, however, it held on, and at 1h. p.m. on the following day a favourable change of wind to the northward made us sway our topmasts up with all possible speed and hoist our boats in, which had been wooding all day. At 2h. p.m. we steamed out of the bay, and shortly after 3h. passed Cape Pillar, soon leaving the Straits well in our rear. And well we did so, for at six o'clock such a violent storm arose that had we remained at our anchorage we must have been more imperilled than ever from the heavy sea which must have been sent into the bay, exposed as it is to northerly winds.

General Remarks.—And now the question arises as to the eligibility of the passage through the Straits of Magellan in preference to that round the Horn, and as I have been both passages I can give an unbiassed opinion upon each.

In the summer months—*i.e.*, January, February, and March—westerly and north-westerly gales of great violence prevail, and a ship taking the passage through the Straits in these months, should proceed leisurely and take advantage of fine weather and light breezes, and not attempt to force a passage, as we were obliged to do from being pressed for time. To a steam ship, under the former circumstances, the passage through the Straits no doubt offers great advantages; for by proceeding leisurely from port to port she might save all her coal, by cutting enough firewood for the succeeding day's consumption, abundance of which is to be procured, admirably adapted for steaming purposes, at every place where we anchored after passing Cape Gregory. She must be prepared, however, to encounter strong contrary gales after she passes Cape Pillar, and to find great difficulty in getting to the westward. We found N.W. and westerly gales succeed each other with great rapidity after we passed out to the westward of the Straits, and were driven down to 55° S. before we could attempt to turn her head to the northward.

The wind veered constantly from N.W. to West, and then S.W.; but it seldom remained long in the latter quarter, shifting again to N.W. and generally increasing in violence. The barometer in these instances was very true to its calling, always falling for northerly and north-westerly winds and rising for south-westerly ones. But its variations appeared to depend more on the direction of the wind than its force; for the south-westerly winds blew with equal violence as the others, although the weather was somewhat finer, an occasional glimpse of blue sky being seen.

As I have before remarked, wood and water, those great necessities,

can be obtained with ease and in great abundance at all places where we anchored, and in nearly all those marked in the chart. Even the mis-called Harbour of Mercy is not deficient in these instances, although some difficulty is offered in getting wood, from the extremely rugged and precipitous ground, and the slightest swell making it very unpleasant for landing and for embarking it.

As for the passage round the Horn,—I rounded that much dreaded cape in January, 1854, and, standing as far as 59° 30′ S., we got a S.W. wind, which carried us well to the westward (into 85° W.), and we arrived at Valparaiso sixteen days after passing the meridian of the Horn, making the whole passage from Rio in thirty days, unscathed.

In February, 1863, I passed through the Straits of Magellan,—was ten days in the Straits, lost two anchors and was once driven on shore, and was twenty-six days from our passing the meridian of the Horn to our arrival at Valparaiso; the whole passage from Rio (forty-eight days) not being compared, as we called at the Falkland Islands and remained there three days.

While we were lying in the Harbour of Mercy we observed the sea breaking violently on what I have no doubt is a sunken rock, and which I should have examined had the weather been any less violent than it was. I mentioned the circumstance to the captain of the port at Valparaiso when we arrived; and he assured me of the existence of a rock as I described to him, and which was not marked in the charts. It was about two cables' length off Mercy Head, bearing from the anchorage about N.E.b.E.*

THE GENERAL IMPROVEMENT OF SEAMEN,—*An Address Delivered at the Sailors' Home, Well Street, April 24th*, 1863, *by Captain Henry Toynbee, F.R.A.S.*

My Friends!—My object in calling you together this evening is to tell you that we are trying to do something for the general improvement of seamen, by getting up homes for married sailors, their wives, and families; and also a fund to which sailors may subscribe, by which they may provide for old age and for their widows and children. Now, you can all of you see that these things would be a great advantage, and you can also see that they cannot be done unless sailors take an interest in them, and do their best to help themselves, as well as letting other people help them. Last November I gave a lecture in Calcutta on these subjects to nearly three hundred sailors, and they all agreed that these changes would be great improvements; and their friends also agreed, for one merchant sent me £50 to be

* No doubt this is one of the patches of kelp shown in the Admiralty plan of the Harbour of Mercy, and which should be carefully avoided.

spent for the benefit of sailors, saying "We are proud of our sailors, and would gladly see their moral improvement."

To make the lecture all the more clear to you I shall consider four separate things:—

1*st.*—I shall say a few words on the peculiarities of a sailor's life, and how going to sea exposes him to temptations when he comes on shore.

2*nd.*—On the helpless state in which sailors' families are left, and how homes should be built for them.

3*rd.*—How much sailors are in want of a fund to support them when old, as also their widows and orphans.

4*th.*—How a sailor's religious teaching is neglected, and how he must study it before he can be happy on earth or after death.

First, then, on the peculiarities of a sailor's life:—

I have been now a sailor for nearly thirty years; have passed, in the early part of my sea-life, from the forecastle, through every stage, up to commander, so that you may think that I have seen enough of different ships and different ports to know what are the peculiarities and the wants of sailors.

From your boyhood, while at sea, you have had other people to lay in stores for you, so that you have never got into the habit of managing for yourselves. This makes you an easy prey to the thousands on shore who live on your hard-earned wages. Certainly there are amongst them a very few who really care for you, and who give you a fair return for your money; but most of them are the veriest dregs of the places where they live, who lead you astray that they may get your money the quicker. Is it not true that many sailors cannot be called sober during the whole time that their money lasts?—and is it not also true that many of these men, when they are sober, feel heartily ashamed of, and disgusted by, the life which they and their wretched companions are leading? If they could by a word set themselves and their companions in vice free from those chains of drunkenness and lust which sink them below the animals around them, they would say that word!—in those cooler moments I am sure they would. Does not this show that they are slaves,—slaves to the worst of masters—to the Devil himself? What sort of master have they found him? What sort of wages has he given them? Are they happy? Are they ready to die? Are they fit to meet their Saviour?

Far be it from me to say that all sailors are slaves to drink and other vices. It often hurts me much to hear people talk of sailors as if they were all a drunken, thankless lot, no more fit to be trusted than a child, for I am happy to say that I know there are many steady men amongst you; but these men will be the very first to join with me in grieving over the fact that many of their shipmates, who are good sailors and kind-hearted men, are sadly given to drink and other vices which are fast hurrying themselves and their companions in vice to ruin here and eternal misery hereafter.

Here let me caution you against that bad custom of offering people something to drink at all times of the day, as if a man's happiness

were centred in drink. It was only the other day that I saw two fine young sailors at a railway station trying to persuade the porters to go and have something to drink; whereas if they had gone it might have led to their being dismissed. You know as well as I that drink is ruining its thousands yearly. I intend to try a teetotal ship next voyage, giving coffee and sugar instead of rum. I shall open a navigation school on board, and encourage all my men in the study of our noble religion. In India I shall have school one night and reading aloud the next for their amusement. I do not propose to do this because of faults in my last crew, for they were a good set of men and really gave me no trouble; but because some of these first-rate sailors gave way to grog, and I want men to learn that they can do without it.

The great question is:—What can be done for men in this state? Sailors' Homes have been provided, and excellent things they are, but I fear there are many who feel themselves unable to submit to the rules of these Homes. Besides, the crimping business is carried on so successfully that I hear it is common for a man to jump on board a ship below Gravesend, well supplied with money and grog, who plies the grog and lends some money, thereby binding Jack to go to his house; whilst in the mean time his mate, who was left in the boat, goes on shore at Gravesend and telegraphs up to the boarding-house keeper to have a cart ready at the docks; when in goes Jack, who feels bound to the man, and is carried off to be *done*, instead of having the opportunity of going to a respectable house like this. The force of habit and the desire for some unusual enjoyment when a long voyage is brought to an end have so led them to yield to drunkenness and vice, that as soon as the restraints of board-ship are gone, and their old companions in vice begin to flock around them, they yield to a slavery which they cannot master, and go headlong to ruin—ruin not only as to anything worth the name of happiness in this world, but to eternal ruin in the next.

From the bottom of my heart I feel for these men, knowing as I do the desperate state of helplessness they are in; and really, if I felt that there was no higher power than their own to look up to for help, I would let them alone. I might grieve over them, and shudder at the thought of what death would bring them to, but I would not remind them of it, for it would be useless. It is only because there is a power who is willing and able to save the worst of sinners, that I beg of these men to stand still for one moment before they go on in this ruinous line of life. Jesus Christ came into the world to save sinners. The best of men cannot be saved without Him, and, blessed be God, the worst can be saved by going to Him in humble prayer for help; for He still lives—lives as surely at this very moment as either you or I, and He lives to forgive every man who sincerely repents, and to give His good spirit to make every man good who will trust Him, and try to do His will.

There are now ships where good rules are established for the comfort of sailors,—such as having divine service on Sundays—keeping

the whole of that day as quiet as possible—providing good and amusing books for their reading,—and I hope that it will soon be common for ships to have a school on board, so that men who like to clean themselves may spend an hour of their watch below when at sea, and of the evening when in port, in learning navigation, reading, writing, or arithmetic. In such a way of spending his time a man must not reckon up only what he has actually learned by attending school, but that he has also been kept from bad companions, and perhaps mastered some of his own bad habits. A sailor takes a step in the right direction when he tries to get into one of these well-regulated ships, hoping and praying that he may make a right use of their advantages.

Again, before landing in England, or any other place, it is his bounden duty to decide on avoiding temptation as much as possible. In this he would be much helped by going to a Sailors' Home, depositing his money in its bank, giving part of it towards his support when he gets old and disabled, and striving to employ his spare time and money, which come suddenly upon him, in useful reading and rational amusements, instead of going off into his old habits of vice. To help you in this we hope to get up cricket and skittle grounds, &c., for your amusement, in respectable places where no drink is sold.

Now, this is very hard work for you I know. Idleness and plenty of ready money are not only bad for sailors, but for every man in this world, and the less we all have of them the better and the easier for us, until we know how to use them right. There are many gentlemen who are ruined by being rich and idle all the year round; and it comes to this, that rich and poor, scholar and no scholar, all alike must learn their own utter helplessness, and that the world, the flesh, and the devil are masters of them. Many sailors make good resolutions before they go on shore; but there is an old and very true saying—"Hell is paved with good intentions," showing that our own strength will never help us to heaven; and it is because of this that Christ tells us to go to Him with our burdens and He will give us strength to bear them. No man ever humbly and honestly asked him for strength to be a good man, who did not get what he asked for. These are not merely my words;—we have the promise of Christ, who is Truth,—"To him that knocketh it shall be opened," and "He that cometh unto me I will in no wise cast out."

Before finishing this part I wish to say how much I feel for you. Those who best know your difficulties will feel deeply for you, and pray earnestly that help may be given you. But let me also remind you that people on shore have their difficulties of other kinds, from which we at sea are often free: so that, as I said before, it comes to this—no matter whether a man be rich or poor, soldier or sailor, clergyman or doctor, or any other profession, he cannot be fitted for heaven now, or go there after death, without the help of Jesus, our Saviour.

My second subject is—That sailors' wives and families are generally

left very helpless, often in the midst of dirt and vice, which tends to keep them miserable.

Many of us, perhaps most of us, have felt, in leaving England, that it was a hard wrench to leave mothers, or wives, or sisters, or children behind, and that other men were very comfortable who could stay at home all the year round. This is the greatest trial of a sailor's life,—bad enough at the best of times, but how much worse when a man knows that he is leaving his wife in the worst part of one of our sea-ports, and his children with no better playground than the dirty streets, where their bodies do not get wholesome air, and where they may learn all wickedness betimes.

Now, to remedy this, I wish to get some large lodging-houses built, which should be called "Homes for Married Sailors," where they could have one or more rooms, according to the size of their family. These rooms should be supplied with a good cooking-stove, with boiler and oven, so that those who liked might bake something better than what many poor women may say is their daily food—

> "That everlasting cup of tea
> And loaf of baker's bread."

Then, too, how can a woman keep her house clean and comfortable when it is a labour to her to bring in the water, and all the clothes she washes have to hang and dry in the very room where you are eating and sleeping? and, as Mrs. Sewell admirably expresses it,—

> "I know it needs the patience
> That a martyr may require,
> To wash without a copper,
> With a pot upon the fire,—
> The chimney smoke all driving down,
> And smuts as black as mire.
>
> "Then not to have a garden,
> Not the smallest of the small,
> Where one could stretch a line across
> To meet your neighbour's wall,
> But forced to dry before the fire,
> In smoke, and steam, and all."

To remedy these troubles, the Married Sailors' Home should have a separate wash-house and drying-place, together with baths, and a school and playground for the children. The boys might be brought up in a training ship as young sailors, and their sisters as useful household servants; who, remembering the comforts of their younger days in a well regulated Married Sailors' Home, would very likely, when the proper time came, marry the sons of their fathers' old ship-mates—boys they knew in their youth and knew something of,—and so would themselves follow the good example of their parents. I firmly believe that they might have all this for the same money that they are now spending in dirt and misery.

Each of these Homes would have a manager and his wife living

there, who would be ready to advise and help the women while their husbands were away from them, and take in work and washing for them, so that they might help to support their families. Of course a few good rules would be made to keep every one in their right place; which all who lived in the Homes would obey, and no one, I am sure, more willingly than a steady sailor, who has seen the use of good rules at sea.

I have made some inquiries about model lodging-houses, and went over one in Westminster, which I understood was built by Miss Burdett Coutts, a lady always ready to help in doing good. In that lodging-house one nice, clean, light room was two shillings and sixpence a week, with good baths and wash-houses and a yard for drying the clothes, and a dust-shaft down which the dust from each set of rooms could be thrown. There was water turned on to each floor, clean water-closets, and every necessary comfort. There was a porter to keep the public stairs clean. Two rooms cost from three shillings and ninepence to four shillings per week.

I am in hopes of getting two such Homes for married sailors: one in London, not far from some railway, the other in the country, near the same railway; for land in the country being cheaper than in London, the country one might probably let rooms cheaper than the London one, and in some cases the family might be able to live in the fresh, clean country air while the sailor is away, and shift into the London one on his return. What a comfort it would be to a man to see his children growing up healthy and good, the girls finding honest employment as servants, the boys as sailors. If the schools were well conducted, all the friends of sailors would go to these Homes for their servants.

Some people are inclined to say that sailors' wives are noisy and quarrelsome, and that it is no use to try to help them; but this I will not believe. No woman likes to live in dirt and discomfort; and though their tempers are tried—often sharply enough, poor souls!—in their struggle to bring up a family, especially where the husband is mean enough to waste the money on drink which he might save for their support, many sailors take a pride in seeing their families comfortable, and would rejoice, when they were far away at sea, to think of them in such a home; and many women who might be noisy and quarrelsome when they heard nothing but noise and quarrels, would soon improve when they found themselves able to keep their children and themselves clean and comfortable. In one month I have sent home money from four of my men to their wives, showing that they wish to keep them respectable. Now, men, if you will only help us with a will, we shall soon be able to pull down the gin-palaces and build sailors' palaces instead. You must remember that government cannot make this change, for if all the gin-shops were pulled down to-night people would manage to get gin;—the change must be made by each man changing himself. Now, as I wish to know if you would really like something of this kind, all those who agree with me hold up their hands. [The show of hands was universal.]

I will now go on to my third head—That sailors are without any fund to pension them when they become old and disabled, or to provide for their widows and orphans, notwithstanding the high pay they receive.

Now, men, when a man gets steady habits he naturally begins to think of the future. He can no longer be like a mere animal, thinking only of the present moment.

It is well known that in many of our country villages, where a labourer only receives about 10s. a week, and often has a wife and family to support, clubs have been got up which support their sick and old people. I have seen upwards of £1,000 saved by one of the clubs of one village, and only last year had an instance of what a man may do by care and saving. When I returned home into Buckinghamshire, a poor widow, whose husband was recently dead, told me that she had some lawyer's business to ask me about. You would not think that a sailor was the best man to come to about law business, and you may guess that I have a particular objection to sea-lawyers. However, it was fortunately not very difficult. Her husband, who had never had more than 10s. a week regular wages (though he made more both at hay and harvest time), had saved £40 and put it in a Savings' Bank; but he having died without a will, she did not know how to get it out. I found that the law is, that when a man dies without a will his money is divided between his widow and children. This man had but one son, also a labourer on 10s. a week, with a wife and family to support; but when the money was taken out of the bank, and £20 given to him as his share, he gave it over to his mother, saying, "I know that you and father worked hard to save this, and I don't feel as if I ought to take it noway." So the widow has her £40 as a standby for her old age.

Now, if these men on such low wages can manage to save in this way, and to keep up Benefit Clubs, what might not sailors do, who get nearly 12s. a week, and have not to find food or house-rent till they get married. It speaks for itself that if a well managed club were got up, sailors could and, I think, would subscribe to support themselves when old and disabled, or their widows and orphans.

Sailors are praised for being kind and unselfish! so, surely, they would not attend to those who say, "Oh, you're not likely to live to get a pension." They are as likely to live as others, and if they do not, some of their messmates, or their wives and families, would enjoy it.

Besides, every pound that a sailor gave to this (which might otherwise have been spent in doing himself harm) would help him to a habit of saving, and make him a better and happier man, even though he never lived to receive the pension.

I have tried to find out what sort of subscription or club would suit sailors best, and think that if Government would have the calculation made to show how much an old sailor of fifty or sixty years of age, or a disabled sailor, whenever his disabling accident might happen, could receive each year if he had paid £30, or £40, or £50,

and so on, and how much could be given to his widow and orphans,—I think, I say, that if this were done, most sailors would begin young, and soon make up enough for a handsome pension. Of course the amount of pension would depend upon the number of sailors who subscribed. If every sailor subscribed it would soon grow into a very rich fund, and the pensions would then be increased, so that every man would be interested in his shipmates subscribing. I wrote to a friend to find out how much a sailor would get for his money, and he told me that he found by some tables that if a man paid £3 1s. 2d. when he was twenty-one, it would give him £1 a year after he was fifty. So that you see by this that £10 before a man was twenty-one would bring in more than £3 a year after he was fifty; and £10 when he was thirty-one would bring in about £2 a year after he was fifty. So the sooner you subscribe the money the better.

Only think that all this might be done with a portion of the money which is worse than wasted on drink and evil company, turning the resorts of sailors into public nuisances.

Last year the Chaplain of this Sailors' Home told me that there is never a week but some sailor comes to him saying that he was paid off on such and such a day, and that that very night he was drugged and robbed of all his pay, and also of the very clothes from his back, having a few rags given him in their place. Now, the bank of the Sailors' Home would have kept his money safe had he placed it there, and the amusements of the Sailors' Home would have kept him from those who stole his clothes. And when he comes of an age to marry the Married Sailors' Home would give him a respectable and comfortable home for his wife and family.

I fancy it often happens that an old shipmate or a comfortable ship may tempt a sailor to go to sea again almost immediately after coming off a voyage. Then he might give as much as £10 or £20 towards his pension fund, feeling that it all went to provide future comfort either for himself or for others.

Some have suggested that any subscription for the support of old sailors must be compulsory, but really I do not see why sailors should not use their judgment and common sense as well as the rest of the world. To help them in this, I think that they should be early paid off, as many now have spent their money before they get it.

I should be most happy to work at the getting up and management of such a Benefit Club as I have described, if I felt that there was a large number of sailors who really wished something of the kind to be done.

It is contrary to reason and wrong in principle to get up subscriptions for the widows and orphans of sailors when we know that in most cases their husbands and fathers have wasted more money than would have pensioned them. Of course, as things now are, if we hear of a case of distress in a sailor's family, we do all in our power to help, without asking whether or not things might have been better managed; but this is a bad way of going on, and I am sure that no honest upright man would wish to leave his family to the charity of

others. We want to strike at the root of the evil, and to do this we must get up a "Sailors' Benefit Club," and persuade sailors to acquire steady habits, and subscribe for their old age and for their families.

My opinion is that it would tend to make sailors much healthier,—they would live longer, and certainly be much happier; and if I found that there was a general wish amongst you to subscribe to a well-formed club, I would communicate with the Board of Trade and with various shipowners to know what could be done. Now, men, those who wish for this hold up their hands. [Here, again, every hand seemed to be held up.]

My last subject is—How a sailor's religious teaching is neglected, and how he must study religion before he can be happy on earth or after death.

Now, a sailor, if he is inclined to be careless of religion, has less to draw him to it than many men on shore. In England, a man, however careless he may be, must know at least fifty-two days in a year that others are going to church or chapel to worship God, and his general work is stopped on those days. But a sailor often has to work on a Sunday. In many ships it is treated much like any other day,—divine service is never performed, the crew have nothing outwardly to remind them that each man has a soul preparing for eternal happiness or eternal misery. This is all the more easy, too, because we do not naturally like religion.

Very much working on Sunday might be avoided if the captain and owners felt properly on the subject; still it is a sailor's duty to obey even if he gets into a ship where religion is neglected, and then to look out that his next ship be one in which religion is respected.

Most of you have seen a shipmate die. It has cast a sudden gloom over the whole ship's company to see a strong and merry fellow taken from amongst them. I remember, only last year, a fine, hearty young man in my crew who was dancing on the forecastle at nine in the evening, and a few hours after was taken with cholera so badly, that when I went on board the next morning about six o'clock he was speechless from utter weakness, and died shortly after. Many of you must have known something of the same kind, and at such times men are forced to think a little about the next world. We naturally ask ourselves—Where has he gone? Have we any way of learning about the next world? Is there anything to be done by us to prepare for it? Have we any reason to think that our happiness in the next world will depend upon our conduct in this?

My friends! the only way in which we can learn to answer these important questions is by reading our *Bible*. It tells us all that we want to know; but the *Bible* tells many things to a bad man that he does not wish to know. He does not like to be told that he must give up his sins,—he does not like to be told that he shall live for ever,—and so he shuts his *Bible* and goes on recklessly, as too many are doing.

Then we say—We shall do as well as our neighbours, a sailor can't

be a saint!—but we are warned again and again in the *Bible* that we are not to look to what others are doing, that we are not to "follow a multitude to do evil," and that we are to keep in the narrow road that leads to eternal life, on which we shall find but few travellers. And then, why should not a sailor be as good a man as if he were in any other profession? "A saint is a man who does God's will with a heart, because he loves Him;" aye, and who does his daily work willingly and honestly, because he is doing his "duty in that station of life to which it hath pleased God to call him."

I remember hearing a story of a good man who lived, some eleven or twelve hundred years ago, in Africa. He thought that to please God he must do nothing but say prayers all day, and often all night too, that he must sleep on the bare ground, and scarcely wear clothes enough to keep off the cold. One night he dreamed that he was talking with an angel, and said to him, "Surely, there is no such saint as I am in the whole of Africa or the world." "There is a greater saint than yourself living within a few miles of you," answered the angel, and showed him a blacksmith in a neighbouring town working at his forge, but all the while praising God in his heart, and doing his daily duties as if in God's sight. So the hermit learned then that God did not like men to be idle, and went back into the town and earned his livelihood, and helped all round about him.

Besides this, sailors have many a spare hour in which they could read their *Bibles* or religious books if they wished, and they might, in the quiet of a night-watch, think of Him who made the sea, the wind, the stars, themselves, and all around them. It is not necessary for a man to go on his knees to pray; he can pray in his hammock, or even walking the deck.

But if a man is half tipsy all the time he is on shore, and working or sleeping all the time he is at sea, this all important subject is put quite out of sight. And as we are all children of habit, a few years of this sort of life seem to deaden a man's mind and heart, and make his progress in religion most slow and difficult, even if he does try to turn to it; and if he does not, we can scarcely dare to think of what will be his fate. Let us then acknowledge that we are helpless sinners, unable to do any good thing in our own strength; but let us at the same time joyfully remember that God in His love sent His own son Jesus Christ into the world to seek and to save the chief of sinners,—not only to save St. Peter and St. Paul, and other good men of whom we read in the *Bible*, but all of us here present this evening,—that He died for us on the cross, and suffered, the just for the unjust, to bring us to God. Let us always thankfully remember that He has promised to help us with His mighty help;—that by real, humble prayer to Him for His strength He will so graciously stand by us in the hour of temptation, that each of us may be able to use the *Bible* words and say for himself—"I can do all things through Christ who strengtheneth me."

Before concluding, I will repeat to you the objects of this lecture:—First, that sailors should try to improve themselves, and thereby fit

themselves for rational amusements and the use of Sailors' Homes; Second, that they should do all in their power to help in getting up Homes for Married Sailors, where they could live with their families while on shore, and leave them comfortable when they go to sea; Third, that they should subscribe to a Benefit Fund for the support of old sailors and the widows and orphans of sailors; and Fourth, and most important, that they should bear in mind that without Christianity no lasting improvement can be made in any human being, and so that they must study and practise their religion.

May I tell the merchants and shipowners of England that you would be very grateful to them if they would build well fitted lodging-houses for married sailors, where they could have all the modern improvements, such as plenty of air, light, water, drainage, &c., for the same money that you are now spending in very poor and dirty houses, surrounded by the lowest society? May I also tell them that you would like cricket and skittle grounds, and other means of rational amusement. which would help you to avoid drink and bad company? May I also tell them that you would be glad of a ship's library, well stored with good and useful books?

May I tell our Government that if they will guarantee a Benefit Club, the sailors of England are willing to subscribe for the support of their old and disabled, and for their widows and orphans?

May I also tell the commanders and officers of English ships that you would be glad if they would help you to improve yourselves by opening a school in fine weather during the voyage? Also, that you would be glad to come clean to church at sea if they would keep Sunday as quiet as possible, and give you the opportunity of studying your noble religion?

And now let me finish with the words of an old sailor, which I have lately read—"My dear brother seamen, I speak just what I feel when I say before we part, that I think the prettiest sight which God could see on the bosom of the sea would be a ship manned by Christian sailors! Oh, what a sight that would be! Prayers instead of quarrels, and praises instead of cursing going round the world! Jesus would be on board and give peace to all, and say in the storm—'It is I, be not afraid.' She would be a blessing, and not a curse, to every port she entered, and Christian men would pray for her and welcome her, and cry 'God be with her!' And if she was lost with all hands, and never heard of more—What then? Poor Jack would be at rest in the bosom of his Father and his God. But farewell, a good voyage to you, and a happy meeting with all friends at home, and a happy meeting with us all when the voyage of life is over."

Finally, I have a favour to ask of you, which is, that you will go quietly home and think over the important things about which I have been speaking to you; and when you feel how difficult it is to change from bad to good, go to Jesus Christ in prayer, and He will certainly help you.

Journal of Captain Cracroft, C.B., of H.M.S. "Niger."—*New Zealand to the Falklands.*

(Continued from page 298.)

Saturday, May 18th.—Cape Horn S. 81° E. 4,305 miles. Those who foretold a good *steady* nor-wester have proved to be false prophets, for during the whole week just past we have made good only 320 miles. In fact, the ship has been laying almost like a log in the water, with every studding-sail set to woo the least breath of air, which only came now and then in cat's-paws, from the N.W. generally. The water was, however, very smooth, and catching the birds that hovered continually round the ship afforded some amusement. On Tuesday no less than sixteen albatrosses were caught, and the men contrived to make messes of them,—anything for a fresh meal.

We have had two Saturdays this week, for having crossed the meridian of 180° on Thursday, I altered our date, putting the day one back. For this extra day we get paid (*vide* Basil Hall's *Fragments*).

Reverting once more to New Zealand and to the campaign in which we have played our *rôle*, it is impossible to avoid drawing a comparison between the result of the struggle just terminated with that brought to so successful an issue by Governor Sir G. Grey in 1846, more especially when the means of offence disposable at the respective periods are taken into consideration.

At the date of the sack of Kororareka, in March, 1845, there were but one or two companies of the 96th Regiment and H.M. sloop *Hazard* in military protection of all New Zealand. Some time after, these were reinforced by the 58th Regiment, which arrived at intervals and by detachments, and ultimately by a wing of the 99th Regiment.

In November, 1845, Captain Grey arrived in the H.E.I. Co's. sloop *Elphinstone*, and assumed the Government. H.M. ships *North Star*, 26, Sir E. Home; *Calliope*, 26, Captain E. Stanley; *Castor*, 36, Captain C. Graham; *Racehorse*, 18, Commander G. Hay; and, after the war in the North had terminated, *Driver*, 6, paddle-sloop, Commander C. O. Hayes, followed. When at the strongest, the whole military force in the colony, including a handful of artillery and a few volunteers, could not have amounted to 1,300 men; and all the naval force, save one, were sailing vessels. Yet, with this force, Governor Grey, in less than two months totally extinguished the northern war, and proceeded forthwith to arrest and subdue the southern war. With what promptitude and energy he did so are matters of history. Though not holding military command, he was everywhere present to counsel, suggest, and encourage those under him. Avoiding blunders himself, he pounced like lightning upon those of the enemy, pushing him hard when the opportunity offered,—never allowing him any rest, but so harassing him that he came speedily to terms; the result being to us an honourable and advantageous peace.

Contrast the above with the exhibition we have so recently witnessed. Our naval force consisted of five steam-ships, viz., *Pelorus*,

Niger, *Cordelia*, *Fawn*, and *Victoria*; one sailing frigate, *Iris*, and gunboat *Caroline*. The land forces included a complete battery of Armstrong guns and 250 artillerymen, a considerable force of engineers, three entire battalions—14th, 57th, and 65th, the greater portion of the 40th, a strong detachment of the 12th, and some 500 Taranaki volunteers and militia; in all about 4,500 men, exclusive of the militia and volunteers of Auckland and Wellington.

But there is another element of force to be considered, more potent even than this superiority of men, to which I have before alluded in this journal.. In the last war, mortars, howitzers, shot, shell, and artillery were lamentably deficient. In the present they have abounded. Last war our men were armed with "Brown Bess," and in that respect were only upon a par with the Maori. In the present war they have wielded "Enfields," and have been furnished with all the means and appliances of modern science unstinted.

Yet the war of 1845–6 was speedily, honourably, and satisfactorily concluded; while this one, thanks to the Fabian and vacillating tactics pursued, dragged its slow and inglorious length miserably along, and finally terminated in a peace which can only prove a hollow and disastrous truce. At this moment it is quite uncertain whether the Waikato King party mean submission to the Queen's sovereignty and obedience to the law, or whether they mean sulky defiance and repudiation of her rule; yet it is equally clear that this question must be settled. The natives of New Zealand *must* become peaceable subjects of the Queen. The Ngatiruanui scoundrels cannot always be permitted to stop Her Majesty's mails and *tapu* the coast.

Saturday, May 25th.—Our progress during the past week has been very slow, light northerly winds prevailing. The average speed has been 87 miles a day, or a little over 3½ knots an hour. We shall be a long time rounding the Horn at this rate!

June 1st.—A great change in the weather took place in the early part of the week, and we logged 212 miles on Monday; but the wind drew round to the eastward afterwards and has been very baffling. On the night of the 29th, in lat. 49° 30′, we had our first snow storm, and it has been snowing more or less ever since, the wind being unsteady, between South and W.b.N. Barometer down to 28·68; thermometer, 30°.

Saturday, June 8th.—The ship's company continue remarkably healthy, although the bitter cold weather we are experiencing must begin to tell upon them. As soon as the thermometer fell to 32° I ordered an extra allowance of cocoa to be served out to the middle and morning watches directly they came on deck, with unlimited leave for smoking, and the result is only *four* on the sick list!

On the morning of the 3rd, about 3h. a.m., the wind, which had been blowing hard from the westward, flew into the S.W., and for a short time blew a hurricane. The topsails were on the cap and the foresail hauled up, but all the beckets of the inner jib carried away, and the ship refused to pay off. Unfortunately, the port fore-topsail sheet (chain) carried away also, cutting the fore lift in two, and the

yard falling on end it was impossible to brace it round; so that, although the main topsail was full, and the ship drawing full four knots through the water, it was a good half hour before we could get her off with the help of the fore trysail, which I thought must have blown away before it was half set.

The scene, while it lasted, beggars description. The roaring of the wind, the beating of the fore topsail, which was very nearly cut to pieces by the sheet, the masts quivering and shaking as though they couldn't stand it much longer—all combined to shake also the nerves of some, even of the older hands. The only thing I dreaded was a sea tumbling on board while we lay utterly helpless, and it was running mountains high.

In the middle of the turmoil we were startled by the sight of a most brilliant comet; but before any angles could be taken the sky became totally obscured. As no allusion is made to this visitor either in the *Nautical* or any other almanac we have on board, it must be a stranger whose existence is unknown to astronomers.

Saturday, June 15th.—This week's run has been more satisfactory, but far less than I had calculated upon; the average was 165 miles a day. We are now in 54° S., but the temperature of the sea water has altered very little; while the air has been always below 30°, it has not descended below 43·5°, a proof that there is no floating ice in our vicinity.

The comet has been seen frequently, rising between 1h. and 2h. a.m. E.S.E., and setting about 7h. p.m. in the S.W. Its appearance is almost equal to a star of the first magnitude, with a tail full 6° in length. On the 10th, at 6h. 30m. p.m., in lat. 52°, the following angles were taken between it and three stars by Mr. Veitch, the Master:—α Eridani (Achernar) 39° 46′; Canopus, 35° 21′; η Argus, 37° 35′. This is all that can be done to determine its position; the calculation of its orbit I leave to Captain Shadwell and other learned professors of astronomy. * * * *

Saturday, June 22nd.—Another week of light baffling winds, chiefly from the East and S.E., and our progress has been slower than ever; average speed 2·7 knots, or sixty-five miles a day. Heavy snow squalls have swept over the ship almost hourly, and were generally succeeded by a partial calm. Thermometer always below 30° till to-day, when it rose to 33°; barometer ranging from 28·70 to 29·64; sea water, 43·5 to 44·5.

We passed four vessels last night, all bound to the westward, which looks very much as though calms had prevailed for some time in this neighbourhood.

I must not omit to mention that "bottle papers" were thrown overboard on the 15th and 28th of May, and 15th of this month.

24th.—At noon yesterday we were only 116 miles from the island of Diego Ramirez, and as the weather still continued baffling, chiefly from the N.E., dead in our teeth, I got the steam up with the intention of sighting the island, to check the reckoning; but we passed to

the southward without seeing it, and at noon to-day Cape Horn bore N.E. eighty miles.

We were now under the influence of the land, and the water was very smooth—like a lake. The beautiful little cape pigeons, which have followed the ship all the way from New Zealand, still stick by us; but the albatrosses have long ago disappeared, and their places supplied by shags and solan-geese, birds which never travel far from land.

We shaped a course to pass thirty miles outside Cape St. John, the eastern extreme of Staten Island; and as a nice light breeze from the N.W. sprang up on Tuesday forenoon, all sail was made, and the royals and topgallant studding sails set. Land was reported more than once during the afternoon, which turned out nothing but "Cape Fly-away." The appearance was that of a range of hills covered with snow,—it may have been land after all.

On Wednesday morning the wind drew round to S.W., and we proceeded under sail only, banking up the fires. We were crossing the recently discovered extensive shoal that lies between the Falklands and Staten Island, and there was a heavy breaking sea on, like overfalls—I have seldom seen worse. We tried for soundings, and struck the ground (rock) with about sixty fathoms of line; but the heavy sea precluded the possibility of being very accurate.

At noon, Cape Pembroke, the eastern extreme of the Falkland Islands, bore N. 36° E. 149 miles; and, as the wind fell light, at 1h. 30m. p.m. the fires were brought forward, in hopes of getting into Port Stanley before dark to-morrow. Beauchéne Island was sighted soon after midnight; and it was hailed with no little satisfaction, for I had not put the most perfect faith in the correctness of our chronometers, and our last sets of lunars had all turned out worthless observations. However, after a run of nearly six thousand miles, the reckoning was not five out.

Thursday, 27th.—At daylight the island of East Falkland was in sight, a bleak uninviting coast, without tree or shrub, or any feature to give it animation—dreary to the last degree. We kept close inshore, passing inside the Wolf and Seal Rocks; but no signs of life were visible, not a living creature of any description to be seen, except a few divers. We rounded Cape Pembroke within a cable's length, keeping outside the Billy Rock. The lighthouse lately established here is of iron, 110 feet high, painted in white and red bands. It shows a bright fixed light, and is visible in ordinary weather fourteen miles.

The two islets in Port William are not so forbidding, being covered with tussac, that wonderful esculent for cattle. Soon after passing them we stopped and took a pilot in—an old Portsmouth waterman, named Melville, who has been here one and thirty years,—and the few scraps of intelligence he was able to give us were most welcome, our latest news from England being just four months old (February 26th).

It was a singular coincidence that a vessel which was reported from

the mast-head just as we rounded Cape Pembroke should turn out to have the English mail on board for this place, *viâ* Rio and Monte Video, which left Southampton on May 9th, the day of our departure from the Manukau—so that we are each fifty days out; with truth, therefore, this may be called a half way house.

At 11h. 30m. a.m. we entered the landlocked basin called Port Stanley, and anchored, in four fathoms, abreast of the stores belonging to the Falkland Island Company; which, according to a circular I have on board, is prepared to supply ships with everything they can require on the most reasonable terms.

This harbour seems to have been specially designed by Providence for the purpose to which it is at present devoted, namely, as a port of refuge for the numerous ships that are annually disabled and suffer such privations off Cape Horn. Last year no less than sixty-four vessels, measuring 14,000 tons, found shelter and supplies, and completed their necessary repairs here; and already this year, up to the present time, thirty-five ships have put in for a similar purpose: so that its importance as a harbour of refuge cannot be overrated. There is one thing, however, in my opinion, absolutely requisite to make it perfect, and that is a patent slip for hauling up vessels; it would doubtless soon pay for its construction.

The settlement appears to be yet in its infancy. The town, if it ought to be dignified by the style and title, is a straggling place, numbering 140 dwelling houses and stores,—all, or nearly all, constructed of wood, notwithstanding plenty of good stone suitable for building purposes is at hand. It contains 550 inhabitants.

A very neat building, consisting of a campanile (the clock not omitted) with two wings attached, one appropriated for a church, the other a school, is conspicuous close to the beach. It is flanked on either hand by the stores, &c.; which have been constructed, with little regard to regularity, along the strand, but having a good road in front—the only bit of M'Adam, and that not much more than a mile long, on the island. There are two public houses, styled "hotels" of course.

A little further on up the harbour is a small government establishment, consisting of storehouses and smithy, with a small, very small, gaol and guard-room, in a ring fence. On the rising ground at the back are the barracks and the houses for the pensioners (old soldiers), thirty in number, each with its little garden. Further on is the government water tank, with pipe led down to a small jetty, from which boats fill with a hose; the powder magazine; and the government offices and house of the Governor, which is now tenanted by an old messmate of mine whom I have not met for more than three and twenty years—His Excellency Thomas E. L. Moore, Captain, R.N.,—and from whom I received a most cordial welcome.

It is not my intention in this journal to enter into the history of the Falkland Islands,—how they came into our possession,—how we have hitherto neglected them,—and what might have been done had their vast capabilities been more thought of;—sufficient to say that their

resources have still to be developed. Would that those in authority at home were aware of the mine of wealth we possess in these islands, and utilize them more. Every man of war that rounds Cape Horn might be ordered to call here on her way, instead of seeking refreshments in a foreign port, and running the risk which too often awaits her of getting yellow fever on board in that hot bed of filth and disease—Rio.

This indeed is the natural half-way house for an Englishman bound to or from the Pacific, and having, by the blessing of God, reached it safely, notwithstanding our dilapidated condition, I shall jot down a few remarks upon our passage; which has been tedious, owing to the very light winds experienced for so great a portion of the distance, but on the whole most favourable, no casualty worth naming having occurred. It is true that I might have run down my longitude in a more southern parallel, thereby shortening the distance a trifle, with the chance of getting better winds; but the long nights (full eighteen hours of darkness) induced me to follow strictly the *Sailing Directions*, which recommend vessels not to go further South than 54° in the winter till within a few miles of Cape Horn. At the same time it must be confessed that a sailing ship, with the baffling winds we had, would have been delayed many days longer in rounding the cape, which we were forced to do at last under steam.

The actual distance run, by the log and reckoning, between Onehunga and Port Stanley, was 5,774 miles,—or 115 a day, 4·8 knots per hour: of which, 772 miles was done under steam in four days and eighteen hours, or at the rate of 6·8 knots per hour; revolutions, 48·8; speed of screw, 8·424; slip per cent., 23·96;—altogether a most miserable performance. The consumption of coal amounted to 135 tons, or 5·715 knots for every ton; 10½ tons were used in addition for raising steam, making the gross quantity expended 145½ tons,—an enormous quantity compared with the work done; but the fuel was Australian (Newcastle) coal of the worst description for our tubes, depositing enormous quantities of soot and clinker, and two of the boilers were leaking very badly.

Friday, 28th.—We commenced coaling this morning from the hulk belonging to the Falkland Island Company, which was hauled alongside for that purpose. Mr. Dean, the head of a firm which is also ready to undertake the coaling, provisioning, and repairs of the lame ducks that arrive here in such increasing numbers, had tendered for the honour of supplying us; but as he had only fifty tons available, I was obliged to patronize the rival company. The weather was against us, being very boisterous, and we had to leave off to house topgallant masts, veer cable, and let go a second anchor. In spite of all drawbacks, however, in two days 154 tons were taken in—West Hartley, at sixty shillings a ton,—and on Sunday afternoon, during a lull, the hulk was safely transported back to her moorings.

With the exception of tobacco and flour, which were obtained from Captain Malony, the officer in charge of the Commissariat store, I got all our other supplies from the Falkland Island Company. Excellent

beef at threepence a pound, delicious mutton, sixpence,—the finest sheep I ever saw. Besides the fresh beef, I had sufficient corned during our stay for a fortnight's consumption, at fourpence a pound, but the casks cost ten shillings each.

I found Mr. Lane, the Company's Manager, most obliging. He gave me an interesting account of the grazing establishment under his charge, which seems to be in a very thriving state, the sheep increasing at the rate of seventy per cent. per annum. The wool fetches a high price in the London market, the fleece being very superior, owing to the climate, which is much more equable than in England; the temperature ranging from 40° to 50° in winter, and 50° to 70° in summer, while snow falls rarely, and still more seldom lies on the ground. The flocks, I suspect, will prove even more valuable than the herds to the company, but everything is yet in its infancy.

In 1859, the first year for which there is any return, the imports into Great Britain from these islands, consisting of hides and horns, bones, wool, seal oil, and skins, amounted to £2,844; last year they had increased to £7,339! And the hulk from which we coaled contained, Mr. Lane informed me, upwards of £8,000 worth of produce, ready for transmission home by the first opportunity. It is evident, therefore, that there is a good opening here for men fond of pastoral pursuits, who can stand hard work and exposure in all weathers. But the climate is considered remarkably healthy, and even persons afflicted with pulmonary complaints are said to experience relief here. See A. K. Johnston's *Physical Atlas of Natural Phenomena*, p. 119.)

Cultivation can hardly be said to have commenced as yet, although many kinds of European vegetables, especially turnips and carrots, thrive exceedingly well. Barley has been grown, but wheat has not ripened, owing, it is supposed, to not having been sown at the right season, and experiments are to be made with winter wheat, which it is hoped will be successful. Trees are utterly wanting; there is not one in all the Falklands, nothing larger than the currant and gooseberry bushes in the settler's gardens, which, by the way, bear uncommonly well. If labour and capital could be found, it might be well worth while to try planting on a large scale. Scotch firs or larch would probably stand the best chance, and there is no knowing what effect draining and planting might not have in mitigating the severity of the gales and otherwise ameliorating this boisterous climate.

I must not omit some notice of the minerals, for there are indications which go far to prove that these islands are rich in various kinds. Captain Moore presented me with specimens of several that had been discovered;* among them what appeared to be a rich chrome iron ore and a specimen of black lead. Coal has been discovered also, and the Governor seems perfectly satisfied that it is fit for steaming purposes. It answers well as fuel in the ordinary grates; so at all events, for household purposes, it may supersede the peat now in general use.

* These were all deposited at the Geological Museum in Jermyn Street on my arrival in England.

But all these resources, and many others which require capital and labour to develope them, are likely enough to lie fallow for many a day without assistance from the Imperial Government; and it appears to me that the most effectual mode of rendering that assistance would be to declare this a penal settlement. There is a cry in England just now for a return to transportation,—the feeling among the settlers here is almost unanimous in favour of convicts being sent to them, and I cannot imagine a more eligible position for such an establishment. It has, indeed, every desirable qualification: the climate has been declared by no mean authority to be healthy yet not enervating; the country is extensive enough to be capable of absorbing the convicts after their term of imprisonment has expired. Roads, jetties, and other public works are urgently needed. Without the former no industry can flourish, and no agriculturalist would be tempted to cast his lot in the land; but once established, there would be a fine opening for the farmer and grazier, for the land is suitable for green crops and resembles much that of the West coast of Scotland and Ireland.

Again, the distance from home is not so great as to render the cost of transport excessive, especially when compared with the expense the country has been put to in sending criminals to the Antipodes. It is under 8,000 miles, or less than half the distance between England and Western Australia.

Another important consideration is the remoteness of these islands from any civilized community, to whom runaway convicts might become a serious nuisance;—Monte Video, the nearest civilized state, being upwards of 1,200 miles off.

Altogether, the Falkland Islands fulfil almost every condition considered necessary or desirable in the selection of a place of security for condemned criminals; and no valid objection can be brought forward against their being appropriated to this purpose.

(To be continued.)

Excursion to the Lake of Nicaragua up the River San Juan.—*By Mr. George Lawrence, Assistant-Surveyor of H.M.S. "Thunder," Commander E. Barnett, in March*, 1840.

(Continued from page 290).

Friday 13th.—We noticed here the remains of a Catholic church or chapel, and its great bell that was wont to arrest the pious traveller in his journey to and from the Lake now lies prostrate at the foot of the belfry, still in a good state of preservation; but evidently having long since ceased to wag its monitory tongue! The remains of a sort of pavement, seem to indicate the site of a considerable town.

The bongo we passed two days ago arrived at this place this morning, and a canoe laden with corn and other provisions from the island

of Solentinane, where it is said there are several agricultural settlements. Her crew consisted of three women and a male coxswain. The former paddled, and appeared to be quite adepts in their occupation; they were remarkably clean in their dress and person, the latter by no means deficient in point of beauty; but I cannot say so much for their modesty and morals.

The entrance of the Lake of Nicaragua. Island Sapote on the left; site of Fort San Carlos on the distant high land.

⌣ Isle Sapote. ⌣ ⌣ Site of the Fort.

The commandant must have been either very studious, very sleepy, or very tipsy, for we did not see the light of his countenance nor hear of him since our audience of yesterday. In such a place as this he cannot often have an opportunity of showing off his importance, and on that account one would have expected a little more attention and civility; but perhaps he had not yet recovered from the effects of his indulgence. We remarked this morning that, with the wind at E.N.E., the lake had again risen to its former level, proving that the padrone was quite right.

Sounding round the Morro Point, I found that the depth varies from 1½ to 2 fathoms. The best guide in the dry season, when there is only six feet in the deepest channel, "is," the padrone says, "to steer direct from this point to the northern extreme of Solentinane."

Having obtained observations, we left San Carlos at 3h. 45m. p.m., paddling along the North shore of the lake till we came to Lime Point, about one mile and three quarters distant from the Morro Point, when we made sail, put the log over, and steered N.b.W. (magnetic) with the wind at E.N.E. No. 4 or 5; weather exceedingly fine. Running along shore at the distance of one and two miles, the land appeared to be low and swampy near the margin of the lake, but gradually rising to one and two hundred feet, and overgrown with a few trees of small growth. Here the soundings were ten feet, and then gradually decreased till we came abreast of Punta del Toole, about two miles and a half from Cay Bokeet, where a small rivulet, named Rio de las Marias, empties itself. At this time the patent log showed 15·2 miles. At 9h. 30m. p.m., we arrived at San Miguelito, where we remained for the night, the weather fine.

Saturday, 14*th*.—At daylight we looked round the settlement of San Miguelito, which is a small village, containing about fifteen huts, situated on a declivity eighty or one hundred feet above, and less than half a mile from, the lake. A few acres of land surrounding the huts have been cleared away, leaving a pleasant open grass plot, where the soil appears to be rich and fertile.

We saw few men at this place, their occupation being pastoral, they had left their homes before daylight to look after their herds, grazing on the neighbouring hills and savannas, and would not return till the afternoon to take their siesta. The women, of whom we saw several, are many of them rather pretty and well dressed, their principal garment being a sort of petticoat, and their busts slightly covered with a thin jacket, giving their *tout ensemble* an air of gracefulness which I little expected to have met with in such a place. Others were bathing as usual in their birthday suit, or, in other words, in all their naked beauty, near the spot of our observations.

Here we found a bongo laden with cheese, jerked beef, &c., the produce of the adjacent country. Of the latter we found it again necessary to purchase a "roba," equal to 25lbs., which cost three quarters of a dollar. Bullocks may here be had for four and a half dollars, fowls for one quarter, eggs and milk for a mere trifle.

The height of Solentinane peak, &c., I found to be 800 feet, and San Bernardo 317 feet high.

The first point we passed is called Padernal, where there are a few houses on its western extremity, said to be a good place for live stock; but having supplied ourselves at the place from which we last started, we did not land here.

Again running along shore at the distance of a quarter, and sometimes one mile;—here there is nothing striking in the features of the land, which near the beach is low, but not swampy, and strewed with small detached pieces of rock, evidently bearing the impress of volcanic action. At a short distance inland, hills of 100 and 200 feet begin to rise, not much wooded, but thickly grass-clad, and affording pasturage to numerous herds of cattle. Here we saw several small huts, the residences of drovers.

Passed the small river Guapola at two p.m., landed to dine on Punta de la Haing, where we afterwards obtained observations, and at four p.m. sailed with a delightful sea breeze, the sky nearly cloudless.

The hills on this side of the lake, divested of forest clothing, remind me of those of Portugal and the North coast of Spain. At sunset we passed a bongo going to the eastward, but did not speak her. At this time saw the peak of Ometape clear and well defined, its summit having all the appearance of a crater.

The night was unusually clear and beautiful, not a cloud to be seen, wind easterly, and canoe gliding along at the rate of four knots. At eight p.m. passed Nanci Tal Cays, and at 9h. 30m. landed for the night at Punta Pederosa.

Between this and Punta de la Haing are three rivulets, viz., Rio Oyate, Rio Rapel, and Rio Burro Negro, which discharge themselves into the lake.

Sunday, 15th.—At daylight proceeded on our voyage with an easterly wind and fine weather, steering along shore at the distance of one and one and a half mile. The mountain of Alto Grande was now seen ahead, a beautiful object, and significant of its name, clothed to its summit with the brightest verdure, where thousands of cattle might be reared: its height we since determined to be 3,149 feet. There is no appearance of anything like cultivation along the whole of this side of the lake, all is natural pasturage and meadow land. The padrone informed us that the inhabitants on the North side of the lake depend in a great measure on those of Ometape for provisions, their own soil not being considered sufficiently productive; but I should rather be inclined to ascribe the cause to their want of industry.

At 8h. 30m. a.m. we passed Point Myalli, and the river of that name, and soon afterwards were abreast of Point Congregal, between which and the former the land is low and swampy. and so continues as far as the Isla Muerta; but beyond the Rio Wapenolapa, which we passed at 10h. a.m., it is gradually acclivitous till within two or three miles of the high land of Santa Cruz.

The breeze began now to freshen so much that our canoe was in danger of being swamped, running before a short topping sea, by which and the rain together we were completely drenched.

At 11h. a.m. we arrived at the small island of Muerta, where I took observations and breakfasted, and we dried our clothes, the rain still descending in occasional showers, with heavy gusts of wind. From this position (about fifty feet high) we saw the volcanic mountain of Mombo Tombo, situated North of Leon on the margin of the lake of Nicaragua. At 2h. 30m. p.m. took our departure from Granada, with the weather still so squally that we were soon obliged to shorten sail and keep away, shipping a good deal of water. In the course of the afternoon, however, it moderated so much that we were again enabled not only to carry all sail, but found it necessary to resume our paddles in order that we might reach Granada at a reasonable hour. Temperature of the lake 81°, air 79°.

The mountains and plains to the North-west began now to appear in all their native verdant beauty; unlike anything among the West India Islands. Instead of being densely overgrown with inpervious forests, they are clad "in Nature's universal robe," and seem to invite the location of the settler. The peaks of Ometape, Madeira, and Mombo Tombo must, I imagine, appear very distinct and remarkable objects from the Pacific. The hill of Granada, whose height we have since ascertained by calculation to be 4,480 feet above the level of the lake, must also be very conspicuous at the same distance; but Mr. Bailey thinks otherwise. In crossing from the Isla Muerta to the town of Granada, we found the soundings to run from 6½ to 6 fathoms. At 7h. 30m. p.m. we landed on the beach, near the old battery of Granada, and hauled up the canoe. Taking with me the padrone as a guide and interpreter, I immediately waited upon Mr. Bailey, (a lieutenant of marines on halfpay, long resident in this country,) whom I found with Mr. Higgins, a respectable American merchant, or rather

agent, lodging at a Mrs. Shepherd's. The former received me with all the kindness and cordiality of a countryman, and at my request conducted me to the house of the Gefe Politico or chief authority; but finding that he had left town for his country estate, I delivered my official letter of introduction from the commandant at San Juan, with a promise that it should be immediately forwarded to him, Having done what I conceived, and what Mr. Bailey, who knows the manners of the country, considered quite sufficient in the way of politesse, we returned to observe for latitude, &c. To guard against any accidents that might happen to the chronometers, as well as to keep the Indians together, I thought it prudent, instead of accepting Mr. Bailey's invitation to take up our abode with him, to remain by the canoe all night, in which, as hitherto, we had managed to sleep tolerably well.

Monday, 16*th*.—The morning broke serene and beautiful, disclosing all the objects on the lake sufficiently clear for our purpose. The beach is chiefly composed of finely triturated basalt, micaceous, and impregnated with spiculæ of iron, as shown by the magnet. The beach extends right and left to a great distance, has no wharfs or jetties, although very shallow and exposed to much surf. Here we saw hundreds of women employed in washing and bleaching clothes from daylight till dark. Our instruments and mode of observing excited their curiosity to such a degree that we were rather incommoded by their crowding round us as if they were inclined to mob us for magicians or something worse. The spot of our astronomical observations was one hundred fathoms South of the old semi-circular fort.

I gave the Ramas a dollar each, with permission to take a stroll through the town of Granada, all dressed in their new frocks and trousers, (made on board,) with which they seemed to be highly delighted. Leaving the chronometers in charge of Deermitt, with a strict injunction not to allow them to be touched, nor to suffer the canoe to be moved, Mr. Scott and I were on our way to Mr. Bailey's, when we met the padrone, who informed us that the second magistrate or Alcalde had detained the Indians, and would not allow them to walk about the town, expressing a wish also to see me. Accompanied by Mr. Bailey, who kindly proffered to interpret for me, I was conducted to the town-hall, where I found this functionary, with his coadjutors, seated in all the plenitude of authority, but certainly without the most remote semblance of what I expected. He requested to know the object of our visit to Granada, and complained with an air of offended dignity that I had not informed him or any of the public officers of my arrival. To which I responded in suitable terms; but finding that all my endeavours to explain the matter were unavailing, I requested him to send to the Gefe Politico for the letter which I brought from San Juan, and then he would see who and what I was. After much hesitation and apparent suspicion that I was not what I seemed to be, he at length consented to have it produced, and to my very great surprise and amusement, I found that this great character at the head of the table, before whom I was arraigned like a criminal, could not

read his own language, but handed the letter over to one of the others, who, after much bother of spelling, &c., managed to make it out, but not to their satisfaction. The Ramas were liberated, but I was requested not to leave the town until this momentous affair had been further deliberated upon.

I ought here to remark that the Central Americans and New Granadians have long apprehended an irruption of the Musquito Indians, with whom these Ramas are in some way connected, and knowing that our government have recognised the former as a nation, they, the authorities in Granada, might very probably suspect that our visit to this unfrequented place had some sinister view, as among other questions they appeared anxious to know whether or not I was a military officer.

An hour had scarcely elapsed after the above ridiculous scene, when I was again summoned before this august tribunal, and requested to deliver up my observations. To which not unreasonable demand, I replied that "although I had them not about my person, they were extremely welcome to a copy of them." After a deal of delay, without further insisting upon my papers, they consented to my departure, and to prevent a repetition of another interruption, I requested to be provided with a passport to Nicaragua, which they declined, saying, "It was not necessary;" and neither did I afterwards find any occasion for one. Before they would, however, allow me to leave this inquisitorial court, in which they could elicit nothing to alarm their apprehensions, they made a demand upon my purse for four dollars, being, as they said, "a debt owing to some one by our padrone;" which I agreed to pay on condition that they would give a receipt to Mr. B. Such petty annoyances as this are, I am told, every day occurrences; instead of assisting and forwarding the views of merchants and other foreign visitors on their arrival in this town, they throw every impediment in their way, and sometimes practice shameful extortions.

On our return to the beach we found our gallant Ramas all dead drunk, stretched around the canoe as if they were so many corpses. Like all other Indians who have had intercourse with Europeans, and above all, I am ashamed to say, with our own countrymen and selves, they have acquired a fondness for ardent spirits, to which they make the most deplorable sacrifices of life, limb, and property.

The town or city of Granada is situated about half a mile from the lake, and about one hundred feet above its level. The only conspicuous objects on approaching from the eastward are the cupolas of the two principal churches, viz., the parochial and the Guadaloupe, which, with the town-hall and barracks, situated in the plaza or square, are the chief buildings in Granada. The houses, with one exception, are all of one story, built in the old Spanish style, and so arranged that the streets run at right angles to each other; the latter are roughly paved, but not much trodden, so few people are to be seen moving about, and there is such an apparent absence of shops and stores that the stranger would be led to conclude that the place was almost deserted, and trade completely at a standstill. But I am told that a considerable business

is carried on in a clandestine manner, owing to the existing anarchical state of the country, where there is little or no security for property, the traders, who are generally foreigners, finding it politic to make as little display as possible, in order to elude the exactions of a rapacious government.

The population of Granada is estimated at 9,000, of whom only 300 can call themselves the legitimate descendants of the old Spaniards, and they are not entirely white. All the rest are a spurious progeny, called in the language of the country *Ladinos* or *Mestizos*, of whom it is said, as of all the inhabitants of the State of Nicaragua, that they are grossly ignorant and depraved; even the most enlightened of them are quite apathetic to everything connected with their civil polity, the principles of which they neither understand nor respect. Central America, as one republic, can hardly now be said to have any virtual existence, as the federal states have all revolted from each other, and are struggling for an independence which must eventually terminate in their total annihilation. In the present disorganized state of things, it were vain to look for order or regularity in any department of the government, and therefore any statistical information I might have attempted to glean respecting its finance, commerce, &c., would not be obtained, or at least relied upon for its authenticity.

The exports from Granada, chiefly consisting of indigo, hides, and Brazil wood, are conveyed in bongos down the Rio San Juan to the settlement of that name, where they are deposited in warehouses, or transhipped as often as opportunities offer to Jamaica, New York, and other places. At present a Genoese vessel is waiting at San Juan for a cargo of indigo. Coffee, cocoa, sugar, maize, sesamum, &c., are cultivated in the vicinity of this town, but not in sufficient surplus quantity to constitute articles of commerce, although in days of Spanish dominion they were all exported.

The nearest mines are in the district of Segovia, distant about forty leagues from Granada. Of their operations I had no time or opportunity to learn any particulars. The regular troops are I am told few, and badly equipped,—the militia more numerous, but, as may be supposed, still worse appointed, continually employed skirmishing about the country in this endless war of independence. They are seldom quartered for any length of time in one place; at present there is not a soldier to be seen in the town of Granada, and all its military defences (if it ever had any,) are completely abandoned and gone to decay. The old semicircular battery on the landing place might as well be called by any other name, for it does not contain a single piece of ordnance of any description.

Of the ecclesiastical establishment, I know nothing more than that there are five Catholic churches in this town, formerly in the care of Franciscan Friars, but now under the pastoral care of rudely educated coloured men, who for want of a bishop of their own, are ordained by some episcopal authority in Carthagena. There was once a bishopric, but now there is not one in the whole republic. All the lands belonging to the convents prior to the revolution, are at present in the

possession of the government, and distributed as the government thinks proper. The only existing nunnery is at Guatemala. Realejo is the only good harbour on this side of the isthmus, capable I am told of admitting vessels of considerable size and numbers, and might in the event of a better communication with San Juan, and a more peaceable state of this distracted country, become a place of great commercial importance, but its distance from Grenada being about fifty leagues, is a serious objection. The nearest part of the Pacific Ocean to Grenada is a small bay called Laceres, where there is neither anchorage nor settlement,—one day's journey across the country.

Leon, the capital of the state of Nicaragua, is distant from Grenada about forty leagues, and four leagues from the shore of Lake Managua, inhabited chiefly, if not altogether by coloured people, who bear a notoriously bad character. This lake is about sixteen leagues long, thirty-five in circumference, from twelve to fifteen in width; in depth not so great as that of Grenada, and its level is said to be twenty-eight feet three inches above the latter; its nearest approach to the Pacific is ten leagues in a direct line. According to Mr. Bailey, I understood Captain Belcher visited this part of the country about eighteen months or two years ago; his information will of course be more authentic.

On the road to Leon, about three leagues from the town of Grenada there is a remarkable brackish pond called Apoyo, apparently contained in the crater of an extinct volcano, which does not ebb or flow, and is not sensibly diminished by evaporation. In the vicinity of Massaya there is also a small fresh water lake; they are both, no doubt, the result of volcanic agency by which this part of the isthmus has often been violently convulsed.

The Lake of Grenada, or Nicaragua, is connected with that of Leon or Managua, by the river Panaloya, which according to Mr. Bailey's survey has its entrance into the former in latitude 12° 10′ N., longitude 85° 50′ W., bearing N. 25° E. (true) from the battery of Grenada, from which it is distant fifteen miles and a half; its exit from the latter, or Lake Leon, is in latitude 12° 15′ N., and 86° 3½′ W. longitude.

This communication between the two lakes, which in Roberts' *Narrative* is asserted to be effectually shut up by an effusion of lava, varies in its width from twenty-five to one hundred fathoms, and has a depth of from three to eighteen feet in the navigable parts of it. Mr. Bailey makes it eighteen miles long, including all its windings, but as the distances in his survey of San Juan were found to be rather short, I think we may fairly allow an additional mile or two, making its actual length inclusive of all sinuosities, to be twenty miles.

It is navigable for canoes as far as the village Pasquel, situated three miles and a half from the Lake Leon, beyond which for the distance of nearly a mile the channel is so superficially imbedded by a stratum or ledge of rocks, that in the dry season the stream is confined to a few water-worn fissures; but after a continuance of rain, the channel is overflowed, and the water rushes over the rocks with great impetuosity.

Near the village of Tipitapa, not far from Lake Leon, there is also a fall of nearly thirteen feet, so that if ever a navigable communication is to be effected between these two lakes, this part of the Panaloya is not available in its present state. Adjacent to it there are several settlements.

Viewing these lakes as the grand reservoirs of numerous mountain torrents, and rivulets, from which the river San Juan is the only outlet, it must necessarily happen that their depths will vary with the change of season; accordingly we find by Mr. Bailey's registration that there is a difference of six feet six inches in the depth of Lake Nicaragua between the wet and dry season, but of course this is not invariably the same.

The evaporation over an area of nearly 3,150 square miles, where the temperature ranges throughout the year between 75° and 90°, in conjunction with the continual efflux by the river, will effectually keep in check any extraordinary overflow, and must be taken into account in making a pluviometric calculation. Before leaving Grenada I must again express my thanks for the attention we received from Mr. Bailey, and his friends. To him I am chiefly indebted for the little information I have been able to pick up, and only regret that our stay had not been longer.

(To be continued.)

The Western Division of the Mediterranean.—*Currents.*

(Continued from page 311.)

Currents in the Mediterranean are principally detected by their main cause, which is a constant difference of level in the surface of the sea, produced by incessant evaporation, the precipitation of rain, and winds,—independently of the tides.

The continual supply of waters of the ocean to the Mediterranean through the Strait of Gibraltar, and those of the Black Sea by the Bosphorus, is known to all navigators. The Atlantic Ocean and the Black Sea may therefore be looked on as the two great sources for making up the loss arising from that great evaporation to which the Mediterranean Sea is subject. This sea, besides occupying a zone very much raised in its temperature, extending from East to West over more than 2,000 miles of longitude, is bordered on the South by the northern coast of Africa, which opposes but a slight barrier to the Simoom and other heating winds from the Great Desert. Comparing the great evaporation with the small accession which it gains from the Nile, the Po, the Rhone the Ebro, and other rivers of lesser note, the reason at once presents itself why there should be a continual small difference of level and a perpetual demand from the two adjacent seas to make up for it, notwithstanding the opinions of some who entertain

the theory of a submarine counter-current through the Strait of Gibraltar (which has never yet been critically determined) to account for such a continual influx. Let us analyse the several opinions that are advanced to explain the incontestable fact of this flow, and we shall be better able to appreciate the results and the service they render to navigation.

General Easterly Current.—In the description of the Strait of Gibraltar* this current from West to East was enlarged on, and its rate of hourly progress through the strait given. This rate decreases gradually, in proportion as the ocean waters are spread over those of the Mediterranean; their first direction being also varied as they encounter the most projecting capes, islands, and straits.

It is to be observed, nevertheless, that the even character of the African coast from West to East as far as Cape Bona serves to direct the course of the general current in maintaining its primitive direction beyond Sicily in a manner that we must admit as a principle,—that in its normal condition the current always runs to the East on the African coast. But it is not so on the coast of Spain, for there it only preserves this direction unchanged as far as the meridian of Cape de Gata, turning then to E.N.E. and N.E. in proportion as the coast continues trending to the northward.

When S.W. and N.W. winds are blowing, a more than ordinary mass of water generally enters the Mediterranean, and then the strength of the current is increased and its course somewhat varied,—setting to the N.E. off the coasts of Spain and France if the wind be S.W., and East and S.E. if the wind be N.W. If the prevailing winds be S.E. to N.E. new currents are produced, which, combining with the general current, assume various directions. With the easterly wind, for instance, the current sets into the very head of Valencia Bay, checking somewhat the general easterly current coming round Cape San Antonio, mixing with it and turning along with it, taking the direction of the African coast.

In many parts of the Mediterranean the currents are as variable as the winds; in certain localities being affected by the configuration of the shores and direction of the channels, occasioned by the prevailing wind or even that which is about to blow. Off the Esquerques currents setting in two different directions have been observed in the same day. Nevertheless, it has always been found that there is a great tendency to the East, in obedience to that general direction which the waters of the ocean take when passing the Strait of Gibraltar.

Respecting the waters which occupy the western portion of the Mediterranean, we have to observe that the influence of the general current is felt more there than any where else in this sea, because a great part of its original strength is preserved as far as the meridian of Cape Palos; and that strength is the same on the African coast. If there be a strong N.W. wind blowing in the Gulf of Lyons the

* See former page.

water impelled by its force acquires a direction to the S.E., South, and S.W., spreading along the coast of Sardinia and over the Balearic Sea; but on approaching the African coast the currents imperceptibly assume the easterly direction which they derive from the general current, and run with considerable strength through the Channel of Sardinia. If the wind be from S.E. to S.W. the current is checked towards the Gulf of Lyons, and in the Balearic Sea sets to the northward; while on the African coast, between the Balearic Islands and the Strait, it follows its usual easterly course.

When strong constant easterly winds prevail in the Mediterranean the easterly current is not so sensible in the narrows between the Spanish and African coasts; but it is always the same in the Strait of Gibraltar, as is proved by the facility with which sailing vessels get through the Strait to the eastward against these winds. By keeping also in the parallel of the Strait they derive great advantage when working to windward off the most projecting capes of the Barbary coast, still proving the effect of the general current.

Strength of the General Current.—The strength of the easterly current is such that an instance may be quoted of a vessel being becalmed in the evening in the middle of the eastern entrance of the Strait, and finding herself at daylight the next morning due South of Malaga; the distance which she had drifted giving a rate of five miles an hour. In such cases, too, as this the noise of the different streams of current which bore the vessel along to the eastward is distinctly heard.

The general tendency of the current in the latitude of Ceuta is to the S.E.; for it has always been observed that when a vessel is becalmed off Point Almina she has been set over towards Cape Tres-Forcas. Along the whole African coast from this cape to the eastward the general current follows the course marked out for it by the projecting capes; observing, that only outside of these capes, and at distances not easy to define, the easterly current prevails. But within the bays near the shore counter-currents will be found setting westward; but these currents again join the general current on emerging from these bays.

The strength of the general current outside these capes may be considered when in its normal condition as about two miles an hour. Sometimes, though very seldom, the current has been found setting West off the capes; but these are exceptions, which do not affect the principle of the general current known to all navigators who have sailed on the African coast, or who have stood off and on to it from that of Europe.

Coasting vessels which trade between Oran and Algiers, and between Algiers and the ports to the eastward, make their passages without difficulty *with* the easterly wind, assisted by the general current; but they are much longer on their return passages if they have a westerly wind, having then considerable trouble in beating to windward.

The easterly current is not less certain on the Spanish coast. No

navigator who knows that coast can fail to know the facility there is in getting to the eastward with easterly winds, and the difficulty there is also with westerly winds in getting to the westward. Off Cape Palos the influence of the general current is first felt, there inclining to the N.E.; an influence which renders it difficult to pass the cape with winds from W.S.W. and S.W. Off Cape de Gata it is more perceptible still, but double the number of boards must be made to gain to windward with westerly winds, it being common to lose in the calm nights what has been achieved with a great deal of trouble in the course of the day.

The great difficulty of getting to the Strait against westerly winds is very well known, as also the impossibility of passing it with these winds; it being notorious that occasicnally more than a thousand vessels will be scattered through the different ports and bays between Cape de Gata and the Bay of Algeciras, detained by the difficulty of running over the current to the eastward with westerly winds; while there is never any one detained by easterly winds in getting to the eastward,—unless it be coasting craft, when those winds are very strong.

The strength of the easterly current on the coast of Spain varies according to the locality, being estimated at one to two miles an hour between the meridians of Malaga and Cape de Gata, and something less between this and Cape Palos. Between this cape and Cape San Antonio the current is the same, but taking an E.S.E. direction on passing between the Balearic Islands and the coast of Africa, and N.E. on entering the Gulf of Valencia through the Ivica Channel. It is found to have a N.E. direction sometimes off the eastern end of Minorca when S.W. winds are blowing hard.

Currents in the Gulf of Valencia.—In the Gulf of Valencia the current takes different directions. In a fresh Levanter a large quantity of water is accumulated, producing a strong current into the gulf, which escapes round Cape San Antonio and winds along the coast of Spain to join imperceptibly the general easterly current following the African coast.

Currents in the Gulf of Lyons.—The same variety is found in the currents of the Gulf of Lyons. If S.E. to S.W. winds prevail, the stream outside takes a direction for the shore, principally N.W., North, and N.E., according to where it may be in reference to the gulf, a vessel finding it the stronger the nearer she is to the entrance of the gulf. The contrary is the case with a N.W. wind, which produces a current as strong as the former towards the outer shore, and falling on the coast of Catalonia as if the wind were N.E., in the Gulf of Valencia as if it were East, and among the Balearic Islands as if it came from North. Hence it is that off Minorca, an island which is most exposed to the commotions of the gulf, southerly and S.W. currents are nearly always found, as if northerly and N.W. winds prevailed, for two-thirds of the year off that island.

These currents, however, have their limits, as well as those from the Gulf of Valencia, terminating by joining the general easterly current

on the African coast. The hourly rate of this may be estimated at one to two knots in the Gulf of Lyons, and less in the Gulf of Valencia, losing in strength in proportion as they increase the distance from the mouths of these gulfs. At Minorca, off Cape Mola, the current is estimated at a mile an hour in settled weather; but it attains much greater strength if there is a *Salida de Golfo*, as it is called,—an outset from the gulf.

Nevertheless, from what we have been enabled to establish as the general result of the multitude of observations of distinguished navigators that we have had before us, cases will appear of currents taking place in direct opposition to it. But in such cases the observer himself must also be considered, who sometimes complicates his observations with many details unknown to us to change, although imperceptibly, the natural course of the waters; and who, as there are years of easterly and westerly winds, show also there are years when some currents prevail over others.

These remarks will show the navigator the necessity of not trusting the fate of his vessel to a blind estimation, and of fixing her position or rectifying her course every time he sees a well known object. In an extent of sea so limited, where winds often oppose each other and are strong enough to produce different currents and alter the general one, double vigilance is necessary, the log being considered as an authority to consult to form an approximate idea of the strength of the current every time that an opportunity offers for establishing afresh the position of the ship.

Tides.

The phenomenon of tide is scarcely known in the Mediterranean. The effect of that which occurs in the Atlantic is felt as far as a little East of Malaga; and true symptoms of the rising and falling in the whole of this sea are not known, except in its northern and southern limits, or rather in the Adriatic and the Gulf of Syrtis. On other parts of its coast elevations and depressions are observed, more or less remarkable, and in connection with the motions of the moon, that have admitted a belief in the existence of the phenomena; but they are so slight and of so little interest to navigation that we pass them by, confining ourselves to describing the movements of the waters that are known in the portion of the sea which we have under consideration.

Height of the Tide in the Strait.—In the eastern entrance to the Strait of Gibraltar the high water at the syzigies takes place between one and two of the afternoon; and the height of the tide, or rather the difference between its highest and lowest rise and fall, does not exceed 4½ feet on the second day of the new moon. The current produced by the tide in the Strait runs to the *eastward* on the *ebb* and to the *westward* on the *flood*, as we have previously observed; the dividing line continuing along the coast from the outermost points, for from the island of Tarifa it is scarcely a cable distant. Outside of these lines, which mark the limit between the edge of the general cur-

rent and that of the tide, the waters always run from West to East. Consequently, the vessel which would get to windward with westerly winds should make her boards *inshore* of these lines (which we may call eddy lines) during the flood tide, and will gain the more to windward the nearer the tides are to new and full moon. At the time of the moon quartering the tides have scarcely any strength.

The very narrow limits (extending from each shore) being considered in which the tide runs in the Strait, no square-rigged vessel can by tacking make any progress to windward in westerly winds, so as to get round Points Europa and Almina. Lateen-rigged vessels only can work in those narrow belts with advantage, keeping inside the eddy lines. But with spring tides the points of the coast can not only be weathered easily, but a ship may clear the Strait if she sails well and keeps inside of those lines. At half flood these eddy lines extend, on an average, to two miles from Point Europa, and one and a half from Ceuta.

It must be observed that to profit by the tides a vessel should be under way at the time the changes occur, so as to be at the cape or point she desires to pass at the time when the tide is strongest, which is always at three hours after the flood has commenced. Spanish coasting vessels are accustomed, when passing the Strait from East to West against westerly winds, to make sail an hour after the moon rises, because the tide is then rising by the shore, and is extending its limits to the offing in proportion as the zone of the flood widens. In this case care must be taken not to cross the eddy line and to keep in the favourable tide, for if the vessel gets outside of it, in a very short time she will lose what has cost her some hours to gain. The transits of objects on shore in line with each other will indicate whether she is gaining or losing.

Establishment of the Mouth of the Strait.—It is high water at full and change at Gibraltar and Algiers at 1¾ hour nearly, and at Ceuta at 2h., and therefore the establishment of the eastern mouth of the Strait may be taken as 1h. 45m. in calculating the tides.

When the ebb is running, it joins the general current, increasing its strength in the easterly direction in the middle of the Strait, passing swiftly along the Spanish and African shores. Thus it is that the ebb between the rock of Gibraltar and Point Torremolinos sets to the E.N.E., following the sinuosities of the coast, and E.S.E. between Ceuta and Alhucemas. The flood on both coasts follows the reverse direction, joined to the counter-currents to the eastward, and with sufficient strength to be of service to vessels bound for the Strait of Gibraltar with westerly winds.

Velocity of the Tidal Stream.—It is by no means an easy matter to determine the rate of the tidal stream of flood on both shores; but it is probably about a mile an hour in ordinary times near syzigies. And allowing that the counter-currents of the general stream run at the rate of half a mile an hour, the hourly rate of these currents may be taken at a mile and a half an hour; that is, the two combined.

According to the pilots of Peñon de Velez there are times when the westerly current runs two miles an hour, and this is probably the case in the bays of Marbella and Estepona, in which a vessel gains to windward without much trouble in westerly winds.

From the meridians of Malaga and Alhucemas to the eastward, the tides lose their strength so much as to become of no service to assist navigation. At Malaga the greatest rise is scarcely three feet, and if sometimes the sea is found to dash its waves on the walls of the piers, it is the result of some easterly tendency, or the cause of winds outside. The establishment of Malaga is 2h. 30m.

In the entrance of Tetuan, which is nearer than Malaga to Gibraltar, the tide rises four feet, and the establishment of the port is 1h. 30m. East of this place the effects of the tide become sensibly lessened, so that beyond Alhucemas they are scarcely recognized; for the observations made at Melilla and Chafarinas have given no other results yet than just showing the influence of the moon in the rising and falling of the water, independent of the effects of the wind that may be blowing.

From observations at the ports of Algiers, Carthagena, and Mahon, no other result has been obtained; for the tide guages established there at different times have shown a rise of fifteen to eighteen inches above the ordinary level, and these have been but the effects of the prevailing winds. The same may be said of the rest of the ports in the Western end of the Mediterranean: and consequently generally speaking the name of tide cannot be given to those small elevations and depressions observed at some places, although those which occur at Toulon and other points may interest philosophers to discover whether they are occasioned by the action of the sun and moon.

It is considered that the tidal wave that enters by the Strait of Gibraltar spreads in the Western part of the Mediterranean under consideration, as if penetrating into an extensive bay, the time of high water retrograding in the same proportion as it advanced to the eastward to make high water; for instance, making high water at Toulon when it is low water at Gibraltar.

Rise and Fall of the Tide.—The risings and fallings of the water most remarkable in the Western part of the Mediterranean, are generally those due to the action of the wind. When the wind is in the S.W. or N.W. quarter, the rise is most considerable, coinciding nearly always with a low state of the barometer, and a high one of the thermometer. If to this be added the great mass of water which, driven by S.W. winds, penetrates through the Strait of Gibraltar, as if into a huge gulf, we may comprehend why the water is so high in all the ports under these circumstances. In those of the gulf of Lyons it is two feet above the ordinary level when gales from S.W. to S.E. are blowing, and the same takes place in the harbour of Mahon. At Algiers it is a foot and a half, and the same may be said of the rest of the ports on both coasts.

Prognostications of the Wind.—When the waters are observed at a

high level without being preceded by any westerly wind, the S.W. quarter may be looked to for it, as that indicates that a S.W. wind is blowing in the Atlantic. Perhaps it may not reach the place where this is observed, but its effect will have been noticed somewhere. When this height is extraordinary in the port of Mahon, it is considered to be the forerunner of a Norther. The same effect takes place in the gulf of Lyons after a S.W. gale. No sooner is a Norther established in the gulf than the level of the water falls, going down to its ordinary height or below it if the northerly wind is strong and lasting.

The level of the water in the Mediterranean is generally low with winds from the N.W. and N.E. quarters, and it is considered that the same is the case with the level of the Atlantic, as the flow into the Mediterranean is the same as at any other state of level and weather. And this circumstance leads to the belief that there is some powerful cause which keeps down the levels of both seas when northerly winds prevail;—philosophers attribute it to atmospheric pressure. In fact, it is observed that the great depressions of the level occur when the barometer stands highest; that is, when this indicates the greatest pressure of the atmosphere. Thus it has been found so at Algiers and at Toulon, where the alterations in the level of the sea have been most attentively observed, showing that the lowest level occurs with the highest state of the barometer, and this taking place in January or February, with settled weather. This is also the time of the coldest and driest weather in this part of the Mediterranean.

But these general laws are affected by strong winds and the indented or straight character of the coast. Thus strong North-easters and Northers keep a low level of water in the ports of the gulf of Lyons, the coast of Spain, and the Balearic Islands; they raise it in the ports of Algiers; while those to the East and S.E., which keep it low in the ports of the Barbary coast, raise it in those of the gulf of Lyons, Valencia, and all the South coast of Spain.

As a general conclusion of what is here stated and proved by experience, it may be considered that the tides are only serviceable to navigation between the Strait of Gibraltar and the meridian of Malaga: that independently of the tides the level of the water is low in the Western end of the Mediterranean when winds from the N.E. and N.W. quarters prevail with settled weather: that the level is raised when the opposite winds prevail: that its elevation and depression are influenced by the state of the barometer: that in the midst of calm weather the high level of the water indicates S.W. winds, and with a similar condition the low level indicates the approach of winds from the N.E.

(To be continued.)

A Few Words about Natal.

The climate of Natal proves to be admirably adapted for the production of arrowroot. The moist summer, dry sunny winter, and abundance of water, are all favourable to its growth and manufacture. Not less than 6,000 cwts. of this produce have been exported during the last two years, although during that time the attention of settlers has been much withdrawn from its cultivation, on account of the unusual prevalence of drought and the low price of the commodity in the English market. Some very fine specimens of Natal arrowroot have been exhibited in the International Exhibition.

Coffee is grown successfully in three or four localities in the neighbourhood of Durban. The cultivation proves to be exactly adapted to the peculiarities of the Coolies recently introduced into Natal from India. There are about two hundred acres of land under coffee plantation at the present time, with a prospect of producing a return of from £25 to £50 per acre per annum.

Wheat is successfully grown on the high lands above Maritzburg, but cannot be produced to any serviceable extent upon the coast. The Dutch boers or farmers on the high lands send a large quantity into market. The home demand is almost entirely supplied by colonial agriculture.

Barley of good quality can be readily grown on the uplands. Oats are sown in large quantities round the towns, but are principally cut and employed in the straw for forage. Most lands yield two crops of them in the year. The tract of country in which the English crops thrive lies at an altitude of between two and four thousand feet above the level of the sea, where there is a mean temperature for the year of about 65°, but where frost is occasionally seen in winter.

Maize flourishes everywhere throughout the colony. It is grown by the Kaffirs as well as by the white colonists in the greatest abundance; it always commands a ready sale in the market, being the staple food of the Kaffirs throughout the land, and an acceptable addition to the table of most white colonists.

The capsicum grows readily from Maritzburg to the sea, and is cultivated near Durban for commercial purposes. The Natal cayenne pepper is of acknowledged excellence. Fifty-four hundredweights of chilies and twenty hundredweights of cayenne were exported last year.

The Dutch farmers are large manufacturers of butters; the quantity is abundant, but the quality is not very choice. The export of this article during the last two years was upwards of 6,000 cwts.

Natal also produces excellent bacon, hams, and biltong, which are nearly always to be obtained in the market.

In the matter of vegetables the colony is exceedingly well off. The sweet potato—the underground tuber of a convolvulus—is perhaps the most important of the vegetable productions. It grows

everywhere, and, under favourable circumstances, attains an enormous size. It contains a large proportion of both starch and sugar, and is a constant article on the table of most colonists. The potato, turnip, and carrot are common in gardens, and frequently in a state that would do no discredit to old Norfolk lands. The cucumber, gourd, melon, pumpkin, onion, and tomato, are found in every garden in the highest luxuriance. In the gardens of the coast, the banana, papaw, pineapple, mango, guava, orange, tamarind, custard apple, sour sop, and many other tropical fruits, ripen with the greatest ease. The pineapple is reported to be almost as common as turnips are in England. The orange also is very abundant, especially in the valley of Weenen, some seventy miles from the sea, where the groves bear already in great luxuriance, on account of this having been one of the earliest spots settled by the Dutch.

In connexion with the food substances produced in Natal, tea deserves a passing notice. Some years since a few Assam plants were introduced by the curator of the Botanic Gardens of Durban. They have so flourished and multiplied that there are now some hundreds of their descendants in the most healthy condition. The tea has the full green tea flavour, somewhat too strong, possibly, on account of its newness and the rudeness of the process followed in its preparation.

Among the animals yielding raw materials serviceable to commerce and the arts produced in Natal mention must first be made of the ox. South Africa has been from the earliest period of its history essentially a pasture land. Recently considerable ravages have been made among the herds by an epidemic lung sickness. This, in connexion with the enormously increased demand for oxen for purposes of land transport, has largely augmented the price of the animal in the market. The hides and horns of the ox and buffalo are amongst the most important exports from Natal.

The sheep thrives in many parts of the Natal uplands, and in the Free States beyond, and is now being gradually introduced into the lower region around the capital, with varying degrees of success. Gentlemen who have had large experience in the management of sheep in other lands are turning their attention to its care, in the conviction that when proper attention and skill are devoted to the object, and when the sheep are hurdled and fed on the hill tops, and kept clear from scab, which has hitherto been entirely disregarded in the colony, mutton and wool will be remunerative even in these lower localities. At any rate mutton is now regularly supplied in unlimited quantities at 6d. per pound.

There is another large group of animals which is of great interest in Southern Africa on account of the meat it affords and of the spoils it yields: this is the family of the antelopes or bucks, as they are more familiarly called by hunting men. The flesh of the antelope is the venison of South Africa, and many forms of this venison are still common enough in Natal. The giraffe is now never seen except far up in the interior.

The thick-skinned group of quadrupeds is unquestionably next in

importance to Natal in a commercial and economical point of view. The elephant is still plentiful in the thick wild bush along the Tugila, and is in great force in the high land beyond the Drakensberg. During last year 75,000 pounds of ivory, worth nearly £23,000 sterling, was shipped from Natal. There are also exported annually 1,200 horns of the rhinoceros, worth about £600.

The ostrich is still encountered in large flocks in the high inland plains North of the Drakensberg. The feathers of the ostrich are constant exports. Last year 110 pounds weight were shipped by the merchants of Natal.

The silkworm thrives well in Natal, but hitherto there have been too many other doors ready open for the enterprise of white settlers for any one to have been induced to turn his attention to this particular branch of industry.

Amongst vegetable raw materials cotton ought to stand prominent. The cotton plant grows readily in Natal. During the last year nearly 2,000 pounds weight of cotton wool was exported from the colony, as the first fruits of a series of small experiments. The main difficulty at present in this cultivation seems to be the readiness with which white colonists find a more productive field for their energies, and the unwillingness with which the Kaffir enters upon any system of work that ties him to the performance of a certain task at a certain time. The colonial government is at the present time making an attempt to encourage the Kaffirs to grow cotton. There is a species of wool produced by a wild plant indigenous to the country, and known to the Kaffirs under the name of monfonga.

Flax has been grown in various localities, seemingly with success; but hitherto no experiment has been made which may be considered to establish the possibility of its remunerative cultivation. Hemp grows wild and luxuriantly.

An immense variety of timber is furnished by the trees of Natal in great abundance, some of which is as hard and dense as metal. The grain in many cases is very rich and ornamental when highly polished. There are also many barks which are commercially useful, some being used for tanning. A prolific underground bean, called the ground nut, yields a fine lighting oil, and the castor oil plant grows wild almost everywhere in the most luxuriant state.

The mineral wealth of Natal is not extraordinary. The colony is a land of cattle, wool, and sugar rather than of gold. Much of the coal found is an obstinate anthracite, the most useful coal being that dug up in the Bickersberg, to the North of Klip River. The rich ores of lead in the Transvaal States, near the Magaliesberg Hills, are worked by the Dutch settlers, and yield a large quantity of metal.

The colonial manufactures are as yet rather limited in number, and the colonists supply many of their wants with imports. The exports from Natal in 1861 were only valued at £108,000, while the imports for the same period had the declared value of £402,000. Nevertheless, young as it is, the colony does many things for itself. It has shown some very creditable specimens of leather, made from buck-

skins in Maritzberg. It has shown soap, tallow, and candles made in the capital; travelling caps, specimens of bookbinding and printing, cigars and tobacco, bricks, pavements, and tiles, cabinet work, powder horns, and pipes. Its strength, of course, lies in its raw materials, but many of the manufactured articles, especially those in the interesting Kaffir collection, showed great promise. The climate, as described by Dr. Mann, seems to be faultless. An enlarged edition of Devonshire under a more sunny sky ought to furnish everything that an emigrant could wish for.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*Report of the Royal National Lifeboat Institution—Captains Speke and Grant's Discovery of the Source of the Nile.*

The Chairman said, before calling upon the Secretary to read the report of the last meeting of the National Life-Boat Institution, he wished to make a few remarks on a munificent gift which had just been presented to that society.

He (the Chairman) stated that he had the satisfaction to report that the surviving children of the late R. T. Garden, Esq., of Rivers Lyons, Ireland, had presented to the National Life-boat Institution the cost, amounting to £600, of the Bude Haven, Cornwall, new lifeboat establishment, as a memorial of their beloved mother, Mrs. Elizabeth Moore Garden. An inscription recording this philanthropic gift had been beautifully carved in stone and placed over the doorway of the lifeboat house. The lifeboat is 33 feet long, and rows ten oars double banked. She possesses the usual valuable qualities of the self-righting lifeboat of the institution. The boat and her carriage were liberally taken free of charge by the South Western Railway Company as far as Bideford, and on June 19th, being the natal day of the deceased lady, their inauguration took place with great *éclât*. The boat-house is a substantial and commodious erection, and was built from the design and specifications of C. H. Cooke, Esq., the honorary architect of the society. The new establishment at Bude is now one of the most complete and efficient on the coast of the United Kingdom. Probably no heavier surf rolls on any part of our shores than in the vicinity of Bude, and fearful indeed have been the wrecks in the locality. Last winter twenty-six poor fellows perished there from the illfated ship *Bencoolen*, of Liverpool. This splendid and powerful new lifeboat will, it is hoped, be able to contend successfully with the heaviest of rollers.

At midnight, on the 11th ult., the Ipswich lifeboat, stationed at Thorpe, Suffolk, was the means, under Providence, of saving six men under the most perilous circumstances. She is a sister boat to the Bude lifeboat, and her cost was presented to the institution by the town of Ipswich.

And again, the St. Ives lifeboat of the society was the means, on the 12th ult., of rescuing, during a gale of wind, the crew of five men from the *Azores Packet* of Falmouth, which was wrecked at the entrance of the harbour of St. Ives. The boat behaved admirably, although somewhat injured by coming in contact with the vessel. The cost of this lifeboat, and of three others, was presented to the institution by a lady, whose name is unknown to the society to this day. The National Life-Boat Institution has now 125 lifeboats under its charge; some of them are constantly engaged in saving shipwrecked crews in stormy weather, and during the past eighteen months nearly 500 persons have thus been snatched from a watery grave.

He (the Chairman) was sure that these were facts which would come home to the heart of every one, and plead for support and sympathy on behalf of one of the most important and valuable institutions in our land.

The Secretary then read the report of the meeting of the institution held on the 4th of June, Mr. Thomas Chapman, F.R.S, occupying the chair. It stated that—

A reward of £14 was voted to the crew of the New Brighton tubular lifeboat of the institution, for their laudable exertions in putting off, in tow of the steam tug *Universe*, of Liverpool, and rescuing, during a strong wind, and in a heavy sea, the crew of ten men from the brig *Levant*, of Bristol, which had stranded on the inside of the North Bank, in Liverpool Bay, on the 11th of May. This lifeboat has only been on this dangerous station a few months. She was reported to have behaved well when alongside the wreck.

Voted £8 13s. to pay the expences of the Hastings lifeboat of the society, in going off and saving the crew of four men from the smack *Britannia*, of Ramsgate, which was totally wrecked on the East Groyne Rocks, off Hastings, during a gale of wind, on the 19th of May. Mr. Roe, the chief officer of the coast guard, was thanked by the institution for going off in the lifeboat on the occasion.

The Lyme Regis lifeboat of the institution was also the means of rescuing from destruction the schooner *Vulcan*, of that place, which was observed, during a heavy gale of wind, to be rapidly driving on the rocks off Lyme Regis, on the 19th of May. This valuable lifeboat had, on one or two previous occasions, rescued shipwrecked crews under the most perilous circumstances, during dark and stormy weather.

Various other rewards were likewise voted to the crews of other lifeboats of the society, and to those of other boats, for putting off with the view of rescuing vessels in distress.

The Second Service Clasp of the institution was voted to Mr. G. B. M. Beatson, inspecting chief officer of the coast guard at Fraserburgh, and the silver medal of the society to Mr. Alexander Forbes, shipbuilder, of Peterhead; and the thanks of the institution inscribed on vellum to W. J. Parsons, A. Grey, J. Simmonds; and £5 to them and two other coast guard men, in testimony of their gallant conduct

in rescuing, at considerable risk of life, eleven out of fourteen of the crew of the ship *Genoa*, of Liverpool, which, during a very heavy gale of wind and high surf, was wrecked sometime since on Rattray Brigg Rocks, near Peterhead. This was reported to have been a very gallant service, and that Mr. Beatson, Mr. Forbes, and the coast guard men had exerted themselves most nobly on the occasion.

A reward of £10 was also voted to the crew of a fishing yawl, for putting off and rescuing, at risk of life, the crew of ten men from the brig *Faith*, of Colchester, which, during a gale of wind and very heavy sea, was wrecked on Blakeney Bar, on the 19th of May.

A reward of £4 was also voted to the crew of a fishing smack, for putting off and rescuing the crew of thirteen men and a pilot from the brig *Alli*, of Helsingfors, which, during squally weather, was wrecked some time since on the Hasborough Sands, on the Norfolk coast.

A reward of £5 was likewise granted to the crew of the smack *John Hooper*, of Plymouth, for rescuing the crew of four men from the ketch *Helena*, of Newport, Monmouth, which had sunk, during a strong gale of wind, near the Eddystone Lighthouse, on the 18th of March.

It was reported that the Admiralty had ordered H.M.S. *Curaçoa*, under the command of Commodore Sir William Wiseman, Bart., to be supplied with some of the most important stores for her lifeboat, like those used in the boats of the National Life-Boat Institution.

It was likewise reported that the executors of the late Mrs. Ann Cutto had paid to the society her munificent bequest of £1,000. The trustees of the late Mr. James Miller, of Glasgow, had also paid to the institution a legacy of £100 left to it by that gentleman.

It was also stated that at the annual meeting of the Manchester Unity of the Independent Order of Odd Fellows, held on the 30th of May, it had been resolved to make a voluntary subscription throughout the order in aid of the National Life-Boat Institution, in consideration of its philanthropic and national character.

It was also reported that Lieutenant W. Farquhar, R.N., of H.M.S. *Racehorse*, on the China station, had kindly forwarded a donation of £5 to the institution.

Payments amounting to £384 having been made to various lifeboat establishments, the proceedings terminated.

[We have taken liberties with our Club papers, having considered it due to the enterprising explorers of the Nile to preserve a record of their important discovery among our Club papers. We trust, therefore, that the Chairman will give us credit for all due respect and attention to the wishes of himself and friends in this our proceeding, and can assure him that the discussion of the great question which Captain Toynbee is so ably advocating, although necessarily reserved for our next with other matters of the Club, shall not be lost sight of.]

Sir Roderick Murchison, President of the Society, in introducing Captains Speke and Grant, said:—

Gentlemen,—We are now specially assembled (for our regular session has terminated) to do honour to the two men who have accomplished the most remarkable geographical feat which has been performed in our time, and one which it has been the ambition of other nations to accomplish during all ages. The council of this society has the greater reason to be proud of this achievement, because it was by their exertions that the means were obtained to carry it out; and her Majesty's government and the Indian government must also have a real gratification in reflecting that they complied with the wishes of the geographers who organized the East African expedition, in furnishing the essential means of accomplishing it.

But, gentlemen, whilst we may well dwell with satisfaction on the encouragement we warmly offered, let us at once turn to the man without whose earlier as well as recent labours this great feat could never have been brought about—I mean, of course, Captain Speke. In the year 1858, when serving with our former medallist Burton, and when that eminent explorer lay sick at Kazeh, Captain Speke, having heard of this lake from Arab merchants, hastened to reach it; and finding that its southern extremity was on the high plateau-land, between 3,000 and 4,000 feet above the sea—the land which forms, indeed, the watershed between North and South Africa in that meridian,—and finding also that the waters of this vast lake were fresh, he then and there, after accurately determining the longitude of its southern end, was convinced that this body of water must be the great southernmost reservoir out of which the White or Main Nile flowed at its northern end. It was for this first great discovery that the Royal Geographical Society awarded our founder's gold medal to Captain Speke.

Though obliged to return to England with his leader, Captain Burton, Captain Speke held pertinaciously to his project; and engaging his Indian brother officer, Captain Grant, to accompany him (an officer, let me say, who distinguished himself, and was severely wounded, in the great Indian mutinies), and encouraged by this society and the government, he has gone and done the great deed, and has followed the Nile from its sources to its mouth.

Gentlemen, it is not for me to recapitulate any portion of that abstract of the vast labours gone through by Captains Speke and Grant, which I read to you at our anniversary, and which was printed in the *Times* of the 26th May last. But I think it necessary to say that I now know that, in my anxiety to satisfy the desire of the public, there were omissions and errors in that address. I know, for example, that I did not on that occasion do sufficient justice—and I am sorry for it—to able critical geographers who had framed hypotheses, or had collated data from natives and other authorities as to the probable source of the Nile; but I beg you to consider that I was then solely bent on developing, as well as I could, from the records sent home by Speke, the main features of the great actual and practical survey

which had been made by himself. As to the errors in that rapidly prepared abstract, I may advert at once to one. It was stated by me that the young King of Nganda, who was so kind to Captain Speke when he was separated from his companions, had 3,000 wives, but I now find that there was a nought too many, and that his Majesty has hitherto been contented with 300 wives!

Then, again, as to the statements which are arising and will arise as to the dates of the old maps on which lakes were marked in the interior of Africa, and out of which the Nile is made to flow, they are not confined to the old (probably Portuguese) maps of the sixteenth century, of which I spoke, and which exist in the library of the Propaganda Fede in Rome. One Arabian map is now indeed cited, which is upwards of 1,000 years old, in which one of the pieces of water occupies very nearly the position of the Victoria Nyanza of Speke Not pretending to be able to decide upon who may have been the people who first were acquainted with such great interior waters, Captain Speke informs me that he believes the traders from Hindostan were probably anterior even to the Greeks in visiting this region.

When, however, we come to the latter, Captain Speke is of opinion that Ptolemy, that great geographer, is the authority who first placed upon historical record the existence of African lakes under the Equator, out of which the Nile flowed. But age after age rolled on, and traveller after traveller, from the days of the Roman Emperors to our time, endeavoured to ascend the Nile to its source, and all have failed. In our days, one Miani, a Venetian, who had lived many years in Egypt, is the person who got farthest southward in ascending from Egypt, and he, not being an astronomical observer, thought, and has asserted, that he has reached to the second degree of north latitude, where he cut his name upon a tree. He has even written to me from Vienna what he calls a "protest" against the river of Speke being the true Nile! Speke, however, in passing southwards, determined the latitude of that very tree, with Miani's name on it, to be 3° 30′ N. lat., and as Speke had traced the water of the Nile from three degrees south of the equator, it follows that the Venetian was never within about 400 miles of the head waters of the Nile!

As it would be impossible on this occasion for Captain Speke to carry you along with him on this long pilgrimage which he and his companion made from Zanzibar, on the east coast, to the central and equatorial kingdoms in which they were so long detained, he will now first read to you a brief sketch of the whole course of the great White Nile, and will show you how vastly superior it is, not only in length, but also in volume and importance, to all the affluents which it receives from the east or from the west, including the great Blue Nile. Cavillers about the source of the Nile there are, I know, in abundance, and such persons will probably not even be satisfied by my assuring them that Captain Speke himself does not talk of the source; but he tells you that whilst the southernmost end of the lake Victoria Nyanza does not receive waters from the south, that great

body is fed by numerous small streams which flow into it from the west and the east as it extends northwards; the great fact remaining that the southernmost end of this lake is on the watershed between North and South Africa, and in 3° 30′ S. lat.

Before I call on Captain Speke to read his communication on the Nile I must acquaint my associates with the deep interest which our patron the Queen and our vice-patron the Prince of Wales take in this great discovery. When I recently waited upon the Queen, at the building of the International Exhibition, along with other Royal Commissioners, her Majesty was pleased to congratulate me most graciously upon this great geographical feat, and I feel certain from the kind and emphatic manner in which her Majesty expressed herself the first time in which the Queen had appeared after her sad bereavement, that she is truly proud in the reflection that two of her own gallant Indian officers should have succeeded in doing what the people of every European nation have failed to accomplish.

Then, as to our vice-patron, the Prince of Wales, I know that his royal highness, who is himself a great traveller, and who loves our science, would have been here this evening had not a very special engagement prevented him; but arrangements have, I am happy to say, been made by which his royal highness will hear, to-morrow night, a lecture from Captain Speke at the Royal Institution.

Whilst our own royal family recognizes the importance of this great discovery, the King of Italy has taken the lead amongst foreign sovereigns in the expression of his desire to commemorate this great discovery, and has directed two gold medals to be struck in honour of our heroes of the Nile. One of them, or that which is destined for the leader, has arrived, and has on it the inscription "Honor a Nilo." I must here add that the letter of the Italian minister, the Marquis d'Azeglio, which accompanies this appropriate reward, is such an elegant and apposite composition that it is worthy of the country which reared a Columbus.

The chairman read a letter from the Marquis d'Azeglio expressing the admiration of the King of Italy for the gallant explorers, and concluded by saying,—As the French Geographical Society (like our own society) gave a gold medal to Captain Speke, for his original discovery of the great lake, he, in grateful remembrance of that act, named a large channel at the head of the Victoria Nyanza after the Emperor Napoleon, who will, I doubt not, duly appreciate the honour of having had his name affixed to such an important feature in the heart of Africa, and by such a distinguishad British geographer. I now call on Captain Speke to read his communication.

Captain Speke then came forward, and after a most enthusiastic reception read the following paper on "The Nile and its Tributaries:"—

In attempting to describe the extent and character of this great river, compared with its tributaries, within the limits of actual inspection by myself, I will first treat of its head, the Victoria Nyanza, from its southern extremity, which I find by astronomical observations in 1858 to be close on 3° south of the equator, and gradually

bringing it down to its point of debouchure in the Mediterranean Sea, 31° north of the equator; by which it will be seen that the Nile represents, considering that it lies almost in one direct line from north to south, a total, in round numbers, of 2,000 miles (geographical rectilinear) in length, and is therefore nearly one-tenth the circumference of the globe.

It must be borne in mind, however, that my observations respecting this great river are not the results of one expedition, but of two; that I have not actually followed its banks from head to foot, but have tracked it down, occasionally touching on it, and even navigating it as opportunity offered; for the barbarous nature of the African forbids the traveller doing as he likes. Therefore, to give full weight to any inferences I may draw, deduced from what I have only seen in part, I will blend native information with my own experiences, and in doing so shall hope to teach others what I know and what I believe myself.

In the year 1858, when I discovered the Victoria Lake, which is the great reservoir of the Nile, I found it a large sheet of salt water, lying on the main level—or from 3,000 to 4,000 feet above the sea level—of the great interior plateau of equatorial Africa, looking for all the world like the source of some grand river; so much so, indeed, that I at once felt certain in my own mind it was the source of the Nile, and noted it accordingly. To add to this impression, the natives, who there only knew it by the name of Nyanza, which equally means lake, pond, and river, described its extension in a confused manner, to the northward as being boundless, whilst its breadth—really, in fact, its circumference—was enormous, greater, if anything, on the eastern than on the western side. For the native informants knew the names of all the countries surrounding the lake, and must, had they understood the value of geographical definitions, have been able to separate the river Nile from the Nyanza, and so reduced their explanations to any common understanding. Other informants, Arab merchants and their slaves, residents at Zanzibar, who penetrate Africa in quest of ivory, who had completed the whole circuit of the Nyanza, not together, but separately, some on one side, some on the other, assured me the Nyanza was the source of some great river, they knew not what; though I had heard confused accounts from the natives living on the equator of the European ivory merchants who frequented the Nile in vessels, at 5° latitude, and had further heard through the same channel that with the rising of the Nile, and consequently the violence of its waters, islands were floated down its surface, which really is the case—not composed of earth and stone, but tangled roots of trees, rush and grass, with even sometimes huts on them, which otherwise undisturbed are taken away by the violence of the stream and carried down, perfect floating islands.

Then, again, these men described the territory between the Nile and the Asua rivers as an island on the one side and the land comprising the ancient kingdom of Kattara, according to their acceptation of the word, as an island also, being nearly circumscribed by the

Kitangule and Luta Nzige rivers, in conjunction with the Nyanza and the Nile. No merchant, however, had crossed the first parallel of north latitude. None understood geography. They heard what the natives said, but could not fully understand them, and hence it was a doubt still existed in everybody's mind but my own as to the origin of the Nile, which no one would believe till I went again and traced the river down from head to mouth. Had I been all alone on this first expedition I should have settled the Nile in 1859, by travelling from Unganyambe to Uganda, with an Indian merchant, Musa Mizuri, who was prepared to go there; but my proposal having been negatived by the chief of the expedition, who was sick at the time and tired of the journey, I returned to England, and to my inexpressible delight the very first day that I arrived here I found in Sir Roderick Impey Murchison a warm advocate and proposer to the Royal Geographical Society to complete what I had begun; for, as might be imagined, I could not rest satisfied until the world accepted my own views—happily now verified by indisputable means, actual inspection and astronomical observations—that the Victoria Nyanza is the great reservoir of the Nile.

Suffice it now to say, that after returning to Unyambe (the old point), 5° south of the lake, in 1861, I struck upon a new route, which I imagined, from the unsophisticated definitions of the ivory merchants, would lead me to a creek on the left bank of the Nyanza, situated on the south frontier of Karagwe. Geographical definitions were here again found wanting, for instead of the creek of the great lake appearing, a new lake was found, called the Luero (Lo-of Urizi), which it appeared formerly contained a large quantity of water, but now fast drying up. Its head lies in Urundi, and circles round the south and east flanks of Karagwe, in the form of a mountain valley. It is subsequently drained by the Kitangule River into the Nyanza, but not in sufficient quantity to make any sensible impression on the perennial contents of the Nyanza's basin.

It is to the west and north of Karagwe that the lake receives its greater terrestrial supplies of water through the medium of the Kitangule River; which, in addition to the aforesaid Luero, drains off the superfluous waters of many rivers and lakes,—as the Akenzara, in Urundi; the Luchure, which is the second of a chain with Akenzara; the Ingezi, an accumulation lying between Kishakha and Karagwe; and the little Windermere, which in Karagwe lies below the capital on its N.W. corner. None of these lakes are larger than puddles in comparison with the great Victoria Nyanza; but still the Kitangule River, after receiving all their contributions, is a noble river, low sunk like a huge canal, about eighty yards across, with a velocity of about four miles an hour, which appears equal to the Nile itself when it issues from the lake by the Ripon Falls. The question now naturally suggests itself—What forms these lakes, whence originate their waters? It is simply this. The Mountains of the Moon, in which they lie, encircling the northern end of the Tangangika Lake, are exposed to the influence of the rainy zone; where I ob-

served, in 1862 no less than 233 days out of the year were more or less wet days.

Mashonde, in the Adda portion of the Uganda, is the first place where, in the second expedition, I obtained a view of the Victoria Lake, called in this more northern country Luero (White) (Lo-of), Luta (Dead) Nzige (Locust), in consequence of the reported fact that flights of locusts, endeavouring to cross these waters, have dropped from fatigue, unable to accomplish so extended a journey on the wing, and, perishing on the lake, have been found dead in dense masses by the boatmen. But, like the word Nyanza, it is also applied to the Nile and its tributaries, confounding all inquiry. For instance, the Waganda, who know of the Nile and the little Luta-Nzide, a semi lake-river tributary to it, flanking the nortnern boundary of Ungoro, on being questioned as to the extent of the dead locusts, say, "Uganda, conjoined with Ungoro, is an island, so that a man may walk for months and never see the end of it." The whole is likewise called Nyanza there, for, as might be expected in countries where no literature is known, and there is no knowledge but what suits the actual requirements of domestic life, the people are satisfied with local names.

Hence there is the greatest difficulty of endeavouring to put together the information, though you can gain more by questioning the natives than the Arabs, for whilst the former regard a river as flowing from head to mouth, the Arab invariably says it goes from mouth to head.

In a southerly direction the Waganda boatmen go as far as the island Ukerewe—where I saw, on my first journey to Muanzarat, the southern extremity of the lake,—and to the eastward beyond the escape of the Nile, to the north-eastern corner of the Victoria Lake; where, by a strait, I had gone across to another lake in quest of salt—the Baringa of Dr. Krapf. Which, from the information gained through the natives, is called a salt lake most likely because there were salt islands in it; which I deduced from the fact that on a former occasion, when the Arabs first spoke to me of the little Luta Nzige, they described it as a salt lake belonging to the great Nyanza,—yet not belonging to it, when further pressed on the subject, as the great Nyanza's waters were perfectly pure and sweet: the Arabs, like Dr. Krapf, merely narrating what they heard. As salt islands were visited by the natives in consequence of that mineral, the surrounding waters were naturally considered sweet by them, dispossessed as they were of those connecting links which included the whole area of ground under consideration, within the limits of the drainage system of the Nile.

The Arabs, it is now very clear, had heard of everything in connexion with the Nile, but from not being conversant with the science of physical geography, were unable to connect all they had gleaned in detached fragments with it. Dr. Krapt further tells us of a rivet trending from the Snow Mountain Kœnia towards the Nile. If such is the case, it must be a feeder to the Baringa, whose waters pass off by the Assua River into the Nile; for the whole country on the eastern side of the Victoria Nyanza is said by the Arabs who have tra-

versed it for ivory to be covered by low rolling hills, intersected only by small streams and nullahs from its southern point in Muanza to the Strait, which is situated on the equator, the north branch of the Victoria Nyanza.

Turning now again to Mashonde, and proceeding north along the bending coast of the Nyanza, which is situated on the equator, the lake is constantly in view. The land above the lake is beautiful, composed of low sandstone hills scored down by small streams, the effect of constant rains, greened over by gigantic grass except where the numerous vegetables have supplanted it by cultivation, or in dells where mighty trees, tall and straight as the blue gums of Australia, usurp the right of vegetating. But though beautiful, travelling is there no sinecure. The bed of the Nyanza has shrunk from its original dimensions, as we saw in the case of the Urigi Lake, and the moorlands immediately surrounding are covered with a network of large rush drains with boggy bottoms, as much as one to every mile, even counting from the Kitangule, which of itself was obviously at one period a much finer stream than at the present day, when the old bed was on the level of the present surface of the water, and its breadth was double that which now exists.

The Mountains of the Moon are wearing down, and so is Africa. Crossing the equator, although the configuration of the land appeared much the same, but increased in beauty, the drainage system was found, the opposite country showing we were on the northern slopes of Africa. One stream, the Mwerango, of moderate dimensions, is said to arise in the lake flowing north, and joining the Nile in the kingdom of Ungoro, where its name is changed to Kafu. Further on another stream, Luajerri, followed its example; and then, still further on from the centre of the lake's northern coast issued the parent stream of the Nile, falling over rocks of igneous character twelve feet high, which all the natives and all the Arabs designate by the simple name "Stones;" but which I have done myself the honour to christen "Ripon Falls," after his lordship, who was the president of the Royal Geographical Society when the expedition was set on foot. This escape of the Nyanza waters, situated twenty miles north of the equator, is the only one actually inspected, owing to the barbarous restrictions placed on strangers by the King of Uganda, in the supposed maintenance of his dignity.

But it matters not, as following down the Nile we saw the junction of both the Kafu and the Asua Rivers, and crossed the Luajerri, midway between its escape and junction. Now proceeding down the Nile, from the Ripon Falls, the river first bisects the sandstone, continued hills which extend into Usorga, above the coast line of the lake, and rushes down with mountain torrent beauty. Then, having passed these hills of so great extent, it trended through long flats, more like a lake than a river, where in Ungora it was increased by the contributions of the Kafu and Luajerri, and continued in its navigable form to the Karuma Falls, in Chopi, where again the land dropping suddenly to the westward, we saw the river rushing on with boisterous

liveliness, but could not follow it owing to a war which lay on the track. It was, indeed, a pity, for but sixty miles from where we stopped, by common report, the Little Luta of Nzige, which I had taken so much trouble in tracing down its course from the Lunæ Montes, with its salt islands in it, joined the Nile.

The old river was next met with in the Madi country, due north of the Karuma Falls, where it still bore the unmistakeable character of the Nile—long flats, long rapids. The southern half in the Madi was a flat extending, we believe, to the junction of the Little Luta Nzige; the northern, a rapid extending down to the navigable Nile—that is to say the Nile which is navigable; its entrance largest during the period of its flood, and here it is the Asua River, of which you have heard, draining from the N.E. corner of the Victoria Lake joins on—in the rainy season an important feeder, but when low fordable. The rest of the Nile, considering that it is navigated yearly, ought to be well known; but it is not so, as no one has yet taken the trouble to place nileometers in the various branches, by which we might know the perennial amount of water drained by each in every year, and for want of which, it appears to me, who have seen them all in the dry season—the best time for judging their various degrees and magnitude—great misconceptions have taken place.

To these branches then, more particularly, I would draw attention, noticing only that the Nile—White River as it is called—in its southern bearings carries the palm with it in all instances of its branching, though this has been so often denied, especially at the junction of the Blue River. The first great affluent, which is indeed the only one worthy of remark, on the left of the Nile, is the Bhar el Gazel. It joins on with the appearance of a diminutive lake at a sharp elbow of the Nile, without any visible stream of its own, whilst the great river winds round with considerable velocity, carrying, as I have said, the palm with it. The second affluent in order of position, which with all the others is on the right of the Nile, is the Geraffe River, swirling with considerable stream and graceful bend into the parent Nile. Its magnitude and general appearance are like that of a first class canal, inferior to the Kitangule River, though not much so, and may equal in quantity of flood one third of the Nile at its point of junction. It is navigable to a great distance south, but where it comes from no one knows. It cannot be a mountain river, as we find it full with rosets floating on its surface, as in the Nile, evidently showing that both trunk and branch are subjected to the same effects of sluggish flats and rapids. Indeed its character suggests the possibility of its emanating from the Victoria Nyanza, and most likely it is fed to a considerable extent by minor branches from the great eastern mountain chain. The third affluent is the Southern Sobat River, also full and navigable. In breadth it is greater than the Geraffe, but less in rapidity: so that in their perennial contents they are much the same.

Unfortunately the Northern Sobat was passed without our knowledge, which being also navigable, would obviously make the Upper Sobat—that is to say, the Sobat above the Delta—of far greater mag-

nitude than the Geraffe; unless, indeed, the three rivers be one river still further south, when in combination, the comparison would have to be drawn with the Nile alone, which, doubtless, it would very nearly equal; for the Nile, with its additions, has certainly doubled its importance considered as it was seen above entering the Bahr el Ghazar. The Blue River, so long assumed to be *the* Nile, only because its perennial powers were never tested, appears, as it is, a mountain stream emanating in a country between the rainy zone, but, subjected to the influence of tropical rains and droughts, at one time full and mighty, and at another so shallow that it is fordable. The supposition, therefore, that it was the Nile must of itself appear absurd, for its waters, unassisted during the droughty season, would have been absorbed long before they reached the sea; but apart from this, at the mouth of the Blue River the Nile runs a sluice in its wonted course, whilst the Blue, conforming with the Geraffe and Sobat, blends on with it, describing a graceful sweep. The Albara, which is the last, is in all respects like the Blue, only smaller. With one more remark I will conclude. In the heat of the dry season the White above the Blue is freely navigated, owing to the great accession of the Geraffe and Sobat Rivers; but below the Blue and Albara the sea sand banks obstruct free passage.

Nautical Notices.

Particulars of Lights Recently Established.

(Continued from page 334.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
20. Spithead	.....	.....	..	..	..	Blue light on Noman's Land discontinued.
21. Cork	Buoys	.....	..	..	..	(*a.*)
22. Chioggia Port	Fort S. Felice	45° 13·6′ N., 12° 16·4′ E.	F.	52	12	Est. 2nd June, 1863. A pale blue light.
23. Cayenne	Guayana	Barracks, N.W. angle	F.	130	10	Est. —. (*b.*)
24. Yang-tse-kiang	Langshan	Crossing	F.	..	..	Est. 12th March, '63. (*c.*)
Wusung Piv.	Beacons	.....	..	..	..	(*d.*)

F. Fixed. Fl. Fixed and Flashing. R. Revolving. I. Intermitting. Est. Established.

(a.) 21.—The Lords Commissioners of the Admiralty hereby give notice, that the white buoys heretofore marking the western shoals of Cork Harbour, have been replaced by buoys coloured *red*, in order that they may be more distinctly seen.

Also, that the four small buoys marking the Harbour and Turbot Rocks, in the fairway of the entrance to the harbour, have been replaced by large conical buoys, as follows:—

Harbour Rock.—A buoy chequered red and white, surmounted with a beacon, now marks the eastern side of this rock; and a buoy chequered black and white marks the western side of it.

Turbot Rock.—A buoy striped red and white vertically, and surmounted

with a beacon, marks the eastern side of this rock; and a buoy striped black and white vertically, marks the western side of it.

The buoys on the western side of the rocks are ten feet buoys; and those on the eastern side of it are twelve feet buoys, the latter being distinguished by beacons.

(b.) 23.—A *fixed* white light is exhibited from a wooden structure, thirty-nine feet high, on the glacis North of Fort Cépérou. The light is 130 feet above the mean level of the sea, and visible from a distance of ten miles.

A *fixed green* light is placed in the N.W. angle of the infantry barrack, sixty feet above the sea, and visible eight miles. It stands N.W. of the fort, and N.W.b.N. from Cépérou lighthouse. The two lights in line bearing S.E.b.S. lead over the Aimable Rock. A vessel entering the river of Cayenne should therefore keep the white light a little open westward of the green light.

A *fixed red* light is shown from the jetty head to assist in entering the river at night.

(c.) 24.—The vessel is painted red, has two masts, each carrying a ball, and may be passed on either side. She is moored in five fathoms at low water springs, with Langshan Pagoda bearing N.b.E, Fu-shan Fort W.¼S., upper end of Muirhead Hills S.W ¼ W., and Plover Point S.E.b.E.¼E. When a ship is observed running into danger a gun is fired to attract attention, and the signal (by Marryat's code) of the course that should be steered is then exhibited.

Also, that on the same date, a new light-vessel was moored at the entrance of the Yang-tse, in the same position as the former vessel. She exhibits a *fixed* white light, visible in clear weather at about twelve miles. In thick weather a *flash* light will also be shown every *hour*.

Pilots.—Pilot schooners cruise off Gutzlaff Island, and also between that island and the Amherst Rocks, and pilots for the Yang-tse can now be obtained day or night, except when they are all on board of ships, when the pilot schooners anchor near the light-vessel.

(d.) 24.—To cross the Inner Bar, three *beacons* have been erected on the East bank of the river; the High or Eastern beacon, sixty feet high, is painted *red* and surmounted by a *red cross*; the North and South beacons are each forty feet high, painted *black* and *white*, and each surmounted by a *black ball*. The bar boats are discontinued.

To cross in the deepest water (ten feet at low water spring tides), bring High beacon midway between North and South beacons, E.¼S. With a strong flood the course should be altered when High and North beacons are in one, E.b.S.¼S., or even before; on no account should North and South beacons be brought in one, as they lead over an eight feet patch, which is marked by a spar buoy with a red flag. When over the bar, approach the shore to half or three-quarters of a cable, then alter course as requisite, keeping the same distance off the East bank of the river the whole way up to Black Point.

At spring tides off the Middle Ground, the streams, both ebb and flood, run four knots, and at neaps two knots. Vessels going up with the last of the flood are obliged to anchor below the shipping and remain till the ebb stream makes down, which does not take place till 1¾ hours after high water by the shore; the flood stream makes about an hour after low water.

All bearings are magnetic. Variation 1° 50′ W. in 1863.

SAXBY'S WEATHER SYSTEM.

H.M.S. Devonshire, June 4th, 1863.

Sir,—Will you kindly permit the enclosed list to be inserted in your next number of the *Nautical Magazine*? I am happy to be able to

record the fact of all that constitutes my weather theory having been, at length, recognized as truth by Admiral Fitz Roy, in the *Times* of 21st of May, and *Daily Telegraph* of June 2nd inst.; and if you will oblige me with space in a coming number, I shall be happy to furnish some remarks which I trust your readers will find useful.

I have, &c.,

S. M. SAXBY.

To the Editor of the Nautical Magazine.

SAXBY'S WEATHER SYSTEM, 1863-64.

(Fourth year of issue.)

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.*

JULY:—5,—12 to 15,—20,—27.

AUGUST:—2,—9,—**14 to 17**,—23,—29.

SEPTEMBER:—5,—**13 to 15**,—19,—25.

OCTOBER:—2,—**10 to 12**,—17,—23,—30.

NOVEMBER:—6,—**11 to 15**,—19,—26.

DECEMBER:—4,—**10 to 13**,—17—23—31.

N.B. From the 10th to the 13th will be a period of great danger, and there will be an exceedingly high tide on the 12th.

JANUARY:—**7 to 11**,—13,—20,—27.

N.B. From the 7th to 11th will be a dangerous period, with a very high tide on the 11th.

FEBRUARY:—2,—**7 to 9**,—16,—23 and 24.

N.B. From the 7th to 9th will be a very dangerous period, with very high tide on the 9th.

MARCH:—2,—**7 to 10**,—14,—22,—29.

N.B. The 7th and 8th will be a very dangerous period, with probably a very full tide on the 10th.

The above apply to all parts of the earth's surface—even (in a diminished degree) to the trade belts.

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, and the clouds at such times generally have a liny or stratified appearance, which usually indicates approaching rain.

The worst Cyclones (if they reach us at all) will be on or about 25th August, 22nd September, 19th October, 22nd November, 19th December, 16th January (1864), 18th February, and 17th March.

S. M. SAXBY, R.N.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

AUGUST, 1863.

Torres Strait by the Bligh Entrance and Channel. *Proposed Beacon on Ipili Reef.—By Captain J. S. Kennedy, Ship "Teresa."*

The *safe* passage of Bligh Channel, through Torres Stait, in comparison with the *unsafe* one by Raine Island, having yet to be established against the prejudice of certain agents at Sydney, we insert another voyage by it from a relative of our esteemed correspondent Captain Kennedy. In our volume for 1860* will be found the previous voyage of that officer, one replete with information, and from which we are glad to learn that several of our readers have profited. Like Captain Kennedy they have found the advantage of Bligh Channel, and that, compared with the anxiety attaching to running for Raine Islet with the chance of being caught on a lee reef and being brought up by some unknown rocky head afterwards, it is actual safety. As he justly says, "there is no difficulty whatever, every danger can be seen from the deck." Thirteen wrecks seen on one voyage by the Raine Island Passage serve well no doubt to keep up the insurance by that channel, while in that by Bligh Entrance there is nothing of the kind to be seen.

Since this Raine Island Channel has been unworthily dignified by a beacon in the early days of this outer route, we trust that the remarks of our correspondent in reference to a beacon on the Ipili Reef will not be lost; and that some of our ships of war will lend their aid to improve that navigation with as much zeal for Bligh Channel as was displayed for the Raine Island Channel. There is safety in every part of that, and if a ship should ground she may be easily got off

* P. 561, see also former on this passage.

again, as Captain Kennedy says; but of Raine Island Channel, thirteen wrecks counted at one time, shows that Raine Island beacon is really a trap for the unwary navigator.

Sir,—Having recently made a passage from Moreton Bay to Madras through Torres Straits by Bligh's Entrance, I send you a few remarks, which, if you think worthy of notice, please insert them.

I left Moreton Bay, August 27th, at 6h. p.m., and having previously read Captain Kennedy's account of his passage through by Bligh's Entrance, in November, 1860, I was determined to go that way, although all the information I could get at Brisbane from a shipmaster, who had been through the straits several times, was in favour of the Raine Island Entrance. After clearing Moreton Island I stood to the eastward until I got to 157° 4′ E. long., and 25° 13′ S. lat., on August 29th. Then got the S.E. Trades strong from E.S.E. and S.E.b.E., with hard squalls. Steered to northward, following the track laid down on the charts of the Coral Sea for 1860. I had fine weather, with hard squalls, all the way up to Bramble Cay, and got the altitude of the sun on the meridian every day for latitude.

At midnight, September 4th, hauled the ship up to West under close reefed sails, being then in lat. 9° 14′ S. At daylight, made sail to the westward, expecting to sight Bramble Cay on the starboard bow; or allowing six miles drift during the six hours the ship was steering W. ½ S. under close reefed sails, to make it right ahead. However, I was not so fortunate, and I do not exactly agree with Captain J. B. Kennedy as to the lead being an unerring guide to Bramble Cay, as the soundings on both sides appear to me about the same depth and quality. I sounded at midnight in 75 fathoms, coral; at 2h. a.m. on Friday, 5th, 60 fathoms, coral and sand; at 4h. a.m., 45 fathoms, red coral. Now, if I had been sailing direct in the stream of the cay, the soundings would have been the same; and had I been a few miles South, they would have been the same. So far the lead is an unerring guide that if you get soundings in 75 fathoms and keep your lead doing, you are sure to have considerably less water before your ship can take any harm from Bramble Cay or any other.

At 8h. we sounded in 17 fathoms, mud; the water quite discoloured. Stood on to the south-westward, keeping the lead going, gradually decreasing the soundings. At 9h. 11 fathoms, soft mud. Could not see any land; but then being certain we were to the North of the channel, hauled close to the wind, S.W.b.S., until noon. Then tacked to E.N.E., in 9½ fathoms, and saw the trees on Bristow Island bearing W.b.N. At 2h. saw Bramble Cay bearing E.S.E., distance about five miles. The water on the mud bank is very remarkable, being quite a different colour from any other shallow water on the reefs or sands. The edge is very clearly defined.

I think it is worthy of remark here, as I have not seen any caution given of it in the *Directory*, to guard against a northerly set as soon

as the N.E. channel is open. I steered to the westward in 9° 14′ S., six miles South of the cay; but passed it about eight miles North of it. I also observe that the *Medway*, in November, 1860, passed in to the North of the cay; also the French ship *Chatillon*, of Bordeaux: but whether they were set to the North, or went intentionally, I am at a loss to know; but it is very evident to me that to enter the channel to the North of Bramble Cay is wrong, and will be in most cases the loss of a whole day to regain your position to windward, as was my case, and most probably would not have been if I had heard or seen anything about a northerly set in the vicinity of Bramble Cay. I would strongly urge the necessity of guarding against it by all who are taking that route, and on no account go to the North of Bramble Cay, as by entering to the South the ship will, under ordinary circumstances, fetch Stephens Island, and the passage is made. I quite agree with many of Captain Kennedy's remarks respecting the navigation of Torres Straits by Bligh's Entrance. There is no difficulty whatever; every danger can be seen from the deck.

From sighting Bramble Cay at 2h. p.m., we tacked ship to S.W., the wind unsteady to S.S.E., and my ship very light in ballast. We stood to S.W. into 13 fathoms on the mud bank, and anchored at 6h. p.m. Midnight, strong wind, S.E., and heavy squalls, a short jump of a sea; 65 fathoms cable.

Saturday, September 6th.—At 3h. a.m. commenced to heave in cable, but did not way until 8h., owing to the strong wind and small crew. Stood to the eastward until noon, then tacked to southward, and at 7h. came to anchor, Arden Island bearing S.E., about two miles.

Sunday, 7th.—At 4h. a.m. commenced to heave in cable; at 6h. 45m. cast ship to the eastward; at 7h. 30m. tacked ship to S.b.W., and now all the difficulty of the straits is at an end, now that we have got to the windward side of the channel; and if we had entered to windward of Bramble Cay, it would have been all smooth sailing. I do not mean to say that there is any danger in entering to the North of Bramble Cay,—very far from it, as you come on to a mud bank decreasing the soundings regularly from 17 fathoms to half 9, so far as I went. Then we saw a very suspicious looking patch ahead, and tacked; but the nature of the ground and sounding shows plainly that the anchor is a safeguard anywhere in that vicinity. Moreover, you can anchor anywhere after you have passed to the westward of Bramble Cay, either to the North or South, you can anchor in safety, or at all events it struck me so, and I slept just as well during the three nights that my ship was anchored as I have done at anchor in any good harbour, and very much better than in Madras Roads.

We fetched Cocoanut Island and steered for the grassy sand bank on Bet Island, then close along North of the reef of Bet Island, and steered to the South of Ninepin Rock, but did not see Campbell Reef. At 7h. came to anchor in 7 fathoms, under Wednesday Spit,—very strong tides.

Monday, 8th.—At 6h. a.m. got under way. A canoe with six men

paddled off, but could not catch the ship; they looked fine men and worked hard to catch us, holding up tortoiseshell for barter, but I could not stop. I rounded Hammond Rock closely, the tide running strong to eastward. The N.W. reef shows very distinctly. I did not make out the Ipili Reef until I had passed it, as I did not take the black rocks close to the North part of Good Island to be it. There was no part of paddle-wheel or engine to be seen near the rocks. It was then top of high water and full moon. Neither did I make out the sunken reef *d*. I steered pretty close past the black rocks called Ipili Reef, and the white rocks to the North showed me when we were clear of the sunken reef. It would certainly be a good thing if a beacon were placed on Ipili Rocks. It is the only thing wanting as a guide all through the straits by Bligh's Entrance. I found from 2 to 4 fathoms more water in most parts of the passage than is marked on the charts; but in Prince of Wales Channel about the same, 7½ to 9 fathoms. In passing the island N.N.E. of Cocoanut Island, not named in the chart, there were two flags flying from poles above the highest trees. One looked like the Union Jack, the other I could not make out. I kept the ship close along the beach to see if any white men showed themselves, but could only see blacks running at the top of their speed and calling out lustily. I did not like to anchor for fear of treachery.

The sand bank to North of Bet Island shows very plainly; I saw the sand dry about two miles S.W.b.W. of Poll Island from the masthead, and breakers close to the South of the sand, about half flood, near the position of Ackers Shoal, 1860; but I did not see Campbell Reef, neither did I see any fragments of wreck on any of the islands or cays in the passage. I have heard people talk of seeing thirteen wrecks on their passage through the Raine Island Entrance; it is very different from Bligh's, nothing of the kind to be seen there. If a ship should get on any of the islands or reefs, it does not follow that she must be wrecked; the water is quite smooth, and there is every chance of getting her off again.

Noon, September 8th, I rounded to under Booby Island, the eleventh day from Moreton Bay. Sent the boat in charge of the first mate to land a barrel of biscuits, a canister of tea, and three bottles of rum in the cave. He went to the N.E. part of the island and deposited the small supply in a cave containing five tins of biscuits, about 30 lbs. each, and twelve tins of beef, 6 lbs. each, from Sydney. Then walked over to N.W. side and found the cave called the Post Office; there he reports to have found fifteen barrels of fresh water, seven cases of biscuits, eight kegs of beef and pork, one cask of Burton ale, some bottles of gin, tobacco and pipes, wax matches, some bottles of pickles, ink, quill pens, and the record book left by Captain James B. Kennedy quite filled up, and the office in want of another. He also reports that the last occupants of the cave, much to their discredit, had left it in a most disgraceful condition. There was one keg of beef and one of pork open, and the contents quite putrid from exposure to the air; also about thirty biscuits quite rotten on the sand.

I hoisted the signal for the boat to return at 1h. 30m. p.m.; they did return part of the way, and turned the boat over on top of themselves. Nothing of importance occurred after this, but we had very light winds from East and sighted Timor on the 20th at 6h. p m.; then had light airs from West and W.S.W. At 6h. p.m. in the evening of 21st the S.W. part of Rottie Island bore N.b.W. ½ W., about eighteen miles, not having made any progress to the westward during the last twenty-four hours. Stood off to the southward.

Monday, 22nd.—Steady breeze S.b.W.; lat. obs. 11° 30′ S.; long. 123° 30′ E.; bar. 29·80. Midnight, variable to W.N.W., tacked ship, as required to keep clear of the Hibernia Shoal.

Tuesday, 23rd,—a.m., variable in West. At 4h. a.m. tacked to S.S.W., wanting to make the two sandbanks ten feet high after daylight. At 10h. sent the second-officer on the topsail yard to look out right ahead for them, the ship heading S.b.W. right for the reef, according to Raper's maritime position; and as we had just stood off from Timor two days previous, and our chronometers gave us the positions of the islands in the straits as laid down in the charts, we could not be far out, and as soon as he got on the topsail-yard he reported heavy breakers bearing S.W.b.S., and a quarter of an hour after from S.W.b.S. to S.b.W., then to South and the reef extending to S.S.E., from S.W.b.S. to S.S.E. At 11h. saw the breakers distinctly from the poop and looked hard for the sandbanks. Stood on S.b.W. until 11h. 35m. We were then about one mile from the northern edge of the reef and the water looked deep close up to it, as though it came straight up like a wall. Tacked ship to N.N.W., the N.W. part of the reef bearing S.S.W. ½ W., distance about two miles, and the eastern breaker S.E., about three miles, and the East end of the reef E.S.E., about four and a half miles. The breakers at the West end were about two miles in length, a continuous line; then about one mile and a half clear space, but very shallow water; then about a quarter of a mile heavy breakers, which I have called the eastern breaker; then about two or two and a half miles of very shallow water to the eastward.

I think the reef is quite six miles long, but very narrow. There is no sand above the water, but it looks very close to the surface where the heavy breakers are, as the water was quite smooth at the time we were passing, and the current was running strong to West close to the reef. I have not the slightest doubt but that the two places where the heavy breakers are, are the same that the sand banks ten feet high occupied. We saw the N.W. breaker until 5h. 30m. p.m. At noon we observed in lat. 11° 52′ S. and long. 123° 23′ E.; bar. 29·93 inches; having made about two and a half miles N.N.W. since tacking, giving our position at 11h. 35m. about lat. 11° 54′ S., long. 123° 24′ E., and the ship's distance from the middle part of the reef at the same time, would give lat. 11° 56′ S., long. 123° 27′ E., about as described by Raper, for the eastern breakers. This part of the passage was very tedious, as we did not get any Trade winds until in 14° 40′ S.

We arrived at Madras on the 21st of October, after a long tedious passage from Timor, and making the whole passage from Moreton Bay fifty-five days. But we could never have got round the Lewin, at that season of the year, with so light a ship.

I remain, &c.,

J. S. KENNEDY,

Master of ship Teresa.

To the Editor of the Nautical Magazine.

EXCURSION TO THE LAKE OF NICARAGUA UP THE RIVER SAN JUAN.—*By Mr. George Lawrence, Assistant-Surveyor of H.M.S. "Thunder," Commander E. Barnett, in March*, 1840.

(Concluded from page 368.)

Tuesday, 17th.—At daylight we roused the Ramas, who were looking very stupid after their debauch, launched the canoe and paddled to the Isletas,—a group of islands lying off Grenada, which appear to have been thrown up by some violent eruption, as indicated by the immense detached blocks, rent and huddled together in the wildest disorder. But whatever may have been their origin, they now present a most beautiful picturesque appearance, ornamented with many graceful trees growing in the interstices of the rocks, and overrun in all directions with luxuriant vegetation.

The high hill of Grenada towering over these islets, by which we were land-locked on every side, produced a striking effect. We landed to breakfast on one of the most inviting of them, where we saw, as on most of the others, a solitary resident. We then threaded our way through this labyrinth of islands, and steered for the South end of Zapatero, with a moderate but short unpleasant sea; and sounded as we went in six and nine fathoms.

At noon we stopped, being prevented proceeding to Nicaragua by the wind, which was blowing fresh, and dead against us; but at 5h. p.m., the wind having moderated, we again embarked, and steered close under the western shore of Zapatero, where it is high and thickly wooded. The island is not inhabited, but in this season it is visited by the people of Grenada for the convenience of fishing. Its western hill is bare and barren, having recently been cleared away by an accidental fire: its geological aspect resembles that of the Isletas.

At sunset we passed between this island, which is distant from the main about a mile, and entirely composed of stratified rock, dipping at an inclination of 15° to 20° from the horizon, thickly overgrown, and at present visited by a few fishermen. A plain seems to extend across the isthmus from the South side of the Grenada Mountains as far as the eye can reach, and the island of Zapatero forms with the main an excellent harbour.

Wednesday, 18*th*.—At 5h. a.m. we launched and steered along shore for the road of Nicaragua, against a short chopping sea, which made us very wet and uncomfortable. I was rather surprised to find in a lake where the prevailing winds at North and N.E. are seldom very strong, how soon its surface becomes ruffled; such, however, we experienced to a degree that not only incommoded us, but often threatened our little vessel with no small danger; the padrone told us, in crossing from Muerta to Grenada, that in all his trips in large bongos he had never before steered that course, but always kept close under the lee of the North shore: we for the sake of expedition preferred the former, as being the most direct.

The coast eastward of the Zapatero Channel is low, with a straight line of beach, where the average height of the trees may be about seventy feet, and the soil appears to be most prolific. The soundings since we left Tahaja were from five to six fathoms.

At 9h. a.m. we passed Palmata Point, at the distance of about a quarter of a mile, and in the course of half an hour more landed on Nicaragua beach, and sent the padrone to town for horses, in order that we might lose no time in waiting upon the authorities.

This beach is composed of disintegrated quartz and argillaceous earth, straight, and lined with trees of fifty and sixty feet high, completely intercepting the view of the town, which is only about three and a half or four miles off. Here, as at Granada, we saw lots of "lavanderas" washing clothes.

By the time we had obtained our sights, Pedro, the padrone, had returned, with a couple of horses, on which Mr. Scott and I mounted forthwith, to pay our respects to the Gefè Politico, not forgetting to take with us our letters of introduction to Senors Ruis and Mongalo. After an hour's ride up a very gradual ascent, where the road is tolerably good and hedged in on both sides by a penguin (Bromelia) fence, we reached the town, and first called at the house of the former, but finding him absent on an excursion to the Pacific, we waited upon the other, who received us with the greatest politeness, and at our request took us to the chief official, whom we met, not in his own house, but in a neighbouring shop, dressed in anything but the garb of so high a functionary.

Through Senor Mongalo I stated to him the object of our visit, and requested permission to cross over to the Pacific; at which he appeared to be highly flattered, and without a moment's hesitation replied, "that we were at liberty to go where we pleased, and make what observations we thought proper." Delighted with this courteous reception, we took our leave, and after requesting our worthy interpreter to furnish us with horses and a guide, all ready equipped by ten o'clock next morning, we returned to our lodging on the beach. Before we retired to rest, we got the altitude of three stars North of the zenith, the same we observed at Grenada, which gave the difference of latitude 28′ 26″ S.

Thursday, 19*th*.—At daylight the weather was fine, and wind E.S.E., when I observed for the true bearing of Ometape, the result

being N. 62° 17′ E. At 9h. 30m. a.m. our mules arrived, not velocipedes, but we afterwards found them very sure-footed animals. The saddles of uncouth shape and rude material, but with the aid of a sheep's skin thrown over all, they were soft enough and rather too comfortably warm! Our guide presented a grotesque figure, rigged out in a party-coloured jacket of the gayest colours, great jack-boots with spurs, and stirrups of most whimsical make and unreasonable dimensions.

After completing all our preparations, we took our departure from the beach, slowly wending our way towards the town of Nicaragua, on the road to which I observe there are several houses, constituting a scattered village, where there is a church named St. George. The town of Nicaragua stands on an elevation of about one hundred feet above the level of the lake: its houses, similar to those of Grenada, are all of one story; those formerly belonging to the old Spaniards are substantially built of stone, with capacious doorways and gloomy grated windows; the more modern ones, of lighter material and construction; in fact, many of them are little better than mud huts. I saw but two churches, the largest of which is situated in the square opposite the guard-house, but neither have any pretensions to grandeur. The town of Nicaragua is said to contain 6,000 souls, all of whom are a mixed race of Spaniards and Indians, to the utter exclusion of whites. For the first three miles the road is tolerably good, and the land partially cleared, with here and there a house to enliven the scene; but all beyond is a wilderness; the soil appeared parched, and indicated a long absence of rain.

At noon we came to a small stream. Here we discovered that our only weapon of defence, a pistol, which Mr. Scott had lashed to the pummel of his saddle, was missing; but as time to us was of more importance than powder and shot, we left it behind, trusting that it might cast up on our way back.

Proceeding at a slow and steady pace, we rode through a forest of lofty trees, thickly interwoven with gigantic creepers and spindendral plants, which appeared to be almost impenetrable on both sides of the road. The silence of the wood was only disturbed by the occasional discordant scream of a maccaw or parrot. At length we emerged from this agreeable "contiguity of shade," and came to a plain covered with short grass and studded with clumps of calabash trees (the *crescentia*), where we surprised a few deer. Here at times we had a good view of the peaks of Ometape and Madeira, towering over the trees, and producing a very fine effect. The country through which we rode was one continued savanna, and only wants a decent road to make it very agreeable; but owing to the deep fissures, caused by a long continuance of dry weather under a powerful sun, we found some difficulty to get along without stumbling.

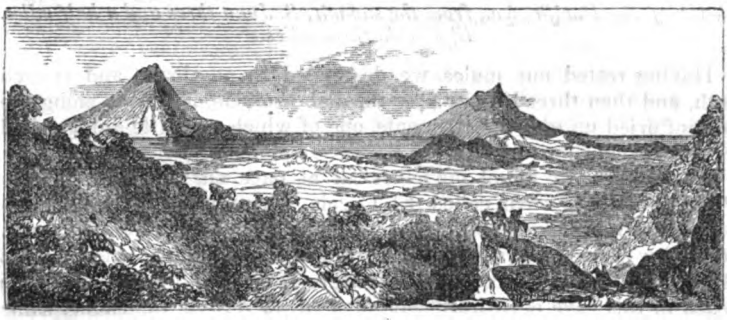
The ground gaping for moisture reminded us that we were thirsty, and our sapient guide, no doubt sympathising with our feelings, readily understood us when we directed him to take us to the nearest spring; which, after going two miles out of our way, we had the mortification

to find was completely dried up, and we had to retrace our steps. His stupidity in taking us thus far became too apparent when we found that we were within the same distance of a farmhouse or cattle pen, called Quocoti, where we shortly afterwards arrived, and drank our fill of delicious milk and water.

Resuming our course, which now lay over a rugged plain where the path could hardly be distinguished, our hopeful guide became so perplexed that, after "backing and filling" a few times, he candidly confessed that he was at a *ne plus ultra*, and pleaded as an excuse that he had not travelled across the isthmus "*por muchos anos.*" With the assistance of Scott's Spanish we explained to him that it would be prudent to return to the farmhouse, in which opinion he appeared to acquiesce, but had some secret misgivings whether he should be able to find it. In this dilemma we consulted the compass, and after a deal of traverse sailing at length managed to hit upon a path which led to the house, where we were greeted by the inmates with a hearty laugh, our guide looking very sheepish and ashamed at being the cause of it.

The day being now far advanced, and our journey not more than half complete, the end of which I was anxious to accomplish before dark, we thought it advisable, instead of blundering along after this stupid fellow, who had already served us so many tricks, to engage another guide. The only one we could find at this place was a fine little boy, who volunteered to conduct us to Port San Juan if his father, who seemed reluctant, would allow him to go. After some persuasion, expressed as well as our imperfect knowledge of the language would allow, we gained the paternal consent, on condition that we brought him back the following day, and for his services all he demanded was six reals, equal to three shillings.

Led on by our Muchacho, we again pursued the uneven tenor of our way, at a brisk pace; our quondam guide bringing up the rear at such a distance that we were often obliged to "heave to" for him, much to our annoyance, but to the great amusement of the young one. In the

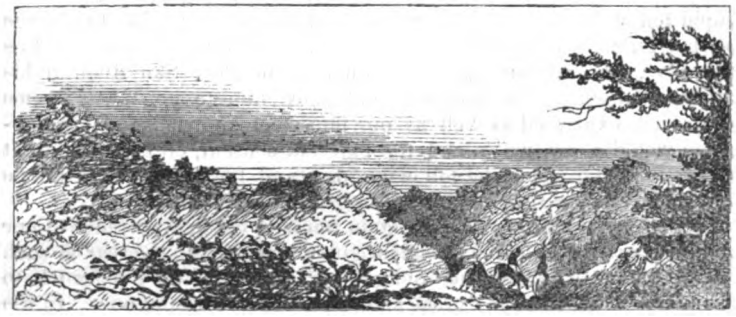


The Lake, &c., from the summit of the Mountain on the Road from Nicaragua to San Juan, Pacific. Ometape Peak N. 39½° E. mag., nineteen miles. Madeira Peak N. 61° 50′ E., mag., twenty-one and a half miles.

course of half an hour's ride the road began to be more rugged, leading over and between very steep hills, so much so, that had our mules not been very sure-footed animals, and used to such travelling, our necks would certainly have been endangered in crossing the mountain passes, where the road was almost blocked up by the fallen trees, rocks, &c.

These mountains are all thickly wooded, but not much overgrown with bush. From the summit of one more clear than the rest, whose height I roughly estimated at 800 feet, we had a delightful view of the Pacific to the westward, distant in a direct line about three miles, and the peaks of Ometape and Madeira rising out of the lake to the eastward.

The range of hills to the southward are, I should think, two or three hundred feet higher than this. Here we saw monkeys in plenty, of the Coaita or Ateles species, exhibiting feats of agility far surpassing anything I ever saw performed by those of the old world; their long, powerful, prehensile tails enabling them to make the most astonishing leaps from branch to branch, and to hang suspended while they chattered to us with almost human expression. A few wild cattle and deer occasionally came across our path, the former looking defiance, the latter no sooner seen than off.



Sketch of the Pacific, &c., from the summit, S. Juan three and a half miles. El Cacola three miles.

Having rested our mules, we descended by an abrupt and rugged path, and then threaded our way through the vale of Volgo, along the beds of dried up mountain torrents, one of which our little guide called the Rio Volgo.

At 6h. 15m. we found ourselves all at once on the shores of the Pacific, in a little cove called El Cacola, where we found nothing in the shape of human habitation, but fell in with a gang of fishermen and a few women, from whom we got a drink of water, but for want of sufficient knowledge of their language, gained no information. The beach in this cove is entirely composed of pulverised sandstone, *without a trace of iron.*

Here we would gladly have remained for the night, ourselves and mules were so knocked up; but the youngster having found out his

mistake, told us that we had still another league to travel. Accordingly, we again mounted, and after another hour's ride through a gloomy wood, at last reached Port San Juan, the *ultima thule* of our journey, after having been more than nine hours on horseback. The people of Nicaragua say the distance is only seven leagues, but taking into account all our deviations, we may fairly say that we had travelled many miles over as bad a road as ever was trodden by man or beast.

Having been informed that people occasionally resorted to this place for change of air and sea bathing, we expected to have found a few huts near the beach, but we saw nothing of the kind, and the only human being we met with was an old fisherman, who gave us a scanty supply of water. On the way, however, from El Cacola, we saw the glimmering of lights at a distance, and may therefore infer that there is a village in the vicinity.

In the course of the night we were enabled to get three excellent single sights on each side of the meridian, the mean of which we subsequently found gave a very satisfactory result. We also obtained the latitude by difference of altitude, making this place 11′ 46″ South of Nicaragua. But all our endeavours to obtain equal altitudes were frustrated by the impossibility to set the instrument for want of a good light.

Friday, 20th.—4h. a.m. Having now obtained the ultimate object of our expedition, we sent the guides for the mules, and in the mean time we employed ourselves reconnoitring this bay, which I at once recognised as the scene of Mr. Bailey's operations, he having shown me his plan at Grenada. It certainly does not merit the name of port, being little more than a large cove, distinguishable from that of El Cacola by its having near the centre of the beach a swamp, which communicates with the sea; and when the tide ebbs, has all the appearance of a running stream of fresh water. The rise and fall of tide is, I think Mr. Bailey told me, about twelve feet.

Mr. Bailey's levelling operations were commenced from Puerto de San Juan, and carried across to Rio de Lacas, the result of which makes the lake 128 feet 3 inches above the Pacific; the summit level 126, and the distance across fourteen miles; but I cannot at present say whether this is the distance in a direct line between the two extreme points of his level, or the actual distance measured in levelling. I am rather inclined to think it is the latter. In this undertaking he was employed by the government of Central America, and had many difficulties to contend with. He commenced in January with thirty labourers to clear the way, and it took him four months to complete his work.

At 5h. a.m. we mounted, and at first felt very much shaken from yesterday's ride. Retracing the path by which we came, nothing worthy of remark occurred, and in the course of four hours we again found ourselves on the summit of the mountain from which we first got a glimpse of the Pacific, and now we took a last retrospective glance before we descended towards Gocoti, where we arrived at 11h.

a.m., and restored our faithful little guide to his padre. After resting our mules and refreshing ourselves, we shaped a course for Nicaragua, but had not gone far before we again found ourselves bewildered, and were just about to bear up again when our young friend came to our timely relief, he wishing to accompany us to town. Within the last mile or two from town our lost pistol was restored to us by a woman, near whose house it had fallen and been picked up. I mention this circumstance to show that, bad as the people of this country are represented to be, this, at least, is an instance of honesty rarely to be met with even among our own country people, and it was much enhanced by her reluctance to accept a reward, evidently showing that she expected none.

Without stopping at the town we hastened to the beach as fast as our jaded nags would carry us, where we arrived at 2h. 30m. p.m, and found all well.

Saturday, 21*st*.—Still blowing very fresh at S.E.b.E. Got sights a.m. for equal altitudes, and sent the padrone to purchase beef for salting. At noon, compared chronometers, and found they had been going very regularly since we came to this place; but they appeared to have altered their rates since leaving Grenada. In the afternoon got corresponding sights; wind still continuing to blow hard from the same quarter, and so much surf on the beach that we found it impracticable to launch our canoe.

In the evening of the 21st, we were invited to visit a settlement near Palmarta Point, where Mr. Scott's mechanical skill in showing them how to repair a pump belonging to the estate gained him great applause, of which we all reaped the benefit; for, by way of return for the services he had rendered, they invited us to take up our abode with them, and sent us a bag of fruit and a fine fat ready roasted duck!

Our Ramas all along have behaved extremely well; notwithstanding their ruling passion for grog, they never once were untractable, nor took an unlicensed liberty with our stores.

Monday, 23*rd*.—At 11h. 30m. a.m., the wind having a little moderated, we launched our canoe and paddled across to the island of Ometape, carrying a depth of five and seven fathoms. At 3h. p.m. we landed, the wind coming round to the East.

The South side of this island is thickly wooded, excepting here and there where a few small plantations appear like so many oases in the wilderness or forest. On the North side there is, I am informed, an Indian village, containing between 200 and 300 huts, where beautiful mats are manufactured out of grass.

At 6h. p.m. we again embarked, paddled to the South point of Ometape. The shore along which we passed is bold and craggy in some parts, in others low and gently declivitous. Here we remained for the night, under the lee of the island, wind blowing in heavy gusts.

Tuesday, 24*th*.—At 4h. a.m. started, continuing our course towards Madeira. Here we discovered that Ometape and Madeira, which at a

distance appear to be distinct islands, are connected by a low woody neck of land, about forty or fifty feet high. The latter mountain is thickly wooded to its summit, and in some parts intersected with ravines and cataracts.

At 7h. 30m. we landed on the S.W. part of Madeira, where we found a German, named Oraldo Wormger, had settled with his wife and family. They had lately come from the United States with a view of forming a cotton plantation. He appeared to be very sanguine of success, informing us that although he had been there only two months he was getting on extremely well; his land, amounting to 5,000 acres, he had purchased from the local government of Nicaragua at the rate of half a dollar an acre, which, after all incidental expences were paid, would cost nearly as much as land in North America. The delay in getting it surveyed before he could take possession had, he said, been a great source of vexation and expence.

The huts in which this enterprising family had taken up their abode, are made of bamboos and wild cane fixed perpendicularly into the ground, and roofed by a kind of palmetto, neat, airy, and comfortable enough in fine weather, but in the rainy season I should think hardly weathertight. But should he succeed in his expectations, he told us he intended to remove his dwelling and build a more substantial house near a cascade, a short distance from this, for the convenience of its falling water, which he thinks he can make subservient to his cotton gin and other domestic purposes.

At noon, the wind having nearly died away and the sea gone down, we again shoved off, paddling towards the South shore, and carrying a depth of ten and nine fathoms. At 4h. 30m. we were off the Tortugas shore, and at 5h. 30m. landed at the village of that name, consisting of only six or seven huts, inhabited by fishermen, &c. We saw the smoke of Beiga, an active volcano, issuing apparently not from its highest peak, but from an elevation on the side of it.

The aspect of the northern shores of the lake is strikingly contrasted with that of the North side, where all is clear Savanna land; here it is densely wooded as far as the eye can reach.

From the composition of the bottom and beaches of this lake, which are both more or less impregnated with iron, one would have expected to find this water slightly chalybeate; but owing, I presume, to the metal not being in an oxydised state, nor associated with carbonic or sulphuric acid, it is not soluble. Little, however, is known of the chemical operations of nature in the synthesis of mineral waters.

At 1h. 30m. p.m. we were abreast of Maccaroon, the western extreme of the Solentinane Group, which we had a good opportunity of examining as we passed. Their geological features do not differ materially from those of the other islands, and they are completely overgrown with the most luxuriant vegetation, resembling that of Corn Island. They are all inhabited by numerous families, and produce abundance of stock of all kinds.

At 6h. p.m. took our last departure and bade adieu to this inland

sea, our course now being directed to its outlet. Passed close to the eastward of the Bocas Cays, where the depth is about two fathoms; and at 10h. p.m. anchored off San Carlos, where we remained for the night. Weather threatening; lightning in the horizon.

Thursday, 26th.—At 2h. a.m. we were awoke by a heavy squall from the N.E., with torrents of rain.

Shortly after leaving San Carlos we met three bongos, and were informed by one of them that H.M.S. *Thunder* had just arrived at the Boca de San Juan. Continued our course till midnight, when we anchored in the middle of the stream, about three miles above the Toro Rapid. Mosquitos murdered sleep.

Friday, 27th.—Away at dawn of day, when the sky was overcast, and a shower of rain fell, wind easterly. Paddling with the stream so much in our favour that by 5h. 30m. a.m. we had passed the Toro Rapid, and at 8h. safely descended that of Castillo Viejo, in neither of which did we experience the slightest difficulty or disaster by keeping to the northern side. The time occupied in descending the latter was not more than one minute and a half.

At 9h. a.m. we dashed down the river in great style, but more cautiously took the Machuca, which is considered by the padrones the most dangerous of all the rapids, on account of the tortuous course and the many rocks which lie superficially concealed in its bed. They never attempt to pull the bongos over it, but always ease them down by means of a rope. We, however, by keeping good way on the canoe and skilful steerage, managed to shoot it without any inconvenience or danger. I must here alter my opinion respecting this rapid, and confess that it well deserves the name, although insignificant in its ascent. The Castillo Viejo Rapid is the most formidable and imposing to look at, but being strait and clear of shallow rocks, there is not much danger of capsizing so long as you keep well on the northern bank and "give way."

At 9h. 50. a.m. we landed to breakfast on the Isla Campana. The river had fallen at least one foot and a half since we went up, and the stream did not run quite so fast. The padrone said that it would fall one foot and a half more than at present. After May, when it is at its lowest, it begins to rise again, and in October generally attains its greatest depth. Hence I should think that the best time to commence levelling would be about the middle of March or beginning of April. Mr. Bailey, if again employed by the government of Central America to level between the lake and the Atlantic *viâ* this river, intends to lay artificial foundations on its banks by means of planks six feet by three. In the rainy season, when the river is most swollen and the stream is not too strong, it takes the best bongos from fourteen to fifteen days to go from San Juan to San Carlos.

The largest of these rude vessels, hewn out of immense trunks of trees, carry thirteen hands, including the captain or padrone, and are about five or six tons burden. On their passage to Grenada they never take a full cargo, but on their return they are generally deeply

laden, on account of the stream and rapids, which must oppose a greater resistance to a heavy body, and for other obvious reasons.

At 10h. 30m. a.m. we took our leave of Campana, and paddled down the stream as fast as our brave Indians could apply their brawny arms, and by way of encouragement, we gave them an extra allowance of grog, which seemed to infuse fresh vigour. We were frequently drenched by heavy showers which fell during the day. At 3h. 30m. landed to dine on a dry sandy spit, where we remained about an hour, and then resumed our course down the river, heavy showers still falling. And at 7h. 30m. brought up for the night at San Francisco, where we contrived to get our clothes dried.

Saturday, 28th.—Started at 4h. a.m., sky cloudy; paddling down the river at a great rate. Passed the River Serapequi at 6h. a.m., and at 9h. landed to breakfast on the Colorado Island. Found the river very shallow and the stream not so rapid. At 10h. 30m. proceeded, and found the river getting so shallow that the Indians were obliged to jump out and haul the canoe over several bars of sand. The padrone said that the bongos in the dry season are often obliged to leave half their cargoes at Colorado before they can get over the shallows which obstruct this part of the river, and even then the difficulty is so great that it sometimes takes them eleven days to get down to San Juan, digging a channel as they advance. At noon we were abreast of Juanillo Point, where the river takes a remarkable turn, running off at right angles and parallel with the coast, as if this had once been its termination, which by the same process of fluviatile deposit now going on before our eyes at its present outlet, has been blocked up, and the stream diverted into a new channel. The land intervening between this part of the river and the sea coast is a complete delta, the result of alluvial accumulation, and would seem to countenance this opinion.

With respect to the capabilities of this river as we now find it, I think it might be considerably deepened, and many obstructions removed, by shutting the mouth of the Colorado branch. As to the rapids, it would be ruin to attempt their removal, but they might be avoided by a canal.

Such improvements, however, can never be thought of in the present revolutionary state of this country. For all its commercial purposes the river is sufficiently navigable, and its bongos quite big enough.

At 2h. p.m. we passed the Pauro branch, at 3h. the lower mouth of the Juanillo, and at 4h. got on board the *Thunder*, in San Juan Harbour.

JOURNAL OF CAPTAIN CRACROFT, C.B., OF H.M.S. "NIGER."—*The Falklands to England.*

(Concluded from p. 360.)

Monday, July 1st.—We have completed provisions to seventy days, and obtained everything we required at what I consider very reasonable rates,* having a lively recollection of the way in which we have been fleeced at Point de Galle, Hong Kong, Sincapore, and other places in the far East; and I cannot take my departure from Port Stanley without bearing testimony to the great facilities for refitting and replenishing that the place affords, the courtesy shown us, and the expedition used,—most creditable to Mr. James Lane and all concerned in the supply of our wants.

At 10h. a.m. the anchor was lifted and we steamed out to sea, making sail to a fine N.W. wind directly the pilot left. We had some difficulty in locking the propeller, which got adrift and detained us for an hour, hove to, before it was secured, and then the wrong blade came up first. However, we got it right at last, not to be used again, I trust, on this side of the equator. * * *

We have on board, as passengers, seventeen distressed seamen, part of the crew of the British ship *Merlin*, which foundered recently off Cape Horn. Poor fellows, their rescue from the jaws of death seems to have been most miraculous, and several of them have suffered grievously from exposure, frost bites, &c. I have also taken charge, for the Governor, of some curiosities in natural history *(natatores)*, intended as presents to the Zoological Society, Regent's Park, some splendid specimens of upland geese, and a pair of "steamer ducks,"—the latter real *rara aves*, as it is said no specimen has ever yet reached England alive.

Monday, 8th.—After a few hours of a baffling south-easter, with heavy rain, the wind, during the night of the 2nd, backed into the S.W., and has continued blowing steadily from that quarter and South ever since; we have had a good week's run in consequence: distance, 1,154 miles.

On the 4th we ran suddenly into a lane or river of warm water, the temperature of the sea having risen fourteen degrees within twelve hours, namely from 43° to 57°, the air being, at noon, only 46°; and on the 5th we experienced a set of a knot an hour from N.E., very nearly in the opposite direction to the course we were steering.

How little we know of these currents! That valuable and scientific officer, Maury, might well lament the neglect shown by the old log-books to the use of a water thermometer. How few navigators before he called public attention to its importance kept a record of it. But by its assistance alone we can determine the route of those vast

* A fine fat sheep, weighing about eighty pounds, cost £1 4s.; a bullock, £6. We took two of the latter to sea with us.

currents which, however sluggish, are moving immense bodies of water; which, again, in obedience to general laws, keep up a wholesome system of circulation in the sea, and have an extraordinary effect upon the atmosphere and climate in their vicinity. May not the mild open weather in the Falkland Islands be mainly due to some such current as this we have struck so unexpectedly, laving their shores with a result similar to that which the great Gulf Stream has upon the western islands of Scotland?

Monday, 15th.—Another week has passed and the run, for an old jury-rigged craft like this, with her old rotten sails and "worn to her marrow bones," I must consider a very fair one, being 922 miles. I have endeavoured, by Captain Moore's advice, to make a due N.E. course, and happily succeeded, thanks to a strong norther, which commenced in lat. 33° on the 12th, the wind having hung from the N.N.E. for a day or two before. This gale forced me to the eastward; it blew very hard for about twelve hours, with some very heavy squalls, then veered gradually to the N.W. and West, and so round through South, until it settled yesterday in the S.S.E. The barometer's lowest during this period was only 30·00. This reading may appear high to accompany such violent winds, but it must be remembered that the mean barometric pressure is 0·33 of an inch more in this latitude than it is ten degrees further South, and 0·75 more than in the parallel of 55°, where, during this voyage, and in perfectly calm weather, the same instrument registered as low as 28·70.

I am hardly sanguine enough to believe that this wind, although it has blown steadily now for more than four and twenty hours, is the S.E. Trade; but should such turn out to be the case, it will be worth recording as having commenced in lat. 31°!

On the 17th we entered the tropic, and the cape pigeons, to whom this region is a burning fiery furnace, took their departure.

Monday, 22nd.—Our breeze has turned out to be the Trade; but on the 18th it veered more to the eastward, and has since been light and unsteady. Distance run during the week a thousand miles exactly, with a current for five days of it averaging nearly a knot an hour from the eastward. I am anxious to cross the equator in 19° W. if possible, but this current and the scantiness of the wind makes our doing so very doubtful. On the 20th a bottle paper was thrown overboard, the third since leaving the Falklands.

We passed an English ship this afternoon, standing to the southward,—she showed the third distinguishing pendant 326, and wished to be reported at Lloyds',—and it makes one begin to feel getting very near home, although more than 4,000 miles have still to be traversed.

At 2h. p.m. on the 27th we crossed the equator in 21° W., quite as far to the eastward as I could have expected with so little southing in the Trade. A beggarly Trade, indeed, it has been hitherto, and not likely to improve now. During the thirteen days it has lasted the yards have been braced nearly sharp up, but I kept the fore topmast studding sail set to steer by, and yet we made barely a North and by East course, and only averaged 143 miles a day.

It is a singular coincidence, worthy of note, that this ship should have crossed the equator five years ago, on her way out to her station (China), within twenty-four hours of the same time, namely on July 26th, but 8° further to the eastward.

The S.E. Trade favoured us as far as 100 miles North of the line, when it shifted, on the afternoon of Sunday the 28th, into the S.S.W., veering gradually to the S.W. and West, blowing steadily, with a force from 3 to 6, till the 2nd of August,—that is to say, for five clear days, during which time we averaged 145 miles a day, against a current of nearly a knot an hour.

We were in lat. 13° N. when this Equatorial Trade, as Maury, who may claim to be its discoverer, calls it, showed evident signs of failing; heavy rain squalls succeeded each other with some rapidity, and the wind died away almost to a calm in the intervals between them. So, during the afternoon of the 2nd, the steam was raised in three boilers; but it was 6h. p.m. before we could proceed, owing to the shoe having worked loose in which the after screw fitted to the stern-post for raising and lowering the propeller stepped, one of the bolts that fastened it having evidently drawn. Here was a fix that for some time puzzled us, as it was too far under water to be got at by hand, and it was impossible to lower the propeller into its place while it projected into the well. The chief-engineer attempted in vain to drive it back into its place, so, as a *dernier resort*, a heavy spar was slung and by bumping he succeeded at last in breaking it off. Even then we did not get clear of the obstruction, for it dropped into the after bearing, and was not hooked out without some difficulty. * * *

We were now drawing near the Cape de Verdes, and saw a great number of vessels. On the afternoon of the 3rd the island of Brava was reported in sight, but it loomed very indistinct in the thick haze.

At noon on Sunday, August 4th, the island of St. Antonio bore about East, *nine* miles distant, and we fancied we could distinguish land, but there was such an extraordinary thick haze that I should doubt whether it were possible to see so far.

Early in the afternoon occasional puffs and cat's-paws gave warning that the N.E. Trade was not far off. We continued steaming till 5h. p.m., when, having a fresh North-easter, I determined to proceed under sail only. Burnt the fires down, and as our after gearing was now useless, got a chain round the banjo and prepared to lift the propeller with it, but found the shaft set fast; there was no moving it, even with the jacks, so left the screw set vertical and drew the fires.

On the following morning the shaft was disconnected and the screw allowed to revolve, when, owing to the heavy strain previously put upon it, the shaft worked loose, much to my satisfaction; so I ordered it to be drawn and the propeller left free, to see what effect it would have on the speed of the ship. We were sailing at the rate of seven knots, but the propeller only made twenty-four revolutions, equivalent to 4·142 knots, consequently there was a loss of more than forty per cent., and as the wind declined and the speed of the ship was reduced to between five and six knots, it became a still greater drag upon us.

On Tuesday morning, therefore, I hove to, and after some little delay in locking, lifted the propeller and proceeded, not sorry to get rid of the noise and irregular motion,—spasmodic jerks would more correctly describe it, as the revolutions were governed by the speed of the ship and the heave of the sea, and were very irregular indeed.

The Trade blew very steadily from E.N.E. and N.E.b.E. until the morning of the 10th, when, in about 27° 30′ lat. and long. 32°, we lost it. During this period (over five days and a half) we made nearly 750 miles on a N.W.b.N. course.

Saturday, August 10th.—At 9h. 40m. a.m. we commenced steaming once more, in hopes that forty-eight hours will see us fairly through these Horse Latitudes, where, in Roderick Random's time, whole ships' companies used to be "blooded and purged!"

The weather was intensely hot, the air sultry and oppressive, and to my great regret, notwithstanding all the care and attention paid to them, one of the steamer ducks succumbed to it; the upland geese, however, seem none the worse. I consider the loss of this specimen of the *Anas brachyptera* as a public misfortune. Before steamboats were in general use this bird was denominated, from its swiftness in skimming over the surface of the water, the race-horse, a name which occurs frequently in Cook's, Byron's, and other voyages. It is stated in the *Narrative of the Surveying Voyages of the Adventure and Beagle*, vol. i, that—"The principal peculiarity of this bird is the shortness and remarkably small size of the wings, which, not having sufficient power to raise the body, serve only to propel it along rather than through the water, and are used like the paddles of a steam-vessel. Aided by these and its strong broad-webbed feet, it moves with astonishing velocity. It would not be an exaggeration to state its speed at from twelve to fifteen miles an hour. The peculiar form of the wing and the short rigid feathers that cover it, together with the power the bird possesses of remaining a considerable time under water, constitute it a striking link between the genera *Anas* and *Aptenotydes*. * * It is very difficult to kill them on account of their wariness and thick coat of feathers, which is impenetrable by anything smaller than swan-shot."* * * * *

Proceeding under easy steam, the sea being like a polished mirror, we passed many so-called tide-rips, moving more or less rapidly, but I am bound to say none at the rate recorded by Captain Higgins, of the *Maria*, of New York (see *Maury's Physical Geography of the Sea*, p. 318), who thus describes one in his abstract log on October 10th, 1855, in lat. 14° N., long. 34° W.:—

"At 3h. p.m. saw a tide-rip; in the centre, temp., air 80°, water 81°. From the time it was seen to windward, about three to five miles, until it had passed to leeward out of sight it was not five mi-

* It may interest naturalists to know that the other duck reached the Zoological Gardens in pretty fair condition, but did not long survive the loss of its mate. Its skeleton was sent by Mr. Bartlett to the British Museum.

nutes. I should judge it travelled at not less than sixty miles per hour, or as fast as the bores of India. Although we have passed through several during the night, we do not find they have set the ship to the westward any. It may be that they are so soon passed that they have no influence on the ship; but they certainly beat very hard against her sides, and jarred her all over. They are felt even when below, and will wake one out of sleep." * *

Not a vestige of sargasso weed did we see, which was somewhat remarkable, considering that our course lay directly across this extraordinary water-meadow.

On the morning of the 12th we had a sharp squall of rain from the westward, which seemed like the forerunner of a breeze so longed for. But it soon subsided, and after an hour and a half during the forenoon occupied in steaming round two targets and practising at them with shot and shell, I was fain to continue burning coal for another twenty-four hours.

Tuesday, 20th.—I had made up my mind, and had sufficient reason for expecting, that our arrival in England would not have been delayed beyond this date at farthest, instead of finding ourselves to-day at noon somewhere in the neighbourhood, about a hundred miles, more or less, to the eastward of St. Michaels. But such is the case—"*L'homme proposé, mais Dieu disposé,*"—and there is nothing left for us but to exercise our patience and bow in humble submission to the behests of Providence. This day week at daylight I determined to steam no more, but, reserving about ninety tons of coal for contingencies, to trust for the remainder of the distance to our worn out, tattered sails. And a pretty week we have had! First the West wind blew softly and, like St. Paul's mariners—Acts xxvii. 13,—I thought I had obtained my purpose, but on Thursday there arose a tempestuous wind against it, or rather from the N.E., which drove us to the southward. This was followed by a calm, which lasted all Saturday and Sunday; a calm such as Dryden has described, which

* * "Charmed the sea so still
That not a wrinkle ruffled her smooth face."

The result is that in this week just past we have neared the Lizard barely 325 miles, and whatever prospect there may have been once of our making a good passage, if not a very rapid one, has now utterly vanished.

On Saturday we sighted St. Mary, the southernmost island of the Azores, and found what I was quite prepared for, viz., that the chronometers had altered their rates since leaving the Falkland Islands, and that the ship's position is about ten miles to the westward of where they put her. This would be sufficient to account for our not having seen the island of St. Antonio (Cape Verde) more distinctly, which I attributed at the time to the thick haze that prevailed in that latitude.

Tuesday, 27th.—Light baffling winds, chiefly from the East and S.E., prevailed during the whole of last week, and our progress was

necessarily slow, not averaging more than fifty miles a day towards the Lizard; but "'Tis an ill wind indeed that blows nobody good," for on Wednesday we communicated with the brig *Cawton*, of Bideford, only twenty-one days from Barcelona, bound to Dalhousie, in the Bay of Fundy, which reported all peace in Europe; and the First-Lieutenant has succeeded in painting the ship inside and out, not before it was wanted, I must confess.

We were now on the right whales' feeding ground, and had many of these monsters of the deep near the ship. Immense quantities of spawn and blubber were passed; in fact, the water seemed alive with it. At noon the Lizard bore N. 69° E., 648 miles, and the wind, which has drawn round gradually to the westward of South within the last twelve hours, promises now to hold in that quarter, the barometer having fallen steadily during the same period.

29th.—We have experienced a tremendous set from the northward during the last twenty-four hours, as much as forty miles, accompanied by a very heavy swell from the N.W., and the breeze, which promised fair to take us up channel, failed very suddenly, drew round to the eastward of North, and fell almost to a calm; so the steam was got up in three boilers, and, after some difficulty in connecting the shaft, we proceeded ahead easy, having coals enough, if this weather lasts, to take us to Spithead.

Sunday, September 1st.—At noon yesterday we were only eighty-three miles from the Lizard, having struck soundings the previous evening at six o'clock, in ninety four fathoms; and at ten p.m. the lights were reported. * * * *

Unfortunately, as we got to the bottom of the coal bunkers, the quality of the coal seemed to deteriorate, and a mixture of Australian "Newcastle" and New Zealand "Drury," reduced almost to dust, which either falls through the bars or clinkers so badly that the fires have to be continually cleaned out, rendered it extremely difficult to keep up the steam, except by an expenditure which we cannot afford. Accordingly, at eight o'clock this morning (the Eddystone bearing North), having only twelve tons of this stuff left, with an E.S.E. wind dead in our teeth and a very small prospect of a change, I determined to put into Plymouth Sound, and before eleven we were lashed alongside the *Lavinia* hulk, ready to take in a fresh supply of coal the first thing to morrow morning. This voyage may therefore be considered as terminated,—with what satisfaction to all hands I shall not attempt to describe. The following lines truly apply to this ship's company:—

> "Long have they voyaged o'er the distant seas;
> And what a heart delight they feel at last—
> So many toils, so many dangers past—
> To view the port desired: he only knows
> Who on the stormy deep for many a day
> Hath tossed, aweary of his ocean way,
> And watched all anxious every wind that blows."

It now only remains for me to give the performance of the ship between the Falkland Islands and Plymouth Sound:—Whole distance run in sixty-two days 7,813 miles, being at the rate of 126 miles a day and 5·25 per hour, or a speed of nearly half a knot faster than was realized between New Zealand and the Falkland Islands. The performance under steam was a trifle better than before our arrival at the Falklands, the coal taken in there having mixed well with the Australian:—Time under steam 7 days 10 hours 5 minutes; distance run, 1,121 miles; distance per hour, 6·3 knots. Coals expended (including 9 tons 4 cwts. for raising steam), 207 tons 5 cwt.; distance run for a ton of coal (198 tons 1 cwt.) 5·6 knots.

This average would have been much greater but for the loss during the last hundred miles, to which I have already alluded, when, besides the item of bad fuel, the slip of the screw, owing to the ship being very light, had also increased to upwards of 33·5 per cent.

The abstract of the run of H.M.S. *Niger* between New Zealand and Plymouth is therefore as follows. She crossed the bar of the Manukau at noon on May 9th, and arrived in the Sound at ten a.m. on September 1st, including four days' detention at the Falkland Islands:—

Between New Zealand and the Falklands.

Distance run	5774 miles.
Average per hour	4·8 ,,
Of which under steam	772 ,,
Average per hour	6·8 ,,
Consumption of fuel	145·5 tons.

Between the Falklands and Plymouth Sound.

Distance run	7813 miles.
Average per hour	5·25 ,,
Under steam	1121 ,,
Average per hour	6·3 ,,
Consumption of coal	207·5 tons.

Total distance run	13,587 miles.
Of which under steam	1,892 ,,
Consumption of coal	352 tons 15 cwt.

On Monday morning we took in eighty tons of coal, and at noon left for Woolwich, a telegram having been received from the Admiralty ordering the ship to proceed there instead of to Spithead.

On Tuesday at noon we hove to in the Downs, received a pilot, and anchored at the Nore at seven p.m. The next morning the anchor was lifted for the last time and we stood up the river, passing, and receiving three hearty cheers in passing, H.M.S. *Warrior*, at anchor above Greenhithe. Arrived off Purfleet at eight a.m., took the powder out, and secured at noon alongside the *Salsette*, hulk, off Woolwich Dockyard.

And so ends this journal, which I cannot conclude better than in

the words of our great circumnavigator Cook, in the finale to the fourth chapter of his fourth and last book (1775):—

"This imperfect account is written more with a view to assist my own memory than to give information to others. I am neither a botanist nor a naturalist, and have not words to describe the productions of nature either in the one branch of knowledge or the other."

Woolwich Basin, September 7th, 1861.

THE WESTERN DIVISION OF THE MEDITERRANEAN.—*Navigation: Passages from West to East.*

(Continued from page 375.)

On describing the Strait of Gibraltar we pointed out the most proper courses to be adopted from West to East and the reverse, and showed the navigator how to avail himself of the general and special currents of each tide. It remains now to allude to the tracks which are the best to be taken in the western part of the Mediterranean, as the principal object before us.

The Summer Season.—The sailing vessel which penetrates into it with a westerly wind, and bound, perhaps, to some of the ports of Algiers or Corsica, or the Levant, should preserve a midchannel course between Spain and Africa, so as to profit by the whole strength of the general current. If she be destined for Oran or Algiers she may pass between Alboran and Cape Tres Forcas, nearer to the former than the latter, and nearing Cape Falcon if she is bound to the first port, or making Cape Tenez if bound to the second. Then, having got hold of the land, she may run down the coast at a regular distance for Cape Cagines, which she will approach, so as to recognize the points Pescado and Consules, in order to make sure of her port.

Should she be bound to any other port of the same colony, such as Bugia, Stora, or Bona, it would be prudent for her also to make Cape Cagines, so that she may keep the coast at hand to correct her position, and not run the risk of overshooting her port.

If Cagliari should be the destined port, or somewhere in the Levant, the ship should pass between Alboran and the coast of Spain, about thirty miles from the latter. If the land be clear, so as to admit of the heights being seen over Cape de Gat, she should shape a course more to the northward, so as to pass midway between the Balearic Islands and the African coast, and make the coast about Cape Teulada, with the object of checking the reckoning, so as to make for Cagliari Bay or the Sicily Channel.

These routes, adopted in summer with a westerly wind, incur no inconvenience, and a vessel has the advantage of all the current to the eastward. It may be that in the same season, when easterly winds prevail, in proportion as the vessel leaves the strait she may be lagging

to the westward, and that before reaching the meridian of Cape de Gata she may find the easterly wind. In this case she should take to the southward along the coast of Barbary, so as to get into the full force of the easterly current; and she should not stand to the northward until she has made out some remarkable point on the coast of Algiers, so as to correct her position, in case she should not be provided with the means of being certain of it; and she should continue working to windward between the coasts of Africa and Spain, and between it and the Balearic Islands, until she has reached the meridian of her port; or she may continue her boards until she has passed Sardinia, if she is bound to the Levant.

In the channel between the Balearic Isles and Africa S.E. winds predominate, becoming consequently head winds for the ship that is bound to the Levant when she gets too far North. In such a case it is better to work to windward on the coast of Barbary, extending the boards to the North as far as sixty to seventy miles from the shore, with the view of keeping in the general current. By prolonging the boards with these winds in the channel of Minorca and Sardinia a vessel would derive no advantage from the easterly current, and would most probably find one running in the direction of the gulf of Lyons, which would delay her considerably.

Even in summer, with northerly to N.E. winds, which sometimes reach the parallel of 39°, do not bring much sea, a vessel may keep her course indicated along the African coast, with the view of profiting by the general current. In this case she should keep further from the continent, and if she has anticipated a N.E. wind, may get up to that parallel or to that of Minorca, so that she can proceed without concern if she is bound to the Levant.

There are years in which winds into the gulf of Lyons predominate much, and they have been known to blow in June and July for eight or ten days together, and these are the winds which we have said become easterly in the mouth of the Strait. To get to the eastward with these winds is most difficult, especially until passing the meridian of the Balearic Islands, in proportion as the vessel advances towards Sardinia.

If a vessel from the Strait of Gibraltar, or the ports of Malaga or Almeria, be bound to the Balearic Isles, the gulf of Lyons, or the coasts of Italy, she should also keep midchannel, to profit by the general current, whether the wind be easterly or westerly. Should it be easterly she will gain to windward on the African coast, for, little as it may be from the S.E., it will admit of her making good boards, as well for taking any port of the Balearic Isles as for running for the strait of Bonifacio, should she be bound to the Italian continent, or to the gulf of Lyons, or the coast of Genoa, &c. We have already observed that in summer it is common to meet with north-easters in the gulf of Valencia, and in the channel between Catalonia and the Balearic Isles, while between these islands and Barbary S.E. winds are prevailing, and consequently facilitating the navigation by this last channel.

Even from the ports of Carthagena and Alicante a better voyage will be made South of the Balearic Islands, either for the Italian continent, by the strait of Bonifacio, or for the gulfs of Genoa and Lyons, because if in the Atlantic westerly winds are blowing, they come more from the Barbary coast in the channel South of the Balearic Islands; and the same takes place if easterly winds are blowing, and consequently a vessel would be more to windward to make a good course, and she may profit something by the general current.

A vessel from the Strait of Gibraltar, West coast of Algiers, and southern ports of Spain, bound to Catalonia, may take the same navigation by the middle of the channel, to profit by the general current, and would pass South of Formentera, and take the channel of Majorca in search of her destined port. If the wind be easterly, there is the probability for her that it will haul to S.E. between the islands and the African coast, with which she will make good way for the above-mentioned channel. If the wind is from West to S.W. she would make equally good way, because South of the Balearic Isles she may be sure of that wind, while if she pretends to pass between the islands and the gulf of Valencia, she will meet with some difficulty off Cape Antonio, either from winds out of that gulf, or from currents, or baffling winds.

A vessel from the Strait of Gibraltar, with winds from West to S.W., bound to ports of the Spanish continent, should keep at a convenient distance from the coast, so as to be able to recognise the principal objects as she passes them, and by their means correct the position of the ship on the chart. If she be bound to Malaga, and the wind hangs to S.W., she should steer a course for Point Burra direct, avoiding the bight of Marbella, and keep outside; for in summer it is common enough for that wind not to blow down there. She will have besides the advantage of accelerating her voyage by the general current.

If destined for any of the ports East of Cape de Gat or the gulf of Valencia, she should also pass at a distance from the coast, where she will have a brisker wind. It happens in summer time that while outside the wind is West or S.W., nearer the coast it will be calm, or there will be a weak land wind, which will slacken the voyage; therefore it is preferable to navigate at a respectable distance from the coast, and only approach it when it becomes necessary to make for the port of destination.

It often happens that a vessel arriving off Cape San Antonio, with a wind at S.W., finds the wind there at North or N.E., which is the drain of the N.W. wind blowing in the gulf of Valencia. In this case she should manage to be in the bay of Jaira by daylight, where she will find the wind more off the land, with which she may round Cape San Antonio, and when the wind of the gulf is steady in the day, she will be sufficiently to windward perhaps to make for Ivica. But in approaching the cape it may be as well to cite the following observations in reference to the winds of the gulf of Valencia.

With the exception of Cape Cullera, which is a mass of rock, all the

shore of this gulf is low,—a sandy beach, clear and approachable everywhere. It is much exposed to easterly winds, which sometimes come dead on shore, and with these a vessel should get out of the gulf as soon as possible, because a considerable set gets up there, and the current is strong, and if it comes to a gale, the loss of the ship follows. Instances, in fact, might be quoted of vessels running with an easterly wind in passing Ivica and Cape San Antonio having been driven on shore in the night on the sands of Oliva or near Denia. The easterly gales are terrific in the gulf, not only from the sea which they raise but also from the dark weather which they bring hiding the few remarkable points of the coast from the view of the navigator. Besides which, it is devoid of ports of refuge for vessels of any draft, and the few that there are for small craft are most difficult of access. Thus square rigged vessels that have to cross it with these winds must use great precaution, getting as much speed on the ship as possible, so as to get out of it quickly.

In summer, light N.E. winds prevail, which produce no sea, and which only reach the head of the gulf during the day, being replaced at night by the land wind. With these winds there will be no danger in prolonging a board into the gulf when northing is thereby gained, and even to tack with the view of being in shore at night to profit by the land wind. In winter, the N.E. wind is terrible, and is strong from East and E.S.E., with the peculiarity that when it changes to S.E. it is going to South and West to establish itself at N.W., the end of all the gales outside. In summer it also happens that outside the gulf the easterly winds prevail, while inside of them are land and sea breezes, but along with a steady sea from the eastward.

The winds from South and S.W. do not produce much harm in the gulf, and are only felt from Valencia to the northward. With those from S.W. to West and even N.W. a vessel may stand along shore, and will have some shelter from the sea. The N.W., called the Maestral, is the wind that prevails most in summer, and although it is not against vessels crossing the gulf well in shore, it is very troublesome for those well out at sea, which are often obliged to bear up and seek shelter at the Balearic Isles. When the wind from the shore or N.W. comes on after a gale outside, in the first few hours of it it blows very hard in all the gulf, but at noon it will have lost much of its strength. The N.W. wind clears the sky, and, in fact, is always fine; it most commonly blows after rainy weather. Sometimes its approach is announced by a clearness which the atmosphere acquires, distant objects and points of the coast becoming distinctly visible, and also from a small white bank which speedily forms on the horizon and rapidly rises to the zenith. When in the midst of a clear sky a similar mistiness is observed, it is necessary to look to the sails and prepare for a strong breeze, which, unless precautionary measures are taken, will do mischief.

In order to cross the gulf of Valencia with a strong N.W. wind, whether going northward or southward, it should be done sailing free, without caring about losing a little, for as soon as the middle of the gulf is gained the wind itself becomes large and allows a better course

to be steered, and the navigator may conclude that he will soon have it on his quarter. As in all gulfs, the N.W. wind which in the middle blows perpendicular to the line which would mark its two extreme points, it reaches these three or four points on either side of its original direction, off Cape Antonio consequently becoming North, and off Cape Oropesa becoming West.

As easterly winds produce a strong current into the gulf, so fatal to navigators who cross it with them, so with Northwesters another current is formed, which runs out, and which contributes to throw ships to leeward when they cross it with this wind. This last current sets over to Cape Antonio as if the wind were North, and on Cape Oropesa as if it were West, thus forming new obstacles to the navigator against getting into the gulf from its two extremes with winds from inside. Thus it is that sailing vessels find so much difficulty in passing this gulf when a N.W. wind is blowing hard, and have to lay to for them off both capes, or find shelter in some port adjacent that would hold them.

Over the whole shore of the gulf, and particularly in the head of it, in fine weather solar breezes prevail, and are even found in winter if the weather is settled. These set in generally about nine or ten in the morning from the eastward, freshen up as the sun gets high, change to S.E. and South, blowing strongest between noon and 1h. p.m., which is when they become S.S.E., and haul to S.W. to get to the land by sunset and then subside. Two or three hours of calm follow, and then the land wind sets in, which commonly lasts until seven or eight in the morning, when a calm intervenes, waiting for the sea breeze. The pilots of the gulf know well how to profit by these winds, running into it without fear to get hold of the shore, which they do with ease and rapidity.

If in the passage from the Strait of Gibraltar to the ports of the coast of Spain, which we have named above, easterly winds are met with, a ship should keep at a good distance from the shore to profit by the general easterly current. A vessel, for instance, bound to Malaga will gain much to windward by working in mid-channel as far as Point Burra, and in two or three boards might make her port. If she is bound to a place East of Cape de Gat, she should also keep working mid-channel, making her boards shorter from it, in proportion as she is passing the narrows between Spain and Africa.

A vessel bound to Valencia in an easterly wind, should enter the gulf passing South of Isle Formentera, and through the Majorca Channel, for in the narrow of Ivica and Cape San Antonio a current is met with coming out of the gulf which makes it difficult to get on there. Besides, as the currents of the gulf with easterly winds collect all their force in the bight of Gandia, she will be thrown in shore readily by entering by Cape San Antonio. For this reason it will be more prudent to take Valencia on a much higher parallel than that of the cape, and consequently the channel between Majorca and Ivica, and getting to the North of the port of destination to allow for current.

(To be continued.)

A Trip to Tananarivo:—*Madagascar.*

(Concluded from page 305.)

The principal labours of the Hovas of both upper and lower classes is the attendance to oxen, which they obtain from the West coast to sell at Tamatave at a good return. Cows are never sold in commercial intercourse, in the belief, it is said, that the adjacent islands would rear them in abundance, a fact which proves their ignorance that the ground of the neighbouring colonies has a value greater than this would give it. They do not appear themselves to follow the subject of reproduction, for I met with but very few calves in my travels and still fewer cows. Milk by no means forms any portion of the indigenous source of food.

The weavers and forgers are their principal artisans. The former produce, at a price somewhat high, tissue of lively colours but bad hue in cotton striped with blue; vegetable fibres of different values destined for national dresses. The forgers have iron in abundance, that serves for all the articles of their profession. They also work gold and silver, and even make counterfeit coin, the lettering of which is very bad. I have seen these pieces dated 1864, and others in which the letters have been upside down, placed at random, without order or signification. They imitate also musical instruments in copper and give them enormous weight, and make wooden flutes and clarinets.

On the morning of the 11th February I started on my return to Tamatave, the missionaries and traders waited on me with their usual cordiality and we met pleasantly; but the day after I was seized with a violent fever, which kept me to my bed for many days. During this interval the new commandant of the battery, Andriamandroso, failed not in frequently sending to know how I was, and intended also to come and see me as soon as I was recovered. I considered it my duty to communicate to him that I wished him to send my adieus to the king. I was much surprized to find him answering me that he himself had been ill and could not receive me; but heard a little afterwards that we might have an interview at the house of the grand judge, if I considered it desirable. I learnt from this that he was not very desirous of seeing me officially, and I afterwards ascertained this to have proceeded from the orders of Rahanarika. I could accept no compromise in such circumstances, and, although it might, no doubt, have been easy for me to have succeeded with a bribe, I did not choose to adopt this method, and without more ado I informed Andriamandroso that I should represent his conduct to Radama. This menace doubtless made him reflect, for the same evening he sent all his officers to make excuses for him in the humblest manner possible. The refusal had been public, the excuses were published also. I was not for exposing myself to any new caprice, and I refused direct to go and see him; which did not prevent him when I departed from rendering me all the honours of the garrison that I

had received on my arrival, and a salute being given by the guns of the fort.

The foregoing interesting account of a French naval officer, the Baron Brossard de Corbigny, Capitaine de Fregate, is concluded with the following itinerary in Madagascar:—

From Tamatave to Tananarivo.

	h.	m.		h.	m.
Tamatave to Ivondro .	1	30		35	10
Ambodisina, in boat ..	0	35	Beforona (repose)	0	55
Ambalatambako	2	0	Irihitara	1	30
Ankarifonba	0	30	Grand Torrent	1	45
Tranomaro (sleep) ...	0	50	Ambavanihasa	1	25
Tampolo	1	25	Anevoka	1	50
Ampadralokana	0	20	River Analamazaotra .	1	55
Ampanerana	0	45	Village (sleep).....	0	20
Andranakoditra	0	50	River	2	0
Irangy	1	45	Ampatsipothi	0	45
Vavony (sleep).....	1	40	Vehegne	1	40
Andapakameramana..	1	50	Moramangha (sleep) .	1	40
Andevorante (sleep)..	1	40	Andranokobaka	1	35
Marmogue (boat)....	1	35	Andakane	1	25
Boiboizo	1	20	River Mangour	0	15
Moromby	1	35	Andramalaza	0	20
Analamiorika	1	0	Ambodinifody	1	50
Manabonitra	0	55	Ambodinangavo(sleep)	2	15
Andranomofana (sleep)	2	30	Village	0	45
Ambatoharana	3	15	Ankeramodinika	2	50
Mahela	1	50	Soatsimanapiavanana(s.)	2	25
Ampasimbe (sleep)...	2	10	Ambolafoka.....	4	30
Madilo.....	2	0	Andriantsory (sleep)..	2	30
Marozeva	1	20	Tananarivo	0	35
	35	10	Tot. effective travelling	72	10

At a league an hour gives 400 kilometres from Tamatave to Tananarivo, about 250 miles.

We did not anticipate the dire events that have occurred in Madagascar when we commenced the foregoing interesting account of the French Baron's visit to those remarkable people,—that the humane, kind-hearted King Radama II, the friend of the oppressed among his countrymen and, we may say, the liberal minded friend of the foreigner, would so soon have fallen a victim to the barbarity of his people. Yet so it is, and we append to the last of the Baron's papers the following account of the events by which his Queen, Ranavolana, has been proclaimed, and *allowed* to govern Madagascar. They are highly interesting and will form an important addition, showing the state in which Madagascar remains at present.

The first announcement of these events appears to have come from the French consul, and was given by the *Moniteur*. But the letters from our own missionaries throw much additional light on the subject,

and show that Radama, if he had acquired the estimation of foreigners, had still offended the people, represented as they are by a body which judges for itself and determines on what it considers right and wrong for the people, and it is this body that has adopted the initiative on the present occasion. The following is the *Moniteur's* account of the events:—

Tananarivo, April 28th, 1863.

Monsieur le Ministre,—I have the honour to inform you that King Radama has just promulgated a law with the view of terminating the discussions which have arisen between the priests of the idols and the Christians. The following are the circumstances.

For several days a disease has prevailed in the country which produces a kind of hallucination. Aided by this complaint the priests of the idols, instigated, it is said, by personages of high standing, have tried to regain the power they formerly possessed, and to return thus to the former state of things. Many people, in consequence, pretending to be ill, but in reality merely aiding the instigations of the priests, presented themselves before the King, saying they were sent by the old Queen, whom they pretended to see in their hallucinations, and boldly called for the expulsion of the Christians. Popular excitement has resulted from all this, which may, perhaps, become threatening.

The solution which the King will give to this question is impatiently awaited. On the 25th of April his Majesty publicly proclaimed that all provocation offered by the priests of the idols to the Christians, or by the Christians to the priests of the idols, should be heavily fined.

I hope this proclamation will have a good effect. I shall take care, however, if the matter does not stop here, to inform your excellency.

Accept, &c.,

J. LABORDE.

The second despatch is dated May 15th, and it thus commences:—

I have the honour to inform your excellency of the great event which has just taken place at Tananarivo. Radama II. no longer exists, and Rabodo has been proclaimed Queen of Madagascar under the name of Rasoherina. Your excellency will find in the present report all the details of this political revolution. But to fully understand the present position of things we must go back a little.

Two parties surrounded the King. On the one hand were the old officers and the chiefs of the people, with the prime minister and the commander-in-chief at their head; on the other were the Menamaso, that is, the young men who composed the guard of Radama while he was yet prince, and who, upon his accession, took possession of power.

For the last three months especially it was evident that they had destroyed the influence of the superior officers. They appropriated all favours, and suggested measures to the King which the people did not approve. They were accused of injustice and of corruption in the administration of the offices confided to them, and principally in the

administration of justice. Much immorality was said to prevail at the habitual residence of the King at Ambohimitsimbina, which was almost exclusively frequented by the Menamaso. But there was a much stronger cause of division between the two parties—an antipathy of race.

Andrianampoinemerina, the father of Radama I., was from the north of Emerina. He was assisted by the people of the North in forming a kingdom by the union of twelve small states. Favours had naturally been distributed to the people of the North, and the Menamaso were from the South. Moreover, the ministry had always been the appanage of the highly influential family of the former Commander-in-Chief, Rainikaro. Now, though the title of Prime Minister and Commander-in-Chief remained in this family, its influence was absorbed by that of the Menamaso. Matters being at this point, a mere pretext was sufficient to cause hostilities.

The King furnished it by publishing a law which authorised duels, and even combats between tribe and tribe, village and village, without any other formality than the consent of the two parties. This was proclaiming civil war.

The report goes on to state that on the day after the promulgation of the law the officers and the principal persons waited upon the King and begged him to revoke this measure. He had agreed to do so, when one of the officers made use of some offensive expressions. The King at once rose, withdrew his promise, and formally declared that the law should be maintained come what might. Thereupon the struggle began.

The French Consul assembled all his fellow-countrymen, and the English Consul wished the Methodist missionaries to take a similar course, but they did not respond to his invitation.

The King having again refused to revoke the law, the people, slaves, and soldiers assembled in the public places to search for the thirty-three individuals belonging to the King's court who had been proscribed by the conspirators. Eleven were killed by the multitude. While this was going on negotiations were entered into with the King, who asked mercy for the unfortunate men remaining, who, he promised, should be exiled for life. This was refused by the conspirators, who demanded that the guilty should undergo perpetual imprisonment in chains. The King would not at first comply with this demand, but, after much parleying, ended by accepting it.

The following day the King was assassinated, and the council proclaimed Queen Rabodo, announcing that the King, disconsolate at the loss of his friends, had committed suicide. The Queen accepted the constitution, which stipulates among other things, that she shall not drink strong liquors, and that the right over life and death belongs to the council. It also maintains the Tanguin, and the abolition of religious liberty. The Prime Minister informed M. Laborde that he had sent orders to the Governors on the coast to protect the whites.

M. Laborde states in conclusion that the King, while besieged in

his palace, twice wrote to him for assistance, but that the letters were intercepted. "I could not, moreover, render him any aid," he adds, "the interests of my countrymen enjoining upon me the utmost reserve, and being myself watched."

The *Moniteur* also contains an account of the revolution from a private correspondent. The writer says that Radama II was strangled with a rope while his friends were being massacred. The actual perpetrators of the crime, according to this authority, were twelve persons under the influence of the hallucinations referred to in the French Consul's first communication.

We now add the account given by letters to the London Missionary Society:—

Mission-House, Blomfield Street, Finsbury, London, July 7th, 1863.

The announcement of these unexpected events, by telegraph on the 2nd instant, could not fail to awaken the most painful surprise and bitter disappointment in the minds of all friends of civilization and social improvement, especially among the supporters of Christian missions, who had cherished sanguine hopes, and put forth corresponding exertions, for the diffusion of Christianity on behalf of the numerous and benighted population of Madagascar.

The letters received by the Indian mail yesterday confirm the two important and painful facts previously announced, and the Directors of the London Missionary Society embrace the earliest opportunity of communicating to their constituents, and to the Christian public in general, the intelligence which they have received from the Rev. William Ellis, who was a witness of the affecting events which he describes.

In consequence of the non-intercourse between Madagascar and Mauritius during the unhealthy and dangerous season of spring, no intelligence has been received from the island for the last five months, and during this period the extraordinary events narrated by Mr. Ellis have occurred.

The letter of our esteemed friend will excite equal surprise and pain, as it applies to the character and conduct of the late King, representing him as the subject of a strange delusion, and the victim of interested, fanatical, and abandoned men. That Radama was the sincere friend of the oppressed Christians for several years during the tyrannical reign of the late Queen, we have the strongest evidence. His utmost influence was exerted to protect them from persecution and to deliver them from bondage, and his own life was often risked for their preservation. Since his accession to the throne the same disposition has characterized all his public proceedings; and while he has proclaimed just and equal liberty to all classes of his subjects, he has afforded special countenance and encouragement to the native Christians in the profession and diffusion of the Gospel.

But although Radama was distinguished by many amiable qualities,—by an instinctive hatred of cruelty,—by great respect to Mr.

Ellis and his associates, and by an evident interest in their instructions,—yet he never avowed himself a Christian, nor intimated his intention of becoming one. Indeed, it was an occasion of habitual regret to his best friends that his excellent qualities were not only found in connexion with great infirmities, but with positive evils. His impulsive and excitable temperament exposed him to the snares which unprincipled foreigners threw around him, and, more recently, his midnight dissipation appeared in strange contrast with his professions of interest in Christianity and respect for its teachers.

Mr. Ellis, writing to a friend by the last mail, gives the following statement in reference to this painful subject:—"One of the items in the document containing the principles of government adopted by the present Queen is that which requires the sovereign of Madagascar to abstain from all spirituous liquors. They ascribe much that is to be deplored in Radama's character to his having been so easily intoxicated, and are determined, if it be possible, to prevent this evil for the future. This was the weak point which laid Radama open to bad advisers; hence the cruelty and treachery of foreign intriguers, who took advantage of his weakness and excitement, which they themselves brought on, to accomplish purposes which he would not have entertained in his sane moments. It was under the influence of their wine that he signed the fatal treaty with a well known foreigner, and other documents which he did not understand, and it was this evil which finally accelerated the loss of his reason and his life."

Mr. E. adds:—"The King was also addicted to many superstitious notions about dreams and spiritual agencies, habitually enforcing any argument with the expression that he believed it, for it was right because 'God told him so.' Any account of supernatural appearances or phenomena had a peculiar charm for him, much more so than any direct reasoning upon cause and effect. I cannot believe he was a party to the murderous project against my life, but I rather believe that from many combining causes he had become completely bewildered and alarmed, and that he finally lost his reason."

At a similar conclusion devout and intelligent readers will probably arrive, from the contents of the following letter, and it may awaken feelings of compassion for the misguided King who so unaccountably became the instrument of designing men in their deadly hatred to the cause of Christ, and who appeared to sanction and encourage deeds of cruelty and blood, so utterly repugnant to his former disposition and habits.

What permanent results may follow the establishment of the new government in Madagascar none can foretell. In the change from absolute despotism to an approach to constitutional government Englishmen must heartily rejoice. But whether the influential classes in Madagascar sincerely value or know how to improve these good principles time only can determine. It will be seen that Mr. Ellis and his associates regard the change more than hopefully, and determine, by God's help, to work with zeal and vigour in His service while the opportunity is given. To afford them our best support and

kindest encouragement in the prosecution of their labours is our obvious duty; and, while recognising the overruling wisdom, power, and grace of God in all that affects the interests of His church, we should thankfully acknowledge the protection vouchsafed to His servants in the hour of their peril, humbly depend upon His watchful providence for their future safety, and implore the blessings of His grace for the success of their labours.

Signed on behalf of the Directors of the London Missionary Society,

ARTHUR TIDMAN, } *Secretaries.*
EBENEZER PROUT, }

Antananarivo, May 16th, 1863.

My dear Friend,—Seldom has the instability of human affairs been more strikingly and, in some respects, tragically manifested, than in the events of the last few days in this city. Within that period the reign of Radama II. has closed with his life; a successor has been chosen by the nobles and accepted by the people; a new form of government has been inaugurated, and it is arranged that the legislative and administrative functions of the sovereignty shall hereafter be discharged by the sovereign, the nobles, and the heads of the people jointly. A series of resolutions embodying what may be regarded as the germs of constitutional government, has been prepared and presented by the nobles and heads of the people to the Queen, containing the conditions on which they offered her the crown. The acceptance of these conditions by Rabodo, and their due observance by the nobles and heads of the people, were attested by the signatures of the Queen and the chief of the nobles, before the former was announced to the people as their future sovereign, and proclaimed under the title of Rasoaherena, Queen of Madagascar. The death of Radama, the offer and acceptance of the crown, and the proclamation of the present ruler as Queen, all occurred on Tuesday, the 12th inst.

Amiable and enlightened as in several respects Radama certainly was, his views of the duties of a ruler were exceedingly defective, and almost all government for the good of the country may be said to have been in abeyance ever since his accession. The destruction of a large part of the revenue of government by the abolition of all duties; the exclusion from his councils of many of the nobles and most experienced men in the nation, while he surrounded himself with a number of young, inexperienced, and many of them most objectionable men as his confidential advisers; the relaxation or discontinuance of all efforts to repress crime, or punish it when committed; and the neglect of all measures for placing the prosperity of the country on any solid basis, have, notwithstanding the affection many of the people bore him, produced growing dissatisfaction. Still, confiding in his good nature, all were willing to wait in hope of a change for the better; while the Christians, grateful for the liberty they enjoyed to worship, teach, and extend the knowledge of Christianity, directed their chief

attention to the enlightenment of the masses of their heathen countrymen.

Within the last two or three months extraordinary efforts have been made to bring the King's mind under the influence of the old superstitions of the country, and these have succeeded to an extent which has resulted in his ruin. Within this period a sort of mental epidemic has appeared in the adjacent provinces and in the capital. The subjects of this disease pretended to be unconscious of their actions, and to be unable to refrain from leaping, running, dancing, &c. These persons also saw visions and heard voices from the invisible world. One of these visions, seen by many, was the ancestors of the King, and the voices they heard announced the coming of these ancestors to tell the King what he was to do for the good of the country. Subsequently a message was brought to him as from his ancestors, to the effect that, if he did not stop "the praying," some great calamity would soon befall him. To the surprise of his best friends, the King was exceedingly interested in this strange movement, seemed to believe the pretended messages from the world of spirits, and encouraged the frantic dancers who daily thronged his house, and declared that the disease would continue to increase till "the praying" was stopped. It is generally reported that these movements were prompted by the guardians of the idols, and promoted by his own Menamaso,* who bribed parties to come as sick persons in large numbers from the country in order to continue the delusion.

It was then proposed to assassinate a number of the Christians as a means of stopping the progress of Christianity, and also to kill the chief nobles who opposed the King's proceedings. With a view of increasing the influence of this fanatical party, the King issued an order that all persons meeting any of the so-called sick should take off their hats, and thus show them the same mark of respect as was formerly given to the national idols when they were carried through the city. With the view also of shielding the perpetrators of the intended murders, the King announced his intention to issue an order or law that any person or persons wishing to fight with fire-arms, swords, or spears, should not be prevented, and that if any one were killed the murderer should not be punished. This alarmed the whole community. On the 7th instant Radama repeated before his ministers and others in the palace his determination to issue that order; and among all the Menamaso present only three opposed the issuing of the order; many were silent, the rest expressed their approval. The nobles and heads of the people spent the day in deliberating on the course they should pursue, and the next morning the prime minister, with about one hundred of the nobles and heads of the people, in-

* Menamaso, literally, red eyes. These are not the acknowledged ministers of the King, but a sort of inquisitors, supposed to investigate and search out everything tending to the injury of the government, and to give private and confidential intimation to the King of all occurrences, as well as advice on all affairs; and their eyes are supposed to be red with the strain or continuance of difficult investigations.

cluding the commander-in-chief, the King's treasurer, and the first officer of the palace, went to the King, and remonstrated against his legalising murder, and besought him most earnestly not to issue such order. It is said the prime minister went on his knees before him, and begged him not to issue this obnoxious law; but he remained unmoved. The minister then rose and said to the King, "Do you say before all these witnesses that if any man is going to fight another with fire-arms, sword, or spear, that you will not prevent him, and that if he kills any one he shall not be punished?" The King replied, "I agree to that." Then said the minister, "It is enough; we must arm;" and, turning to his followers, said, "Let us return." I saw the long procession as they passed my house, grave and silent, on their way to the minister's dwelling. The day was spent in deliberation, and they determined to oppose the King.

Towards the evening I was most providentially preserved from assassination at the King's house; five of his confidential advisers,—*i. e.* the Menamaso—having, as I have since been well informed, combined to take my life, as one of the means of arresting the progress of Christianity. Under God, I owe my preservation to the warning of my friends, and the provision made by the prime minister for my safety. I went to the King an hour earlier than usual, and returned immediately, to prepare for removal to a place of greater safety near my own house. Messengers from the minister were waiting my return, and before dusk I removed to the house of Dr. Davidson, which stands on the edge of Andohalo, the large space where public assemblies are often held. The city was in great commotion; all night women, and children, and slaves, with portable valuables, were hurrying from the city, while crowds of armed men from the suburbs were crowding into it.

At daybreak on the 9th some two thousand or more troops occupied Andohalo. The ground around the prime minister's house, on the summit of the northern crest of the mountain close by, was filled with soldiers, while every avenue to the city was securely kept by the minister's troops. The first object of the nobles was to secure upwards of thirty of the more obnoxious of the Menamaso, whom they accused of being the advisers and abettors of the King in his unjust and injurious measures. A number of these were taken and killed, a number fled, but twelve or thirteen remained with the King. These the nobles required should be surrendered to them. The King refused, but they threatened to take them by force from the palace, to which the King had removed. Troops continued to pour in from adjacent and distant posts; and as the few soldiers with the King refused to fire on those surrounding the palace, the people, though pitying the King, did not take up arms in his defence. He consented at length to surrender the Menamaso, on condition that their lives should be spared, and that they should be confined for life in fetters. On Monday, the 11th, they were marched by Andohalo, on their way to the spot where the irons were to be fixed on their limbs.

In the course of the discussion with the nobles the King had said

he alone was sovereign, his word alone was law, his person was sacred, he was supernaturally protected, and would punish severely the opposers of his will. This led the nobles to determine that it was not safe for him to live, and he died by their hands the next morning within the palace. The Queen, who alone was with him, used every effort, to the last moment of his life, to save him,—but in vain. His advisers, the Menamaso, were afterwards put to death.

In the course of the forenoon, four of the chief nobles went to the Queen with a paper, which they handed to her as expressing the terms or conditions on which, for the future, the country should be governed. They requested her to read it, stating that if she consented to govern according to these conditions, they were willing that she should be the sovereign of the country; but that if she objected or declined, they must seek another ruler. The Queen, after reading the document, and listening to it and receiving explanations on one or two points, expressed her full and entire consent to govern according to the plan therein set forth. The nobles then said, "We also bind ourselves by this agreement. If we break it, we shall be guilty of treason, and if you break it, we shall do as we have done now." The prime minister then signed the document on behalf of the nobles and heads of the people, and the Queen signed it also. The chiefs of the nobles remained in the palace, and between one and two o'clock the firing of cannon announced the commencement of a new reign.

Between three and four o'clock a party of officers came with a copy of this document, which they read to us. I can only state two or three of its chief items. The word of the sovereign alone is not to be law, but the nobles and heads of the people, with the sovereign, are to make the laws. Perfect liberty and protection are guaranteed to all foreigners who are obedient to the laws of the country. Friendly relations are to be maintained with all other nations. Duties are to be levied, but commerce and civilisation are to be encouraged. Protection and liberty to worship, teach, and promote the extension of Christianity, are secured to the native Christians, and the same protection and liberty are guaranteed to those who are not Christians. Domestic slavery is not abolished; but masters are at liberty to give freedom to their slaves or to sell them to others. No person is to be put to death for any offence by the word of the sovereign alone; and no one is to be sentenced to death till twelve men have declared such person to be guilty of the crime to which the law awards the punishment of death. An hour afterwards we were sent for to the palace that we might tender our salutations to the new sovereign, who assured us of her friendship for the English, her good will to ourselves, and her desire to encourage our work. I cannot add more now. We are all well.

Yours truly,

W. ELLIS.

Rev. Dr. Tidman.

P.S.—*June 17th.*—Everything is going on well. The new Queen

has written to Queen Victoria and to the Emperor of the French, announcing her accession to the throne, her wish to maintain unimpaired the relations of amity and friendship established between the two nations and Madagascar, and assuring both sovereigns that she will protect the persons and property of their subjects who may come to this country. The officer who gave me this statement informed me also, with evident pleasure, that all the members of the government had carefully examined the treaty with England, and agreed to accept it, and fulfil its conditions. I am well, and as strong for work as I ever felt since my arrival in Madagascar. Our missionary prospects seem to rest on a better foundation than ever.

Positions of Reefs and Towns on the Coast of Siam.

Bangkok, Siam, May 27th, 1863.

Sir,—In the course of some coasting trips between this place and Chanthabun I have been told of the understated reefs, which I believe are unmarked in the latest charts:—

Name of Reef.	*Latitude.*	*Longitude.*	*Position: How Known.*
1. Hin Ai Lao	12° 31′ 24″	101° 54′ 25″	Ascertained by myself.
2. Alabaster Reef	12 20 36	102 1 17	
3. Hin Ai Lorp	12 35 25	101 46 30	Native informat.
4. Chong Samit Reef	12 34 30	101 25 0	Ditto.
5. Nameless (near Koh Koi)	12 34 25	101 29 45	Ditto.
6. Nameless (South of Koh Samit)	?	?	An Englishman trading on coast.

1. *Hin Ai Lao.*—The determination is nearly accurate, though possibly a few hundred yards out. (I, of course, only mean the relative place on the chart.) The position given is that of the outer principal reef—there being three in all,—of which a mass about sixty fathoms in length lies exposed to a height of about three feet at low water. The middle reef, of which about forty fathoms' length is bare at low tide, lies about 300 fathoms inside it, in a direct line between it and the shore. The inner, which is scarcely, if ever, exposed, lies about 150 fathoms inside the second. The whole seem to be coral.

Probably many smaller patches of rock lie scattered between those mentioned. The natives say there is a channel between the reefs for boats of light draft (up to six feet) but that it is tortuous and dangerous. The outer reef rises suddenly from four and five fathoms water.

2.—A rock* without a name. Position carefully ascertained by myself (whilst standing on it) by means of an azimuth compass and sextant. The group lies directly opposite the mouth of the Chanthabun River, 7½ miles distant from Cone Island (Koh Nom Sao), the true bearing of which is N. 5° W.

It consists of two rocks, distant about forty feet, the largest about fourteen feet long and five broad. At low water neap tides shows itself about three feet above the water-line. As the tide rises it breaks first over the centre of the rock; hence a tale among the fishermen that it is a triple group. At an ordinary high tide the rock would have four feet water on it. The smaller rock, lying about forty feet to the N.b.E., is about one foot less in height.

The rocks rise perpendicularly from 2 fathoms water. The passage between them at low tide has 2½ fathoms. For about 200 feet all round there is rocky bottom, with soundings to 4 fathoms; outside this, sand with soundings gradually increasing to 9 fathoms. In the N.b.W. direction the rocky bottom extends further, about 500 or 600 feet, the soundings being—at 200 feet, 3½ fathoms; at 400 feet, 4½ fathoms; and at 600 feet, 7½ fathoms, with sandy bottom.

Fishermen say they can trace a line of rocky bottom, or, as they call it, a bridge, from hence to Cone Island.

3. *Hin Ai Lorp.*—I was unable to stay to find this. Native pilots say it lies in a direct line between Koh Man Klang (in the map Koh Mon Klang) and Tung Kaben, about five miles distant from the latter. Some say that it is visible at all states of the tide, others that high tides cover it.

4. *Chong Samit Reef.*—I cruized vainly in search of this, yet all the native pilots declare that it exists and I am inclined to believe them. They say it lies towards the western end of the strait, about mid-channel, and their direction for avoiding it is—"If on entering the straits from the westward you sight Koh Plateen, stand over close to the mainland; if you do not sight Koh Plateen keep as near as possible to the island."

5.—A reef jutting out some distance from the S.E. corner of Koh Koi. My native pilot is the only authority for this, which is not of much consequence. A large junk is said to have been lost on it last year.

6.—Vague reports exist as to a reef or two reefs near the South of Koh Samit, not marked in the chart.

Her Majesty's Hydrographer once did me the honour personally to express the interest he felt in even the most trifling point of geographical information, especially referring to the native names of places and their meaning, I am therefore emboldened to add the following corrections of names and a list of some of the towns and provinces.

Double Head, lat. 13° 18′, long. 100° 53′. The native name is Lem Samook, "The Nose Point."

Koh Nak, lat. 13° 1′ 30″, long. 100° 48′ 20″. The native name is Koh Nok, "The Isle of Birds."

* Called now on the chart Alabaster Reef.

A reef, lat. 12° 42′ 16″, long. 100° 47′ 40″. The native name is Kwai Wing Lai Ngua, "The Buffaloes Chasing the Bulls."

Sombrero Rock, lat. 12° 41′ 18″, long. 100° 47′ 40″. The native name is Hin Look Khai, "The Egg Rock" (?)

Koh Thi, lat. 12° 36′ 10″, long. 100° 54′. Koh To-ke, "The Alligator Island."

Rayong River, lat. 12° 40′, long. 101° 9′ 52″. This is not the Rayong River, but the Klong Ta Kuan.

Village,* lat. 12° 39′ 45″, long. 101° 14′ 15″. This is the mouth of the Rayong River.

Koh Tulu, lat. 12° 33′ 20″, long. 101° 33′. Or Koh Taloo, "The Island with a Hole through it."

Mon Uy, lat. 12° 35′ 35″, long. 101° 40′ 30″. Koh Man Nai, "Central Potato Island."

Mon Klang, lat. 12° 35′ 35″, long. 101° 40′ 30″. Koh Man Klang, "Central Potato Island."

Koh Mon, lat. 12° 35′ 35″, long. 101° 40′ 30″. Koh Man Nok, "Outer Potato Island." (The vowel sound is that of the u in sun.)

Parat, lat. 12° 41′ 35″, long. 101° 46′ 10″. Should be Pang Rat.

Cone Island, lat. 12° 27′ 25″, long. 102° 0′ 42′. Native name Koh Nom Sao, "The Virgin's Breast."

As a rule, the names in the chart are remarkably accurate.

The following is a list of some of the towns, &c. :—

Baughia, large village, lat. 13° 29′ 15″, long. 100° 47′ 30″. The creek is marked in the chart.

Ban Lamung, large village, capital of a district, lat. 13° 3′, long. 100° 53′ 45″. The creek is marked in the chart.

Nah Kleua, large village, lat. 12° 58′ 44″, long. 100° 54′. The creek is marked in the chart.

Satahip, village, lat. 12° 39′ 45″, long. 100° 53′ 15″.

Paknam Rayong, village, lat. 12° 39′ 45″, long. 101° 14′. The village marked.

Lem Saraphin, cape, lat. 12° 38′ 30″, long. 101° 37′ 25″. (This position given me by a native.)

Paknam Wen, river estuary, lat. 12° 18′, long. 102° 15′. This river leads to a large pepper district named Meuang Keeung.

If considered desirable I can give the names of several other small villages and islands, but they are of very small importance.

The provinces are:—From Bangpakong River to Double Head, Bangplasoi or Chonburi. From Double Head to Cape Liant the districts are not of provincial rank. From Cape Liant to Chong Samit, Rayong. From Chong Samit to opposite the upper end of Koh Chang, Chanthabun. From thence downwards, round about the Tung Yai Estuary, a small province, Meuang Krat.

I have, &c.,

HENRY ALABASTER.

Sir R. Schomburgk, H.M. Consul, Siam.

* This misplacement of the Rayong River is the only mistake of any consequence. Rayong is a provincial capital, about four miles up the river.

REPORT ON DAHOMEY.—*By Commodore Wilmot, H.M.S. "Rattlesnake." Presented to the House of Commons.*

This is one of the most interesting reports ever presented to Parliament. It shows in true colours the real state of things in Dahomey, and without exaggeration those grand customs which are kept up by the slave trade. Instead of an army of soldiers composed of men, we here see it formed of women. There need be no marvel at this. If the slave trade deprives the King of Dahomey of his male subjects as well as the nations with whom he makes war, yet soldiers he must have, and why not the women whom they as slaves have left behind? and the female material in its rough condition fresh from the hand of Nature appears, according to Captain Wilmot's report, to furnish their sovereign ruler with a very good substitute for the composition of his army. So that both male and female are thus turned to account.

The *Athenæum* informs its readers that—

The King of Dahomey has recently obtained the reputation of being one of the chief promoters of slave traffic; hence English cruizers and English missionaries have been hovering about his territories. Towards the end of last year, Commodore Wilmot, of the *Rattlesnake*, was informed by the Rev. P. W. Bernasko, Wesleyan missionary in the English fort, that the King of Dahomey was most anxious to see somebody of consideration from England—"a real Englishman"—with whom he might converse on the affairs of his country. Having mentioned this to the Yavogah of Whydah, the latter said, "If you will come back again seven days, I will send to the King, and let you know if he will see you." He accordingly sent to the King, saying that Mr. Wilmot was a "good and proper person, come out as a messenger from the Queen of England." Before making up his mind to accept the King's invitation, there were many points, Mr. Wilmot tells us, to be considered. It had been said that our late attack on Porto Novo had enraged the King's mind to such an extent that he had expressed a strong desire to lay hands upon an English officer in order to avenge the destruction of that place. Porto Novo belongs to his brother; and the European residents at Whydah had spread the most alarming reports of the disposition of the King towards Englishmen, and his hatred of them. But after mature consideration he resolved to go, and place implicit trust in the King's good faith.

Having made preparations for an absence of fourteen days, he landed on the 22nd of December, in company with Captain Luce and Dr. Haran, of the *Brisk*, who had volunteered to accompany him. The *Rattlesnake* and the *Brisk* were sent to cruise, and both vessels were ordered to return on the 14th of the next month. The three Englishmen were conveyed in hammocks across the lagoon and through the wet marshy ground, almost impassable in the rainy months, to a large tree at the entrance of Whydah, where certain ceremonies were gone through as a welcome. They were received most cordially by the

Yavogah and other officials, with drums beating, colours flying, muskets firing, cabooceers as well as soldiers dancing, and the latter singing warlike songs. "We were also treated," remarks the commodore, with the simplicity of a man accustomed to strange sights, "to the manœuvres of a slave-hunt." The Yavogah and chiefs accompanied them to the English fort, where the King's stick was presented, and the healths of the Queen of England and the King of Dahomey were drunk.

Having secured hammock-men, carriers for luggage, and guides, and being furnished with a body-guard of soldiers, they started the following afternoon, accompanied by the Rev. Mr. Bernasko and his servants. They arrived at Cannah, eight miles from Abomey, in the evening, when the King was holding his court. At all places on the road the head men turned out with their soldiers, and received the strangers with firing, dancing, and the usual presents of water, fowls, and goats. Speeches were made expressive of their desire to go to war and cut off heads for their master. The war-dance was performed by women and children, and motions made with swords as if in the act of decapitating their enemies. This show of war did not interfere with hospitality, for at the villages where they slept, comfortable quarters had been provided, and water furnished. The latter is, however, denounced by the Commodore as very bad, scarce, and unwholesome. The King had sent three of his sticks by special messengers to meet them on their way, with inquiries about their health; and at ten o'clock on the morning of the 10th he summoned them to his reception. They went in full dress, and remained under some large trees, in an open space.

After a short time, the chiefs arrived in succession with their followers, according to their rank, and were duly introduced, the same drumming, firing, dancing, and singing being carried on as at Whydah. When this, which occupied a considerable time, was over, the Commodore and his companions got into the hammocks and went to the palace, outside of which, in a large square, were assembled all the chiefs with their people, as well as large bodies of the King's soldiers. The gaudy colours of the large umbrellas, the dresses of the headmen, the firing of the muskets, the songs of the people, the beating of the war-drums, the savage gestures of the soldiers, and their ferocious appearance, made the travellers at first a little uncomfortable. All, however, treated them with marked respect, while, according to custom, they were carried three times round the square. After the third time, they got down and entered the palace-gates, passing through a row of chiefs on each side. They found the court-yard of the palace presenting a spectacle not easily forgotten. At the further end was a large building, of some pretensions to beauty in that country, being made of thatch, and supported by columns of wood, roughly cut. In front of this, and close to it, leaving an open space for admission to the King, was placed a large array of variegated umbrellas, to be used only by the sovereign, Near these were congregated his principal chiefs. On either side of him, under the building, were his wives to

the number of about one hundred, gaily dressed, most of them young and exceedingly pretty.

The King was reclining on a raised dais, about three feet high, covered with crimson cloth, smoking his pipe, whilst one of his wives held a glass sugar-basin as a royal spittoon. He was dressed very plainly, the upper part of his body being bare, with only a silver chain holding some fetich charm round his neck, and an unpretending cloth around his waist. The left side of the court-yard was filled with Amazons, from the walls up to the King's presence, all armed with various weapons, such as muskets, swords, gigantic razors for cutting off heads, bows and arrows, and blunderbusses. Their large war-drum was conspicuous, being surrounded with human skulls.

The visitors adavnced with due form and ceremony to where the King was sitting; and, when close to him, all the respect due to royalty was paid by bowing, which he gracefully acknowledged by bowing himself, and waving his hand. Having sat down close to him, in chairs that had been brought from Whydah, the conversation commenced with the usual compliments. He asked about their health, and how they got on during the journey. He then inquired about the Queen and all her family, asking many questions about the form of government in England. Mr. Wilmot said the Queen sent her compliments to him, and hoped he was quite well, at which he seemed much pleased; but this being only a visit of introduction, nothing political was entered into. The King then gave orders for his Amazons to perform a variety of movements, which they did most creditably. They loaded and fired quickly, singing songs all the time. In Mr. Wilmot's opinion they are a very fine body of women, and are very active in their movements, being remarkably well limbed and strong. No one is allowed to approach them except the King, who lives amongst them. They are first in honour and importance. All messages are carried by them to and from the King and his chiefs. Every one kneels down while delivering a message, and the men touch the ground with their heads and lips before the King. The women do not kiss the ground nor sprinkle themselves with dust as the men do.

When a man appears before the King he is obliged to perform the ceremony of covering his head and upper part of his body with dust before he rises, as much as to say, "I am nothing but dirt before thee!" Though the commodore admits that this is rather a degrading spectacle, he says, "but after all, it is only the custom of the country." After the Amazons had finished the manœuvres, they came to the strangers and gave them their compliments, singing songs in praise of their master, and saying they were ready for war, suiting the action to the word by going through the motions of cutting off heads. The King then introduced all his princes, chiefs, and warriors, in succession, according to rank; then the chiefs and captains of the Amazons; then the princesses, daughters of the late King; in fact, he brought up and named one by one everybody of importance in his kingdom, including the mother of the King and the mothers of his principal chiefs. After each group was introduced, a bottle of rum was given, the usual pre-

sent after such a ceremony, and a signal that they had permission to retire. To the head chiefs a glassful each was presented, which was drunk by themselves or given to one of their followers. When once in the King's presence, or in his capital, no one, European or native, can leave without this customary present. After all the presentations, the King called the Amazons again to salute the strangers, and then offered them water and spirits, which he drank with them; and thus terminated the first visit. No one is permitted to see the King drink; all turn their faces away, and a large cloth is held up by his wives while the royal mouth takes in the liquid.

When the visitors were going away the King got up, it being almost dark, and walked side by side with them across the court yard, through the gates, and nearly half a mile on the road towards their house, which was considered a great compliment. The whole court followed, with the exception of the Amazons and the wives, who never join in such processions. The soldiers shouted and sang their war songs, while certain chiefs went in front of the King to clear the road and point out any dirt or inequalities of ground before the feet royal. The sight was imposing, and impressed Mr. Wilmot with the power of the King amongst his people. He seemed much feared as well as much beloved. Indeed, he appears to have produced no small effect on the commodore himself, who describes him as a very fine looking man, upwards of six feet high, broad-shouldered, and with a pleasant countenance when he likes. His eyes are blood-shot. He is a great smoker, but does not indulge much in the bottle. His skin is much lighter than that of most of his people, resembling the copper colour of the American Indians. He is very active, and fond of dancing and singing, which he practises in public during the "customs." He is an admirer of the fair sex, of whom he possesses as many as he likes. He is about forty-three years old. Before leaving the palace, the King saluted the Queen with twenty-one guns, from pieces of all sizes, the largest being a 3-pounder. These guns are usually carried on men's heads, and occasionally placed on the ground and fired off. The King also saluted his visitors with nine guns. The number of guns fired was shown by a corresponding number of musket-balls produced in an iron pot.

On arriving at their quarters after this day's ceremony, the Prince, who had accompanied them from Whydah, asked for a present for the soldiers and Amazons. He said, he hoped they would not make him ashamed before his people, as he had brought the party up, and was ordered to attend upon them. Mr. Wilmot immediately acquiesced, and made them a handsome present, which was thankfully acknowledged. Whenever strangers meet, they either drink with each other on their first arrival, or when they are about to depart. Of course, our countrymen had always to submit to this, which caused a great drain upon their resources. Next day, the King's jesters danced before them. One of the Amazons, in firing, had injured her hand very much by the bursting of the musket, and a messenger arrived from the King with a request that the doctor might be allowed to attend her. This was granted, and Dr. Haran saw her twice a day until the wound was

healed and a perfect cure made. The wound was a very severe one, and Mr. Wilmot thinks it was fortunate for the Amazon that the skill of Dr. Haran was called in.

The commodore has no small opinion of his own tact. He says:—"I have reason to believe that my line of conduct was rewarded by the whole country being laid open before us, and the whole people, King, chiefs, and all, being our friends. The greater part of what we saw I firmly believe was entirely got up for my sake, and certainly no white man ever saw what we did, or were treated with such marked consideration."

While at Cannah the King invited them on the afternoon of two days to witness the firing of his Amazons and soldiers with ball at a mark. They found him about two miles outside the town in a very large open space which had been cleared away, surrounded by his chiefs and people, to the number of several thousand, preparing to practise at a number of goats, which were tied to stakes driven in the ground at intervals of about fifteen yards, under a mud wall of considerable length, and about ten feet high. The King received them very cordially, and told the Prince to place them under his own umbrellas in a convenient place for seeing everything. The firing commenced, and the King's body guard of Amazons distinguished themselves as good shots. The King fired several times himself. The soldiers fired also exceedingly well, and taking into consideration the quality of the flint musket and the iron ball, which is jagged and fits loosely in the barrel, the display they made astonished the strangers. Several goats were killed, and on the second day four of those despatched were sent to Mr. Wilmot as a present. These had been selected by the Amazons as a particular present to the visitors, and until they were killed no other goat was fired at. The firing was very rapid, and the ladies' weapons were well handled. Some heads were cut off during the night, and this appears to be the practice whenever the King returns to his capital. Eight heads were in the doorway of the palace on the following morning, and more of these trophies were inside. Mr. Wilmot and his companions remained in Abomey five weeks, and daily witnessed scenes of a very extraordinary character, such as the dancing of the Amazons, their warlike songs, the dancing and songs of the soldiers, the distribution of presents to the princes, chiefs, captains, and head men of the troops the "passing" of the King's drummers, of the captains of the Amazons, of the King's jesters, and of a variety of other people which appear before the King during the "customs."

Upon the last day but one of the "customs," late in the afternoon, a large body of soldiers, with their attendants carrying their camp equipage, made their appearance from a place about three days' journey in the interior, belonging to the King. These men had been sent to the assistance of a small town belonging to a chief on friendly terms with the King, who had been threatened by the Abbeokutans, and who had applied to Abomey for assistance. The King had granted the assistance required, and despatched two of his head warriors with about 600 men for this purpose. When these men arrived at the

town, they found that the Abbeokutans, hearing of their approach, had run away, and hence their return to Abomey. As usual, on their return the King made them a long speech and gave them presents.

On the Saturday, six days after the English party's arrival at Abomey, the King saw them privately in his own palace, and they gave him the presents brought up for the occasion. He was attended by six of his Privy Council, his most trusted friends; also by five of his principal wives. He would only receive the presents from Mr. Wilmot's hands. He gave him first the picture of the Queen, saying that Her Majesty had sent this out to him as a mark of her friendship, and her wish to be on good terms with him. He took it in his hands and admired it very much. In this picture the Queen is represented in her coronation robes, with crown on her head and sceptre in her hand. The frame is very handsome, and the picture is a large one. After looking at it attentively, he asked many questions concerning the dress, and then said, "From henceforth the Queen of England and the King of Dahomey are one. The Queen is the greatest sovereign in Europe and I am King of the blacks. I will hold the head of the Kingdom of Dahomey, and you shall hold the tail." Mr. Wilmot then gave him a few small presents from himself, with which he was very much delighted, and grasped him warmly by the hand. His council participated in these feelings, and said, "At last good friends have met."

Then commenced the delivery of the message which the Commodore thought it his duty to lay before the King. The first subject was the Slave Trade, on which he argued apparently at great length. He then gave the King an admonition about human sacrifices, and the threatened occupation of Abbeokuta, winding up with the suggestion of an embassy, an extension of trade and missionary schools. The King listened attentively to the message, and made several remarks during its delivery. The usual ceremony of drinking was not forgotten, and he accompanied Mr. Wilmot through the gates of the palace far on the road to his quarters, amidst the cheers of the soldiers and people. They remained a month in Abomey after the delivery of this message, in consequence of the "customs" going on. Nothing could persuade the King to let them go until this was over, as he was most anxious that they should see everything and report it.

They saw the royal treasures pass round in the interior of the palace, preceded by all the principal ministers, princes, and chiefs, in their court costume. The captains of the Amazons passed round in the same way. The costume worn, the different colours displayed according to etiquette, the ornaments of silver round the necks, with an occasional skull at the waist-belt of the Amazons, and the half-savage appearance of all, notwithstanding their good manners and modest behaviour, were peculiarly interesting. It was during the procession of the King's treasures, that the "human sacrifices" came round, after the cowries, cloths, tobacco and rum had passed, which were to be thrown to the people. A long string of live fowls on poles appeared, followed by goats in baskets, then by a bull, and lastly half

a dozen men with hands and feet tied, and a cloth fastened in a peculiar way round the head.

A day or two after these processions, the King appeared on the first platform: there were four of these platforms, two large and two small. His father never had more than two, but he endeavours to excel him in everything, and to do as much again as he did. If his father gave one sheep as a present, he gives two. The sides of all these platforms were covered with crimson and other coloured cloths, with curious devices, and figures of alligators, elephants, and snakes; the large ones are in the form of a square, with a neat building of considerable size, also covered over, running along the whole extent of one side. The ascent was by a rough ladder covered over, and the platform itself was neatly floored with dried grass and perfectly level. Dispersed all over this were chiefs under the King's umbrellas, sitting down, and at the further end from the entrance the King stood, surrounded by a chosen few of his Amazons. In the centre of this side of the platform was a round tower, about thirty feet high, covered with cloths, bearing similar devices as the other parts. This is a new idea of the King's, and from the top of this tower the victims are thrown to the people below.

When the King is ready, he commences by throwing cowries to the people in bundles, as well as separately. The scramble begins, and the noise occasioned by the men fighting to catch these is very great. Thousands are assembled with nothing on but a waist-clout, and a small bag for the cowries. Sometimes they fight by companies, one company against the other, according to the King's fancy; and the leaders are mounted on the shoulders of their people. After the cowries, cloths are thrown, occasioning the greatest excitement. While this lasts, the King gives them to understand that if any man is killed, nothing will be done to the man who is the cause of it, as all is supposed to be fair fighting with hands, no weapons being allowed. Then the chiefs are called, and cowries and cloths are given to them. The King begins by throwing away everything himself; then his Amazons take it up for a short time, when the King renews the game, and finishes the sport, changing his position from one place to another along the front part of the platform.

When all that the King intends throwing away for the day is expended, a short pause ensues, and, by and by, are seen inside the platform the poles with live fowls (all cocks) at the end of them, in procession towards the round tower. Three men mount to the top, and receive, one by one, all these poles, which are precipitated on the people beneath. A large hole has been prepared, and a rough block of wood ready, upon which the necks of the victims are laid, and their heads chopped off, the blood from the body being allowed to fall into the hole. After the fowls came the goats, then the bull, and, lastly, the men, who are tumbled down in the same way. All the blood is mixed together in the hole, and remains exposed, with the block, till night. The bodies of the men are dragged along by the feet, and maltreated on the way, by being beaten with sticks, hands in some

cases cut off, and large pieces cut out of their bodies, which are held up. They are then taken to a deep pit and thrown in. The heads alone are preserved by being boiled, so that the skull may be seen in a state of great perfection. The heads of the human victims killed are first placed in baskets and exposed for a short time. This was carried on for two days. Mr. Wilmot would not witness the slaying of these men on the first day, as he was very close to them, and did not think it right to sanction by his presence such sacrifices. He therefore got up and went into a tent, and when all was over returned to his seat. One of the victims was saved:—

"While sitting in the tent a messenger arrived, saying, 'The King calls you.' I went and stood under the platform where he was. Tens of thousands of people were assembled; not a word, not a whisper was heard. I saw one of the victims ready for slaughter on the platform, held by a narrow strip of white cloth under his arms. His face was expressive of the deepest alarm, and much of its blackness had disappeared; there was a whiteness about it most extraordinary. The King said, 'You have come here as my friend, have witnessed all my customs, and shared goodnaturedly in the distribution of my cowries and cloths; I love you as my friend, and you have shown that an Englishman, like you, can bear patience, and have sympathy with the black man. I now give you your share of the victims, and present you with this man, who from henceforth belongs to you, to do as you like with him, to educate him, take him to England, or anything else you choose.' The poor fellow was then lowered down, and the white band placed in my hands. The expression of joy in his countenance cannot be described: it said, 'The bitterness of death, and such a death, is passed, and I cannot comprehend my position.' Not a sound escaped from his lips, but the eye told what the heart felt, and even the King himself participated in his joy. The chiefs and people cheered me as I passed through them with the late intended victim behind me."

The "customs" were concluded by a day of firing, when all the soldiers, under their different leaders, marched past the King in review order. The King danced with his Amazons, and invited the visitors to join. While the "customs" last the King does not transact any public business.

On the afternoon of Friday, the 16th of January, the King asked the Commodore to review his Life Guardsmen and women, and he then made him Colonel over the whole of them, about one thousand strong each—an honour for which the new Colonel had to pay dearly, according to the custom of the country. Speeches were made by the Captains, who were introduced separately, the whole tenor of which was what they would do at Abbeokuta, and the number of heads that would fall to Mr. Wilmot's share.

The following day, Saturday the 17th, the King saw them in private, as before, and gave his answer to the message. He commenced by saying how glad he was that a messenger had been sent who by his patience and forbearance had shown himself a friend to the black

man. He then entered into a long history of his country in the time of his ancestors, and stated how anxious his father was to be friends with the English. He said that for many years past (he did not know why) the English seemed to be hostile to him, and endeavoured to make all nations in Africa fight against him. He said that the Slave Trade had been carried on in his country for centuries, and that it was his great means of living and paying his people. He did not send slaves away in his own ships, but "white men" came to him for them, and was there any harm in his selling? We ought to prevent the "white men" from coming to him; if they did not come he would not sell. We had seen what a great deal he had to give away every year to his people who were dependent on him; and that this could not be done by selling palm oil alone. If people came for palm oil he would sell it to them; but he could not carry on his government upon trade alone. If he gave up the Slave Trade, where was he to get money from? It was not his fault that he sold slaves, but those who made his fathers do it, and hence it became an institution of his country. He said, "I cannot stop it all at once: what will my people do? And besides this, I should be in danger of losing my life." Being asked how much money he would take to give it up, he replied, "No money will induce me to do so; I am not like the Kings of Lagos, Porto Novo, and Benin. There are only two Kings in Africa, Ashantee and Dahomey; I am the King of all the blacks. Nothing will recompense me for the Slave Trade." He said there were plenty of blacks to sell, and plenty to remain; and that the price of a slave was eighty dollars, with four dollars custom on each. On most occasions he is paid before the slaves are taken away, but sometimes he risks the payment, and then he suffers by the capture of the slave-ship.

He said, "I must go to Abbeokuta: we are enemies; they insulted my brother, and I must punish them. Let us alone; Why interfere in black man's wars? We do not want 'white men' to fight against us; let every one go out of Abbeokuta, and see who will win. Let the 'white man' stand by and see which are the brave men!" He spoke strongly of Porto Novo, and said, "If my friends the English had sent to me, I would have broke Porto Novo for them." He promised faithfully to spare all the Christians and send them to Whydah, and that his General should have strict orders to that effect. When asked about the Christians at Ishagga, he said, "Who knew they were Christians? The black man says he is a white man, calls himself a Christian, and dresses himself in clothes: it is an insult to the white man. I respect the white man, but these people are impostors, and no better than my own people. Why do they remain in a place when they know that I am coming? If they do so, I suppose they are taking up arms against me, and I am bound to treat them as enemies. If a musket-ball touches the white man at Abbeokuta, am I to blame if they will not go away when they know I am coming?" Mr. Wilmot reasoned with him no longer on this subject, because he thought "his observations so thoroughly just and honest."

The next subject was the "human sacrifices." He said, "You have

seen that only a few are sacrificed, and not the thousands that wicked men have told the world. If I were to give up this custom at once, my head would be taken off to-morrow. These institutions cannot be stopped in the way you propose. By and by, little by little, much may be done; softly, softly, not by threats. You see how I am placed, and the difficulties in the way: by and by, by and by." As to the Embassy, he said he would send a Prince to England, if Mr. Wilmot came again and gave him the Queen's answer to what he had stated. With regard to the schools at Whydah, the King said, "Any of the mulattoes may send their children."

After the interview, which lasted some time, the King made several presents: namely, for the Queen a large umbrella, made of different coloured velvets, with the devices emblematic of their customs; a large carved stool, which no one but kings are allowed to possess; a pipe-stick and bag; a bag made from the leather of the country, with a lion worked upon it; a very handsome country cloth, and a long stick ornamented with silver, which can only be carried by the King; also two girls, one about twelve, the other sixteen, very pretty and intelligent. These last were left by the Commodore at Whydah, in charge of the coloured missionary's wife there, until the wishes of Her Majesty on the subject can be ascertained. The girls were taken at Ishagga, and seemed to be very interesting.

They found the population very scanty. After they had left Whydah, every soldier in the place went on to Abomey to swell the numbers there. There was not a man to be seen on their return, none but women and children. On the whole, there are far more women than men, probably three to one, which may be the reason why the Kings of Dahomey, who are always at war, are obliged to raise and keep up the Amazons, or "women soldiers," to the extent that they do.

The Amazons are everything in this country. The King lives with them and amongst them; they are only to be found in the royal palaces. When they go out to fetch water, which is every day and nearly all day, the one in the front (for all follow in single line) has a bell round her neck much like a sheep-bell in England, which she strikes whenever any person is seen approaching. Immediately the men run away in all directions, and clear the road by which the Amazons are coming. They then wait till all have passed. The reason for this is, that if an accident were to happen to any one of these women, either by her falling down and breaking the water-jar on her head, or if the water-jar fell off her head, the unfortunate man who happened to be near at the time would be immediately seized, and either imprisoned for life or have his head taken off, as it would be supposed that he was the cause of the accident. No wonder, then, that they get out of the way as quickly as possible. The Commodore and his friends were always obliged to follow this custom, but women are not expected to avoid them in this manner. All day long the sound of this bell is heard, and people are seen flying away. The Amazons seemed to enjoy it, and laughed heartily when the men stepped aside to avoid them.

Whatever may be the object in thus keeping up such a large body of "women soldiers," there is no doubt that they are the mainstay of the kingdom. Mr. Wilmot put down the number at 5,000; and besides these there are numerous women to attend upon them as servants. He saw 4,000 under arms at Abomey, and there are more in other parts of the kingdom residing in the royal palaces. He thinks they are far superior to the men in everything—in appearance, in dress, in figure, in activity, in their performances as soldiers, and in bravery. Their numbers are kept up by young girls of thirteen or fourteen years of age being attached to each company, who learn their duties from them; they dance with them, sing with them, and live with them, but do not go to war with them until they have arrived at a certain age, and can handle a musket. These women seem to be fully aware of the authority they possess, which is seen in their bold and free manner, as well as by a certain swagger in their walk. Most of them are young, well-looking, and have not that ferocity in their expression of countenance which might be expected from their peculiar vocation.

Nautical Notices.

Particulars of Lights Recently Established.

(Continued from page 390.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
25. Piedras Cay	Cuba	21° 57·8′ N., 81°13 3′W.	F.	30	7	Est. unknown.
26. Civita Vecchia	Italy, West coast	Bicchiere Pr. Lazzaretto Pier	F.	23	3	Est. 17th June, 1863. Green lights. (*a*.)
27. Dwina	Fortkamet Dyke	West point of entrance	Ffl.	103	16	Est. 13th Sept., 1863. A flash every
			F.	21	9	half minute.
27. Dwina	Magnusholm Dyke	East point of entrance	F.	26	10	Est. 13th Sept., 1863. (*b*.)
28. St. Johns	Newfoundland	One above the other	F.	225	..	Est. 10th July, 1863. (*c*.)
				50	..	
29. Point Doncella	Coast Malaga	36° 24·3′ N., 5° 10·6′ E.	Ffl.	59	12	Est. 31st Aug., 1863. Flash every four minutes.
30. Point Calabroera	Ditto	36° 30·7′ N., 4° 38·6′ W.	Ffl.	115	16	Est. 31st Aug., 1863. Flash every three minutes.
30. Aviles Inlet	Castillo Pt. on Forcada Pt.	43° 38·1′ N. 5° 56·0′ W	F.	130	10	Est. 31st Aug., 1863.
30. Caballo Point	Santander, MtSantona	43° 28·2′ N., 3° 27·2′ W.	F.	85	10	Est. 31st Aug., 1863. A red light.
31. Cape Blanco	Majorca, S.W. coast	39° 22′ N., 2° 49·9′ E.	F.	294	10	Est. 31st Aug., 1863.
31. Salinas Point	Majorca, S. extreme	39° 16·5′ N., 3° 5 9′ E.	F.	50	10	Est. 31st Aug., 1863.
32. Gambia River	Entrance, both sides	Cp. St. Mary Barra Point	F.	70	10	Est. 1863. (*d*.)
			F.	35	7	

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

(a.) 26.—One, at the eastern entrance to the port, should be seen when bearing from N.¼ E. round by East to S.W. The other, near the fortress at the end of the Lazzaretto mole, at the western entrance to the port, should be seen when bearing from South round by East and North to N.W.¼ W.

Vessels entering the port by the eastern channel should have the Lazzaretto light ahead, the Bicchiere light to the eastward, and Antemurale *revolving* light to the westward. In entering by the western channel, vessels will have the Bicchiere light ahead, the Lazzaretto light to the eastward, and the *revolving* light to the westward.

(b.) 27.—Also, that on and after the 13th July, 1863, the time between the flashes of the light on Hango Island, on the North side of the Gulf of Finland, will be altered from one to *two minutes*.

Also with the view of rendering the lower wooden lighthouse on Sourop Point in lat. 59° 28′ 24″ N., long. 24° 26′ 13″ East of Greenwich more easily distinguished from the surrounding wood during the day, the eastern side of the tower has been painted white, to assist in rendering it more conspicuous when seen in line with the upper one, which is also coloured white.

(c.) 28.—One of these harbour lights is on the roof of the custom house at 50 feet above the mean level of the sea, the other near a chapel in front of the cathedral at 225 feet above the sea. They are 2 cables distant from each other, and when *in line* bearing N.W.¼ W. lead through the narrows into St. John's Harbour.

It is in contemplation to remove the light now at Fort Amherst, at the South point of entrance of the harbour, to the North head or North point of entrance.

(d.) 32.—The light on Cape St. Mary illumines three fourths of the horizon seaward.

The light on Barra Point is a *fixed red* light.

Both lanterns are furnished with the dioptric light apparatus. The light on Cape St. Mary bears S.W.b.W.½ W., distant 6¼ miles, and that on Barra Point S.b.E.½ E., 5¾ miles, from the black buoy on the African knoll.

The bearings are magnetic. Variation 19¼° West in 1863.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*The Chairman's Address—Deplorable Increase of Wrecks—The "Anglo-Saxon"—Fog Signals for Cape Race—Report of the Royal National Life-Boat Institution.*

It would almost seem, said the Chairman, after regretting to find so few of his friends about him, and who he supposed were yachting in these beautiful summer days, it would almost seem that the records of our Club are to be made up of wreck history. Scarcely do we meet than some sad account of this kind awaits us. Wrecks and lifeboats, the bane and the antidote, but unhappily the antidote is not so widely spread—the cure of the evil is not so general—as the evil. The last wreck they had recorded since that of the *Orpheus*, was the *Anglo-Saxon*, since which he was sorry to find that the Canada company had added another to their many losses. It appears that the *Norwegian* was wrecked on the morning of the 24th of June, at seven o'clock, in

a thick fog, on St. Paul's Island, a mile and a quarter East of the North-east light. She had on board 58 cabin and 271 steerage passengers all saved, together with the crew and mails, and a large portion of the baggage.

All this continued disaster was much to be deplored, said the Chairman, and he believed this was the seventh vessel that company had lost.

Albert said, he had learned particulars concerning the *Anglo-Saxon* which might be depended on, having obtained them at the scene of the disaster. It appears, after a close inquiry that he had made, that—

1. The *Anglo-Saxon* was not more than ten miles out of her reckoning, if so much, for the chief engineer understood they were to be at Cape Race at 12h. noon, and the ship struck on the rocks four miles N.E. from the light at 11h. 10m. a.m.

2. That she could not have been lost if the deep sea lead and hand leads had been used and the vessel slowed so as to get bottom.

3. One mile N.E. from the light there is 8 fathoms, sand, 400 fathoms from the shore. And it deepens gradually from the shore, but soon reaches a depth of 40 fathoms, and at three miles 60 fathoms.

4. There is every probability that if fog signals had been instituted at Cape Race, especially a steam-whistle, the *Anglo-Saxon* would have heard them in time to alter her course more to the southward. From all accounts, the wind was not strong, nor the water very rough, but a heavy swell set in upon the shore, and made landing, except at a few sheltered spots, impossible.

5. After the ship was on the rocks, Captain Burgess appears, with the exception of not firing guns, to have behaved with great judgment and bravery, and to have been well seconded by his officers and men, in his endeavours to save the passengers. But the breaking up of the ship was so rapid and unexpected, that all systematic effort was speedily brought to a close. One hour from the time of striking the vessel began to break up. Iron vessels appear to be weaker than wooden ones on such occasions.

Such were the conclusions at which he had arrived; but in regard to the use of the lead, he could not help thinking that the company had mixed it up too generally with other matters regarding safety in navigation, and that it was not thought of so much as it should be. In fact, it should be specially pointed out as required to be used when approaching land when the vessel did not know her position, as was the case in a fog That the *Anglo-Saxon* should have neglected it, was scarcely credible; but there was the fact.

Some important remarks, continued Albert, had been made on a fog signal on Cape Race, which it was well to preserve in their records. Guns were, he thought, not so good as the steam-whistle of Smith, that has been so long in use at Partridge Island in the bay of Fundy, and which had been heard seven miles to windward in a gale of wind. The account to which he had alluded says:—

This terrific loss of the *Anglo-Saxon* brings most forcibly before the public the astonishing fact that such a point as Cape Race is left without gun or bell, or any possible means of alarm in the case of fog, so frequent in that particular neighbourhood. We need not say, what every mariner in these waters knows well, that there is no coast more bold or free from hidden dangers than that about Cape Race and Clam Cove; and in proof of this we have the fact that when the ship ran her forefoot upon the rock, her bowsprit was high and dry ashore, affording means of landing to some of the people, the stern being at the same time in deep water. The only difficulty whatever of the navigation there arises from the frequent presence of fog, which is itself an unmistakeable warning; and why this warning was unheeded or despised in the case of the *Anglo-Saxon*, is one of the circumstances of her loss which demand most rigid investigation.

It is alleged that the set of the cape current had much to do with the stranding; but had the requisite southerly distance been kept, the ship would have been out of reach of both the current and fog of the cape. But we see it was believed on board that at the time of the accident she was about seventeen miles South of the cape, an observation having been had on the previous morning; while the published statements are silent as to the probable cause of the false position of the ship. We have, however, been assured that for some days at least the practice of soundings had been entirely omitted. Now, for this there cannot possibly be one shade of excuse; and it is really a matter of astonishment that so indispensable a precaution as the use of the lead in thick weather should prove to be one so very commonly neglected. It was negligence in this respect that caused the loss of former ships of the Canadian line, and there is no room for doubt that this last disaster might have been averted had the steamer's proximity to land been tested by frequent and careful soundings.

It is very much to be feared in such cases as this that the anxiety to make speedy passages is largely to blame. It is a feeling commendable enough within proper limits, and the captain who is devoid of it lacks an important and respectable quality. But this desire in excess —in the degree which reduces the primary consideration of *safety* one iota below its true weight, is to be regarded as a most dangerous incentive. When once it attains to this unjust ascendancy in men's minds, proportionally low, though it may be unconsciously, falls their sense of the most sacred obligations, and it would be difficult indeed to fix bounds to the recklessness thus superinduced. We do not, of course, pretend to charge this straining for speed in the case of the *Anglo-Saxon;* but we must still say its aspect is one which does lead our suspicion strongly in that direction.

The conviction of all on board the *Anglo-Saxon* was, that a gun or any other efficient alarm at Cape Race, would have saved the ship and the lives of the many now mourned in desolate homes.

There can be no doubt if the steam-whistle to which he had alluded

were established, we should not hear of wrecks on Cape Race from a ship not knowing her approach to the land, even at seven miles' distance.

The Secretary then reminded the Chairman that they had not read the report of the last monthly meeting of the Royal National Life-Boat Institution, held in John Street, Adelphi, Thomas Chapman, Esq., F.R.S., V.P., occupying the chair. The report, which we add, stated that—

A reward of £12 was voted to the crew of the Ipswich lifeboat of the institution, stationed at Thorpe, Suffolk, for putting off at midnight on the 11th of June, and rescuing with great difficulty the crew of six men from the brig *Florence Nightingale*, of London, which, during a heavy gale of wind, was totally wrecked on Sizewell Bank, on the Suffolk coast. While engaged in the rescue of the shipwrecked men, a heavy sea struck the lifeboat and carried away one of her brave crew, but he fortunately regained the boat by means of his lifebelt and a line. William Alexander, the gallant coxswain, had, on several occasions, in this and another lifeboat, been off to save life under very perilous circumstances. The institution voted to him its silver medal, in testimony of his valuable services as coxswain of the Thorpe lifeboat. The cost of this lifeboat was presented, about twelve months ago, to the National Life-Boat Institution by the residents of Ipswich. She has since then been the means of rescuing two shipwrecked crews from an inevitable death, besides rendering important services on one or two occasions to vessels in distress during stormy weather.

A reward of £4 10s. was also voted to the crew of the society's lifeboat at St. Ives, Cornwall, for going off and saving the crew of four men from the schooner *Azores*, of Falmouth, which, during a heavy gale of wind, had stranded and afterwards sunk at the entrance of the harbour of St. Ives, on the 12th of June. The cost of this and of three other lifeboats was presented to the institution by a benevolent lady who has withheld her name.

A reward was likewise granted to the crew of the lifeboat of the institution at Rhoscolyn, near Holyhead, for going off and rendering important services to the barque *Diadem*, of St. John's, New Brunswick, which, during foggy weather, was observed in a disabled condition off that place on the night of the 27th of June. The lifeboat landed four passengers from the vessel.

A reward was also given to the crew of the New Brighton tubular lifeboat belonging to the society, for putting off and rescuing the crew of six men from the schooner *Vigilant*, of Kirkcaldy, which was totally wrecked during a strong wind on Taylor Bank, near Liverpool, on the 27th of June. The lifeboat was towed to windward of the wreck by the steam-tug *Blazer*, and remained by the vessel some hours to see if she would float off or not, before the crew were taken off. Before the lifeboat had proceeded far on her return, the vessel was seen to capsize and become a total wreck.

The thanks of the institution, inscribed on vellum, were voted to Mr. John Long, agent for Lloyd's at Lymington, Hampshire; to Mr. William Webb and Mr. James Webb, pilots; and £10 to be divided between the two pilots and three other men in acknowledgement of their gallant and persevering conduct in their pilot-boat in rescuing, at considerable risk of life, the crew of six men from the brig *Alabama*, of Gloucester, which, during a very heavy gale of wind, was totally wrecked in the middle of the Shingles, while running through the Needles passage on her way to Southampton. Upon nearing the distressed vessel the salvers found it impossible to rescue the crew, owing to the fearful sea, which ran so high as to break over the vessel's maintop, completely obscuring the poor men in the rigging, who were shouting for help and seemed frantic with despair. The crew of the pilot boat, however, determined not to leave them, and stood off and on all night until the weather had somewhat moderated, when they succeeded, with great difficulty, in snatching the six men from an inevitable death.

It was reported that during the past month a new lifeboat and transporting carriage had been forwarded to Bude Haven, on the Cornish coast. The cost of the same and of the new lifeboat-house, amounting altogether to £600, had been munificently presented to the institution by the surviving children of the late R. T. Garden, Esq., of River Lyons, Ireland, as a memorial of their mother, the late Mrs. Elizabeth Moore Garden. The South Western Railway Company had, as usual, liberally given a free conveyance to the lifeboat and carriage to Bideford.

It was also reported that a lady resident in Exeter had forwarded the institution a munificent donation of £100. The late Dowager Lady Bunbury had also left the institution £100; and the late Miss Tingcombe, of St. Germans, had likewise bequeathed the society a legacy of £10.

A report was read from Captain Ward, R.N., the inspector of lifeboats of the institution, on his recent tour of inspection of the Irish lifeboats. He found them generally in excellent order. It was stated that all the lifeboats on the Irish coast are now under the management of the institution, and that it had placed on every station a new lifeboat. Altogether the Irish lifeboat stations had cost the institution nearly £8,500.

Payments amounting to about £1,600 were ordered to be made to meet the expences of the numerous lifeboats of the institution. The committee earnestly appealed to the public for continued support to enable them to meet the very large and increasing expences on the 125 lifeboats of the institution. It was stated that each lifeboat establishment required about £50 a year to keep it in a state of thorough efficiency.

The proceedings then terminated.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

SEPTEMBER, 1863.

Port Clarence to San Francisco.—*By Captain Henry Trollope, H.M.S. "Rattlesnake."*

At eight in the evening of Wednesday the 23rd of August, 1854, at Port Clarence, we tripped our anchor and made sail to a fresh breeze from N.W. Sighted Point Spencer, and rounded it at 9h. p.m. And at 11h. lost sight of the land, steering S.S.E. for Cape Upright, Ile St. Mathieu, or Gore Island of Cook. The navigation of this sea is remarkably easy,—the lead and look out, and observations of course when they can be had. These, however, the fogs interfere with; but here as elsewhere the sun shines and the weather is fine.

Baffling winds came with the fog. The wind, which had hitherto been fair, hauled round to E.N.E., and at 9h. p.m. to S.S.E. and South. At daylight on the 29th we made land abreast of the Four Mountain Passage, through which the *Trincomalee* passed to the northward from Honolulu.

The appearance of these mountains was very fine; looking on them over the fog gave them a grandeur of height I have seldom seen surpassed,—their bases were no where, leaving much for the imagination. The wind was dead against our going to the southward, so that we could not pass through the Four Mountain Channel. Perhaps from knowing it better we might be inclined to prefer the Amoutka Pass, as it is called, between that island and Segonam. But there is, in fact, little or no danger. *Aleut* signifies steep in the Russian, and the Aleutians are aptly named, for they are remarkably steep, and although the fog is the great drawback, it generally rises as the land

is neared. Still a good look out must always be necessary; for should the fog not rise until you are close to the land, as with us on the following day, a vessel is in great danger.

A little before noon on the 30th of August we were surprised by the fog suddenly lifting and showing us a high volcanic peak directly a head of us, bearing E.S.E., from which we stood to the westward again, or W.N.W., with the wind from S.W.

This island we took to be Chegoula. In the Admiralty chart, lately published, (and as far as these islands are concerned taken entirely from Admiral Lutke's work,) this Chegoula is not sufficiently large; but a glance like ours, with very foggy weather, and no absolutely determined base, hardly allows one to have an opinion. Chegoula, or ragged, as we called it, is a ragged, rugged, bristling peak. Seeming to defy ascent, it reminded me of a cactus with its bristling spines.

After running twenty-five miles S.E.b.S. with the wind from the northward, we bade adieu to the Aleutians, and shaped our course towards Punta de los Reyes, San Francisco, with the wind from the northward, when it fell calm for a few hours, and from the lowness of the barometer, 29·16 in., for nine or ten hours, a gale was anticipated, and prepared for accordingly. The wind did not, however, exceed 8, with thick, gloomy, overcast weather, which affects the barometer equally with wind, except in extreme cases, such as a hurricane. But it left us the present of a heavy cross sea, but on the 2nd of September a S.W. breeze sprung up, and enabled us to lay our course. And afterwards the wind continued to hang from the southward more than I expected.

In the afternoon of the 23rd of September a breeze sprung up from N.W.b.W., with which we stood S.E.b.E. in a fog until eight in the evening, when we had run thirty-eight miles. Something like the sound of the surf was in my ears, and although uncertain, prudence made me haul off for the night, and stand out some five or six miles to the westward. On the following morning we again stood in for the land, but the fog still so thick that we could not see a mile ahead. However, we carefully appealed to the lead, heaving to every hour to sound, enabled us to feel our way to the shore. Soon after sunrise we were fortunate enough, in a moment of clear, to get a glimpse of the Farallones; their bearings agreed with our account, and by means of the patent log and the lead we picked up a berth, in a dense fog, within six or seven miles off the entrance of the harbour of San Francisco. Just as we dropped our anchor, another lift of the fog enabled us by bearings to verify our position; and it was no little gratification to find that we had taken up a proper berth *by the lead*, assisted by the above bearing, as well as if the weather had been clear and fine.

The ebb tide had just made, and therefore we contented ourselves with our good fortune, although the master of a small schooner, the *William Allen*, gave me some information, most of which, however, I had read in Captain Beechey's admirable instructions.

The breeze continued fresh from the westward and W.N.W., but was not strong enough to overcome the tides, which at this distance ran past the ship three-quarters knot an hour, the flood setting to the N.E., and the ebb to the W.S.W.

A very smart pilot boat soon came alongside and asked us if we wanted a pilot. Now orders are against this; and, in fact, with Captain Beechey's admirable chart a pilot is unnecessary. However, on hearing that we were from Bhering Strait, and had been looking for Sir John Franklin, one of their number, Mr. Peter M'Nally, was deputed to come on board and offer his services in the name of all the pilots! This was a compliment highly gratifying, and although it was no great sacrifice to come and see us, and pass a comfortable night in conversation with the officers about what they had seen in the polar regions, still it was a handsome and flattering piece of civility, with which I was much pleased. Mr. Peter M'Nally was an American, and of course not without many of their peculiarities. He considered, "They were bound to have Cuba," which occasioned a smile of doubt with us; but he was obliging and civil, and I was very glad to meet him. From him we received the first intimation that war had been actually declared against Russia on the 28th of March, 1854.

For entering the harbour Captain Beechey's directions and chart are so admirable that little seems necessary to add to them. It is as well to keep over a little towards Punta Boneta on the northern shore in entering, even with a fair wind, as you have the harbour more fairly open to you, and have more advantage of the tide. At daylight on the morning of the 25th of September, we ran in with a fair wind and flood tide, being high water to-day at 1h. 16m. p.m., three days past the new moon.

San Francisco is an imposing harbour. The entrance, through a narrow gorge, between rugged headlands, about three or four miles long, and less than one mile broad in some parts, imparts the feeling that one is in truth entering a harbour. The wind was steady and the tide strong in our favour, so that we could not have gone in more pleasantly. It seemed to excite Mr. Peter M'Nally's surprise seeing me determined to anchor in Sancelito Cove in preference to the anchorage of Yerba Buena and the city. But I had a dread of San Francisco, a needless one perhaps in our circumstances, and as water was all I intended to wait for, I had no wish to delay there. We rounded too in the cove, and anchored in 13½ fathoms, mud. Veered to 60.

It was high water on the shore at 12h. 30m., and the ship swung to the ebb at 1h. p.m. The tides, as given in the papers of the city, are intended for that part of the bay, and the tides at Sancelito are forty or fifty minutes earlier.

My object in coming to San Francisco was to forward Captain Collinson's despatches. I therefore lost no time in going to the city. The breeze was fresh and the tide strong flood. We were swept by it to the northward of Alcatrace Island, on which the Americans are

forming batteries to protect the mouth of the harbour; as well as at the old fort point on the southern side at the narrowest part of the entrance. We landed at the city about twelve o'clock, having first been taken by Mr. Peter M'Nally on board some really yacht-like pilot boats of 80 and 120 tons, furnished with comfort and even splendour.

I had landed at San Francisco from the *Herald* in 1846, when the Americans had begun their emigration, but before the discovery of the gold. The change is certainly wonderful. The mud bank Vancouver complains of as rendering landing very inconvenient, is now a part of the city; the bay between the N.E. points of the peninsula has had piles driven into it, has been planked over, and is gradually becoming *terra firma*, and the most valuable part of the city of 50,000 inhabitants, which certainly in 1846 had nothing like 500 people belonging to it. This is certainly a wonderful improvement, and although I am not an admirer of San Francisco or its inhabitants, yet I must confess I remembered my wading through the mud in the same place eight years ago, and acknowledged there were some benefits even in American annexation.

San Francisco is a flourishing place no doubt; it has forests of ships in its harbours, goods in its warehouses, merchants enterprising and hospitable, as I am sure I cannot but acknowledge during my couple of hours' stay,—but I do not like the place,—it is dedicated to Mammon, not more so may be than London, New York, or Boston, or a hundred other cities in all countries; but it is a new place; it has nothing beyond its gold and its money making population.

Some of the merchants are in raptures with their city, and asked me to go to the summit of a hill to get a view of it. The booths of a fair would have had as much interest in my mind, and I was in a hurry to be off. I saw Mr. Aikin, the consul, and was taken by him to a club or billiard-room, from which I thought myself fortunate when I got away. I must confess the Americans shine preeminent in drinks,—drinks emphatically,—they are admirable, and would overcome teetotalism almost. I made acquaintance with iced brandy and water such as I had never tasted before,—champagne,—mint julep,—sherry cobler; but I was fain to cry off, I had a boat's crew in the town, and had to cross the harbour; and after leaving the despatches and hearing that provisions of all kinds were most abundant, took my leave.

San Francisco is a flourishing place no doubt, and has 50,000 enterprising inhabitants from all quarters of the globe. Its sudden rise is the chief feature in the place, and is its chief curiosity. It is in the highway of commerce, and will doubtless always be an important place.

In returning to Sancelito Cove we had the ebb tide to think of, and were recommended to pull up inshore towards Fort Point and then strike off for the other side. This we found good advice, as we were the shortest time exposed to the swell and contrary tide, besides being in a better position with regard to the breeze, as then we very nearly laid across with our lug sail.

I did not get fresh beef here, which I regretted; but we laid in abundance of other supplies, so that it was of the less consequence. Water was brought to us by a steam tank,* which also affords a convenient mode of communicating with the city.

Sancelito is still neglected. At one time the American government thought of establishing a naval yard here; but they have now shifted the site to an island a few miles distant on the Sacramento River. The assigned reason was that Sancelito was too much exposed to an invading force, which might land to the northward of the harbour and take it in the rear.

There are not half a dozen houses in the place at present, and the steamer coming in with a passenger or two, or a man-of-war every now and then, redeems the place from almost total desertion. Its great neighbour has eclipsed it entirely.

Mr. M'Nally, the pilot, told me that we had sailed between the Farallones, and that they were steep close to. And between the three clusters of rocks there is no danger.

Tuesday, 26th September, 1855.—It was calm all the forenoon, but at 1h. p.m., when the ebb tide made, we tried to get out. There was some difficulty, however, under the high land in getting a breeze, which, I am told, has been an objection of old to this anchorage. We appeared to be at the mercy of the tide, which drifted us closer than was pleasant under the high cliffs of the Ilaza de los Cavallos, as it is termed in Beechey's chart. I was obliged to lower the boats down to tow her head round. And having to hoist them up again when we got into the stream was inconvenient. The wind was against us, but the ebb tide was making strong. Avoid the tide ripples on either side, and take care not to get into the bays on either side. Captain Frederick, in the *Amphitrite*, backed and filled out; but this was in a light breeze. We made five boards or ten tacks before we were outside the bar,—off or on which we had more swell than in other parts. Captain Wilkes gives an appalling description of his

* *Sancelito Water Company.*—This company is now running a steamer daily, bringing water to the city, and supplying the ships in the harbour.

They have a reservoir at Sancelito which will hold about 180,000 gallons. situated a short distance from the wharf on the rising land. Through the centre of this runs a water-tight partition, for the purpose of allowing the cleansing of it without breaking the supply.

The reservoir is fed by springs from the mountains, the largest of which empties in from the South-west. There are also some four or five springs which add to the supply, running through an aqueduct from the North-west. In addition to these, an aqueduct was built some weeks since in the grounds belonging to Mr. Richardson, drawing the water from some eight other springs, and enabling the company to supply four or five hundred thousand gallons daily. They put it on board their water boat through a square trough, some ten inches in the clear, which will fill its capacity (30,000 gallons) in twenty minutes, which quantity is discharged, on its arrival in this city, into their water tank, at the foot of Washington Street, by means of the steam-pump of the boat, in about thirty minutes. The reservoirs in the city will hold above 100,000 gallons.—*San Francisco Paper, September*, 1854.

dangerous position at anchor too near it. Vancouver speaks of the port as one remarkably easy of access; and he had no chart or guide from others to give him information.

The pilot told me that there was good shelter in a small bay between Punta de los Reyes and Punta Boneta, formed by a sand bank, and perfectly capable of affording protection to the vessels forming Sir Francis Drake's squadron,—the Americans still call it Drake's Bay; or, I suppose. have so named it in his honour. There are few Spaniards or half-caste Mexicans of the present day who have heard of Drake and his exploits. It is only curious as confirming a point that has been doubtful hitherto.

REMARKS ON THE ATOLL OF EBON, IN MICRONESIA.—*By the Rev. E. T. Doane.*

We will begin our remarks on the Atoll of Ebon by referring in a general way first, to that section of Micronesia which embraces it, known as the Marshall Islands. The name is that given by Krusensten in honour of Captain Marshall, who made the first discoveries there in company with Captain Gilbert. The discoveries date back seventy-two years; the first island was seen in 1788, the last being discovered only in 1824.

The whole group lies within the longitudes 166° and 172° East, and 4° 39′ and 12° North latitude. Of the atolls of the group some are large, measuring forty, fifty, and sixty miles in circumference, while others are mere bank-reefs, two or three miles in circumference. Of the large islands, we may mention Jaluit or Bonham, Rimski Korsakoff or Rong-rik and Rong-lab, and Mille or the Mulgrave Islands. Of the mere bank-reefs, we may mention Kili or Hunter and Lib or Princess Island. And we would here remark, perhaps no group of the Pacific presents a more tangled mass in the nomenclature of its islands than do the Marshall Islands, and especially the Ralik range. Some of the terms we have given above may perplex the reader as he attempts to trace them out on ordinary charts.

The Marshall Islands are divided by a deep sea about one hundred and fifty miles wide into two chains,—the Eastern or Radak, and the Western or Ralik. Their general bearing is N.W. and S.E. The Eastern chain possesses thirteen atolls and the Western sixteen. The general features of these atolls are similar to those of most coral islands. They are low, the reef-rock in none probably measuring more than ten or twelve inches in elevation. In form, however, there is much diversity. Mille or Mulgrave Island is nearly a parallelogram; Majuro or Arrowsmith, is oval; Ebon, circular; while Jaluith or Bonham Island and Arlinglab-lab or Elmore Islands, and many others, are without any definite forms.

The atolls vary in fertility. Those South of 8° N. latitude possess, from all native accounts, the most fertile islets and the most available soil. Their fertility may be accounted for from the fact that more rain falls on them. They are more affected by the equatorial belt of "constant precipitation" which is ever oscillating backwards and forwards over them. Dead leaves and wood rapidly decay.

It is an interesting fact, anomalous to the general features of coral islands, vide Dana's *Coral Island*, p 24, that the *leeward* side of these islands possesses the largest body of land. Indeed the windward side of many of these islands is entirely destitute of land,—or possessing it only in small islets. On Mille or Mulgrave Islands and Majuro, Arrowsmith, Jaluith, Bonham Islands, and Ebon Islands, which the writer has visited, this is emphatically true. The windward side of Majuro is possessed only of small islets, while the leeward side is one continuous strip of land, twenty-five miles long. Jaluith is much like this; perhaps, however, it has not so continuous a piece of land on the leeward side, though there is here the most fertile soil. On Ebon this is likewise true.

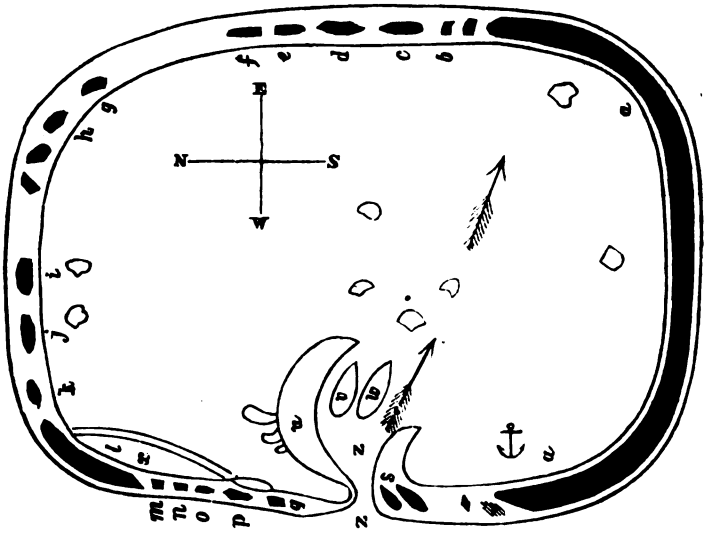
An explanation of this fact may perhaps be found in the strong winds,—the N.E. Trades sweeping with all their force for one half the year over these reefs. These strong winds and the heavy sea they raise, tend to sweep off the material which might accumulate there; and bearing some portion on across the lagoon to the leeward side, is there lodged, and helps forward most rapidly the accumulation of the beach formation.

The fact has been stated that the northern atolls of the Marshall Islands are rather subsiding than otherwise,—vide Dana's *Coral Island*, p. 134. It may be asked, is this not rather apparent than real? May not the small amount of wooded land found there—for this is the basis of this statement—be owing rather to the heavy seas and winds which there prevail? The natives ever speak of the heavy winds of that latitude, 12° N. Islands have been desolated by them. We feel disposed to offer this as a solution of the fact.

Another fact, we would state as common to the whole group,—is the existence of large ship channels on almost every side of the lagoon. Mille possesses four large ones,—three of them, and one the largest of all, on the windward side. Jaluith has its reef pierced by as many, and much in the same position. While Majuro has its channel on the windward side only, and Ebon on the leeward. We cannot speak of more from personal observation, though the natives say the other islands possess many channels and in much the same position of those above mentioned.

With these remarks upon the general features of the Marshall Islands, we proceed to remark upon the atoll of Ebon.

The position of this atoll is 4° 39, N. lat., 168° 49′ 30″ E. long. This is the position from the anchorage of the *Morning Star* in the lagoon. The atoll is the most southern one of the Ralik range. It was discovered May 25th, 1824, by Captain George Ray, who named it Boston Island. In 1834 Captain Covel thought it a new discovery,



a. Ebon. *b.* Dile. *c.* Eniaithok. *d.* Kermkumlab. *e.* Eri Mon. *f.* Remrol. *g.* Koie. *h.* Minlak. *i.* Enear. *j.* Enikaiori. *k.* Riri. *l.* Toko. *m.* Bikri. *n.* Bivilil. *o.* Aneming. *p.* Enilu. *q.* Iu. *s.* Jurith. *t.* Eni Armith. *u.* Worai-thok-thok. *v.* The Komil. *w.* Morelab. Mission Station opposite the anchor.

when it took his name, by which it is often called. The atoll is nearly circular, and measures some twenty-five miles in circumference. Except the passage on the West side of the reef, there is no other, not even a boat passage, in the whole circumference of the atoll. The reef, however, at full tide can be crossed by native craft. There is a tradition that once a passage existed of sufficient capacity to admit ships on the N.E. side, and that it was destroyed, however, by some powerful spirit in his rage, and the present passage opened.

The natives possess also an interesting tradition concerning the existence of *a high island as having once occupied the most of the lagoon.* It is said that tall hills, covered with bread-fruit and cocoanut, reared themselves where now the flats in the lagoon exist. It is said, also, that what must then have been the barrier reef possessed land, which is now Ebon Islet. The present passage is twelve or fourteen fathoms deep, and at the inflowing and outflowing of the tide has necessarily a very strong current, being the only outlet for the whole lagoon,—when the waters are lower than the reef. As it flows in against a strong wind, its presence may be traced quite across the lagoon, from the ripple of the waters and the white caps. The reef-flats near the passage in the lagoon are being covered with sand and other coral debris,—the nucleus of some future islet. The small coral patches in the lagoon are all covered with a few inches of water at low tide.

Ebon is the largest islet on the reef, as shown on the accompanying sketch, and gives name to the whole atoll. Its length from point to point is about eight miles. A singular feature is found upon it, a hedge of coral conglomerate. The map by the sign ↬ represents its position. On the North end of the islet it projects itself free from all soil or sand; and its course, as marked, can easily be traced by its repeated outcropping. The land which lies on the sea side is of considerable more recent formation than that on the lagoon side. The difference is very perceptible. The ledge or embankment was formed no doubt mainly from the wash of the lagoon. This is seen from its lamination sloping that way. It undoubtedly served an important purpose in catching and holding the finer materials thrown up from the lagoon.

At the S.W. bend of the islet the surface is quite uneven,—hills and vales in miniature form and size show themselves. They are formed no doubt by the drift of the sand, blown up into little hillocks. From its elbow round to the N.E. point the islet possesses but little soil. It is, however, covered with quite a heavy growth of bushes and trees, all possessing a very rich and deep green colour, and this is indeed characteristic of the foliage of the whole island. It has none of that sickly yellow half nourished hue, which we find upon many coral islands—those especially of the Kingsmill group. On Ebon all the growth is beautiful. There is soil and rain enough to nourish well the tropical vegetation.

I have not been able to obtain an exact classification of the plants of this atoll. More than fifty distinct species, however, will be found. We will mention some which enter chiefly into the support of native life. The Artocarpus is represented by some eight or ten varieties, one, the A. *integrifolia*, and the rest A. *incisa*. The *Pandanus odoratissimus* is represented by some twenty varieties. Its fruit enters largely into the native food. It is prepared in large rolls enclosed with its own leaf, and may be kept for years. The cocoanut (*Cocos nucifera*) is represented by some ten varieties, distinguished only by the nut. Two varieties of taro (*Arum esculentum*) are quite plentifully grown. It is raised in large beds prepared somewhat for it. These beds differ from those found on the Kingsmill Islands. They are not, as there, excavations carefully worked out and good soil prepared and worked in. They seem in a measure to be natural excavations, perhaps the sunken hollows between hillocks These hollows, with some little preparation, would answer the purpose,—at least their origin at this day is unknown. If a native be asked concerning them, he invariably refers them to the work of spirits. Around the margin of these arum patches are grown bananas in quite plentiful crops. And the larger islets have just sufficient to raise oranges and figs, which the missionaries are now growing.

This atoll is the home for a few varieties of birds. But in this feature of the island, the contrast is as wide between the low coral island and the high volcanic one, as between their natural features. The high islands of Micronesia are largely supplied with the feathery

tribe, but this atoll can claim only a very few birds, and with two or three exceptions these are all water fowl. There are a few Columbidæ, *Carpophaga oceanica*, which manage to elude the keen search of the natives. These birds are occasionally heard cooing away in the tops of some quite isolated bread-fruit tree. A Cuculus gives forth occasionally its sharp whistle, and these, with the addition of another land bird whose species I have not been able to learn, are all the feathery songsters this atoll can claim.

The shores of the reef at low tide and the bare rocks are a little enlivened by the brown and white heron. Small flocks of snipe *(Scolopax)* gather on the sand bars, or single individuals are running along the beach picking up food. An occasional plover *(Charadrius)* is to be seen. Sea swallows *(Sterna stolida* and *Sterna minutia)* are skimming the waters of the lagoon or resting on the beach. A booby *(Lula)* now and then is seen sailing over the island. His home is unknown to the natives. His want of caution is clearly seen in the easy way a native will ascend a tree in which the bird is roosting and with a slip noose capture him. An interesting explanation of the origin of the single variety of the *Cuculus* is given by the natives,—so skilful has this bird been in concealing its birth-place. As the natives find it ouly full grown, they say that it is born and nourished in the clouds, and falls to the earth of full size.

At least five species of reptiles are found on the atoll. Four are of the *Lacertinidæ*, and one, *Geckotidæ*. The gecko readily domesticates himself, and lives upon the house flies and gnats he finds. The lacertinidæ find their homes on trees and bushes.

The varieties of insects are interestingly numerous. It might seem as though these atolls, so comparatively recent in their origin, would be but feebly represented by any varieties of animal life. But the entomologist will find here not an uninteresting field of study. The most common kind of insect is the parasite *Pediculus*, disgustingly numurous in the heads of natives; a large size *Libellula*, dragon fly, is quite numerous, and a few of the diurnal and nocturnal *Lepidoptera* are found. Of ants and mosquitoes and flies there are large swarms. Of the *Culex* there is probably a new kind, which might be called diurnal culex. They are very small and almost as numerous as those more commonly seen at night. Of *Scolopendra*, centipedes, there are many to be found and of rather formidable size, though we rarely hear of their biting any one.

There are several varieties of spiders. The scorpion, though found ou the atoll, is small and harmless.

The *Crustacea* are numerous on land and in the water. We seem to have a great abundance of the *Paguridæ*, hermit crabs. I have thought they were more numerous on these coral islands than on the volcanic ones.

The *Mollusca* too are abundant. Some rare specimens are found. The orange cowry is common to some of the lagoons. Zoophytes also are numerous, as would be supposed, in these waters. A valuable and quite abundant sponge is also found in some of the lagoons and the Marshall Islands.

It will be noticed on the reef of this atoll that besides the islet of Ebon there are nineteen others, All of them are much smaller than Ebon, though for their size they are equally fertile. Some of them seem to be veritable fairy lands,—so soft is the green grass which covers them,—and the deep shade of the interlaced bushes and majestically tall bread-fruit trees, throwing out their long sweeping arms like the monarch oak,—

"Who has ruled in the green wood long."

In the growth of some of these islets we have perhaps some interesting facts connected with the rate of growth of islets or coral reefs. Bikri is an islet containing not more than an acre of land. A few *Pandanus*, self-sown from seed washed there by the waters of the lagoon or sea, have taken root. And there are a few bushes,—a variety which I have noticed as growing only on the frontier soil of an islet,—soil which is but little more than sand. From the leaves of these bushes and pandanus soil is very slowly forming. But the present age of the islet is, as stated by a native who saw it when only a sand bank washed by the tides, some thirty-five years. He remembers it when a boy as only a sand bank. Now it has a little soil and a few bushes. The islet Nanming he describes as once only a sand bank. It is now about the same size and condition as Bikri. These facts are not stated of course as definite for determining the rate of growth of coral islets, for into such a calculation many other circumstances might enter, such as the position of the reef for catching and holding the washed up matter, &c. But we may learn from the facts here given that the growth of the land, like the growth of the reef-rock, is very slow.

Near the southern extremity of Toko (opposite *x* on the map) some thirty-five years since there was a passage sufficiently large to let a proa pass over the reef between what was then two islets. Now that passage has been filled up aud large bushes grow there. The only tree of any size is the cocoanut and pandanus, which have been planted. The fact we would state as illustrative of two points,—one bearing on the fact we have just referred to—the rate of growth of an islet; and the other, that large islets are made by stringing, as it were, together several smaller ones. It may be questioned whether a large islet, say some two or three miles long, is one continuous production; it was rather formed by several smaller islets becoming attached, and the whole in time becoming one large islet. This fact, I think, can be clearly proved to have been the case with the growth of the islet of Ebon. There are several spots which may be indicated as the welding points of small islets. These places are usually narrower and less overgrown with bushes and trees, and possess a thinner soil than other parts of the whole islet. Then, again, there are places which are expanded; just as if they had been the central nucleii of the islets. These are heavily wooded, have large bread-fruit trees and other trees of apparently an old age growing on them. We have reason to believe that all the islets of this atoll will in time be thus

united, and thus the whole reef possess, so far as it goes, one unbroken chaplet of vegetation.

We are now deeply interested in watching the formation of sand banks at one or two points. As yet they are shifting about, as the winds and seas prevail for a given time from any quarter; they are as yet covered by high tides. One of these sand banks is between Eni-armeth and the northern point of Ebon. We may not live to see it, but we believe that this sand bank will yet become fixed, will enlarge itself, catch some floating seeds and appropriate them, and then there will be another green islet on the reef. This will again expand itself and become the connecting link of Ebon and Eni-armeth,—thus completing the length of the green band of this Ebon Islet on its northern extremity.

The Western Division of the Mediterranean.—*Navigation: Passages from West to East.*

(Continued from page 419.)

The general current setting to the eastward inclines to the S.E. off the Riff coast, approaching the shore nearer the more this projects seaward, the reason why off Cape Tres Forcas, a very prominent point, the limit of the eastern current passes near the shore, as shown by the numerous piracies practised on that coast. A vessel, for instance, to enter the Mediterranean, shaping a course to pass between the above cape and Alboran, being becalmed about the meridian of Velez de Gomera, or Alhucemas, is drifted insensibly towards Tres Forcas, and seen by Riff pirates from the heights of their mountainous coast, when they instantly embark in their boats and with the swiftness of a bird of prey seize the unfortunate vessel. A similar fate has happened to ships working with westerly winds between the coasts of Spain and Africa, by extending their boards too far over to that coast they have been becalmed, and left at the mercy of the S.E. current.

Nor are cases wanting of vessels thrown down on that coast by westerly currents. The S.E. current off Cape Tres Forcas will produce a westerly counter-current at a short distance from the shore, and which following its windings runs W.S.W. between Tres Forcas and Velez de la Gomera, and West, W.N.W., and N.W. between this point and Ceuta. Therefore a sailing vessel becalmed to the West of the cape will fall into the general counter-current, and be set to W.S.W. along the coast, and exposed to the attacks of the Riffs.

In summer calms are frequent on the Riff coast, and if there is any wind on the coast it is generally light from the East or S.E., even while in the offing a fresh levanter will be blowing. Sometimes a N.E. sea will be running on the coast, which contributes to set vessels down upon it that may be becalmed in this barbarous neighbourhood,

another reason why sailing vessels should timely avoid it, and never navigate to the South of the parallel of the Strait.

The general current on penetrating into the Mediterranean splits more in proportion the further it is from the Strait, inclining to the S.E. on the African coast; and as in other parts light winds and calms prevail, here vessels beating to the eastward in mid channel should be cautious in their southern boards until they get on the coast of Algiers. They should remember that it is easy to get becalmed even at twenty to thirty miles from the Morocco coast, and be drawn by the current towards Cape Tres Forcas, where they will be exposed to the pirates, and therefore they should get much to the southward of the parallel of Ceuta until the meridian of Chafarinas is passed.

We have hitherto been considering these different routes as adopted in the fine season, when the whole Mediterranean nearly may be considered like a harbour. But the same tracks adopted in winter will require some precautions, which we shall describe especially for the benefit of those who may not have had much experience in the Mediterranean.

The Winter Season.—It is considered that in winter the prevailing winds in the Mediterranean are from the S.W. and N.W. quarters, with which there is not so much necessity to navigate in the middle of that sea for the sake of the general easterly current, a vessel being able to approach the shore as desired in the confidence that the wind will not fail her or that it will draw more off shore.

Vessels bound to the ports of Algiers and reckoning on a fresh N.W. breeze, should be cautious in approaching the land, for that wind raises a considerable sea. They should make for the cape that is next to windward of their port, avoiding the intervening coast; but if the wind be S.W., they may make and run along it, for these are more moderate and off shore.

Vessels bound to the Levant should keep sight of the Spanish coast as far as Cape Palos, continuing their route to the southward of the Balearic Isles, and sighting them to correct their reckoning. then steering to pass to windward of the islands of San Pedro of Sardinia, if the wind inclines to N.W., or to the South of Cape Teulado if it be from S.W. At all events they should by all means keep well clear of the coast of Algiers, in case of meeting with a norther.

When the N.W. wind is settled, the coast of Spain should be kept in hand as close as possible, and should not be left until the isle of Formentero is got hold of, when the vessel should edge to the northward for Minorca, where most likely the wind will become scant. But having gained Minorca, a vessel will be sufficiently to windward, for if the wind should draw from the gulf of Lyons, Sardinia may be steered for. In this part of the track much delay must be expected if the wind draws to the northward, for in addition to the heavy sea which is brought by it, there is also the current, which may be estimated at least at a mile an hour. Hence a vessel should keep to windward so as not to get too far to the southward of Sardinia.

If vessels that have adopted this route have not got sufficiently to

the northward to keep clear of the African coast with the wind from the gulf of Lyons, they should use the utmost vigilance to pass the meridian of Bona, and get near Cape Teulada of Sardinia, for being set down to leeward by the sea and current, they might get on the Sorelle Rocks. With winds dead on shore the African coast is very dangerous and the shore cannot be made out until a vessel is upon it.

When a vessel from the Strait or the ports of Malaga or Almeria is bound to the Balearic Islands, the coasts of France or Italy, she should also keep to the Spanish coast, whether the wind be S.W. or N.W. With the former the wind is aft, and with the latter a good passage will always be made as long as the land is kept aboard. Should the vessel be for Palma or Mahon, she should take care to get between Ivica and Cape San Antonio, in case of meeting with a wind from the gulf of Valencia; or she will pass through the channel of Formentera if she has a pilot. If she is intended for Catalonia or the gulfs of Lyons or Genoa, and the wind hangs to N.W., she will manage so as to pass through the channel between Ivica and Cape San Antonio, will cross the gulf of Valencia, and will then stick to the coast of Catalonia until she makes her port.

It is not improbable before seaching Cape de Creux she may meet with a northerly gale, which will be the effect of the N.W. gale in the gulf of Lyons. In such case the navigator must resign himself to circumstances, and wait for a better chance for entering that gulf, if he should be bound to any port in it: but he will cross it if his vessel has sufficient power and is destined for any port of the coast of Genoa or that of Italy.

Even when the wind is S.W. and the vessel is bound to the gulf of Lyons, she should pass through the Ivica Channel, because the wind may be expected to change from West to N.W. in the gulf of Valencia, in which case the navigator will find himself to windward of the Balearic Isles to run with a flowing sheet for Cape San Sebastian. The maxim never to abandon the coast of Spain in winter time should always be observed when a vessel is destined for some port in the gulf of Lyons or for Genoa, because if in the former a strong northerly wind is blowing, there will be good shelter on the Spanish coast, and excellent anchorage in the bay of Rosas. The navigator who with a want of discretion allows himself to run outside of Cape San Sebastian, will get the whole force of the wind out of the gulf, and a sea which will distress him much, compelling him to put into the Balearic Isles, or keep his ground at sea. In this case, after much endurance he will drift down on those islands and find anchorage there, much to the detriment and delay of his voyage.

He should take care to pass to the northward of the Balearic Islands, especially of Majorca, and not to approach the coast with northerly or N.W. winds. As its coasts are very lofty, they produce calms and variable eddy winds, and the vessel will be at the mercy of the sea. which may consign her insensibly to perish on an inhospitable coast, destitute of ports or a sandy beach. Let him also carefully avoid the neighbourhood of Minorca, for although the northern coast

of this island is low, so as not to interrupt the wind from passing over,it is beset with rocks and reefs, and with that wind a frightful sea is running from the gulf of Lyons, which, combined with the strong current off its capes, has occasioned the frequent wrecks which are always happening there. The North coast of Ivica has not these dangers, being compact and bold a vessel may navigate there with safety.

If in the routes which are above described the vessel should have an easterly wind, which in winter is very strong, she should work mid-channel until past Cape de Gat, and make her southern boards shorter in proportion as she approaches the meridian of Cape Palos, and should gradually get up to the parallel of 39° if she is bound to any part of the Levant, in order to be to windward in case of meeting with the wind from the gulf of Lyons: and she will pass the Balearic Isles, being already to the eastward of Majorca and Minorca, if the vessel is bound to any of the ports of France or Genoa. If she is going to Tarragona, Barcelona, or any other port on the coast of Catalonia, she may pass through Majorca Channel, hugging this island as close as she can, with the view of keeping as clear as possible of the gulf of Valencia, because, as already observed, with easterly winds there is always a current setting into that gulf.

As the easterly winds blow dead on shore on the coast of Spain, especially from Cape de Gat as far as Cape de Creux, and besides which there are very few ports for large ships, vessels should not make their boards too far in-shore, approaching it only as near as would be required to recognize some important point to obtain the correct position of the ship; and in case of being bound to any of its ports, she may work up to the parallel of it.

With winds from East to S.E. there is a considerable amount of lee shore, and as with others a heavy sea gets up, it will be prudent never to stand on for the Spanish coast. A vessel may stand either way with a good long board between Cape de Gat and Cape Falcon, with her head to the northward, because the E.S.E. current will compensate her leeway. When further to the eastward of this part, the easterly current will not compensate so much, and therefore if after a night of beating up bad weather from the eastward continues, some good port should be made, such as Carthagena for instance, should the vessel be to windward of Cape Palos and the wind should not allow her to make Santa Pola; or she might make this place if she were off Ivica or further to the eastward.

The spacious bay of Santa Pola is one of excellent shelter, perhaps, indeed, the only one on the coast of Spain in every way adapted for large ships: it is safe, and is easily taken in all weathers. The bay of Palma is also an excellent refuge in easterly winds, and adapted for any class of vessels that are found South of Minorca. Nor is the bay of Rosas less so for those between the meridians of the gulf of Lyons, and Port Mahon is equally good for any vessel between those islands and Sardinia.

Besides these spacious and safe places of shelter for vessels of all classes, the ports of Barcelona, Tarragona, Alfaques, and Malaga;

may be considered secondary to them, but for vessels only of 18 feet draft, pilot vessels find abundance of places of refuge in easterly winds, but unsafe and bad for those from the westward, there being much risk if these should suddenly set in.

The coast of Algiers has no safe port for all weathers except the port of Algiers itself, for when vessels reckon on some shelter from easterly they are exposed if a westerly wind sets in. The coast of Morocco has only that of Zafarinas, which is good enough for vessels of all sizes.

With westerly winds it is quite the contrary, for the whole coast of Spain affords good shelter from these, owing to its peculiar configuration. Hence it is that when westerly winds prevail, there is a multitude of anchorages in the bays, coves, and sandy coasts, independent of the ports. With North-westers there is no good place on the eastern coast of Majorca, and with northerly and N.E. winds on the southern coast of Minorca. The African coast also has abundance of places of shelter from westerly winds.

Routes from East to West.

If it be desirable to keep mid-channel when passing from West to East with the view of profiting by the general current, it is no less so from East to West, because a vessel has to run over that which delays her progress. Therefore, vessels from the Levant, from the coasts of Italy and France, the Balearic Isles, and the eastern parts of Algiers, should borrow over to the coast of Spain in proportion as they cross the meridians of Capes San Antonio and Palos.

If it be summer, and the vessel is bound to any ports of the Atlantic, there will be no difficulty in making Cape de Gat wherever she may be from; but arrived off this cape, it will be necessary to leave the coast in proportion as the vessel nears the Strait of Gibraltar, and a course should not be steered for the mouth of the Strait until the vessel is off Point Burra. Vessels from Oran and other ports of the western coasts of Algiers may run along the coast of Barbary, keeping well in-shore as far as Cape Negro, and from thence steer for the mouth of the Strait; but they will run the risk of being becalmed off Cape Tres Forcas and other points of the Riff coast, and being victimized by the pirates who dwell there. It will be therefore better for them to get hold of the Spanish coast and keep it.

Vessels from the gulf of Lyons and coasts of Catalonia should keep well clear of the gulf of Valencia should the wind be fresh from the eastward, and may make the land of Ivica, preferring Cape San Antonio, and navigate at a moderate distance from the Spanish coast, so that if at night the wind falls less, as often happens, they will not be drifted by the sea on any one of the salient points, and once off Cape de Gat they may then close with it, for the coast running East and West there will be no danger with the easterly wind.

If the wind should be from the westward, with which the easterly current gains considerable strength, the vessel should be more careful to keep on the Spanish coast, for from off Cape Palos the strength of

the current will be felt. Vessels from the gulf of Lyons and Catalonia, with these winds, if from N.W., should run free for Cape Antonio. If the weather should be fine, the wind never fails at night to become N.W., rather fresh, with which it may be passed well.

Arrived off Cape San Antonio, they should manage their boards so that from midnight to daylight they may be well in-shore to profit by the two or three points which the wind veers more for the land, and by 10h. or 11h. a.m., the time when the westerly wind hauls off shore, they should be sufficiently off shore to make a good lay up along the land.

It has been observed that when the weather is fine solar breezes prevail in the bays, and at night become land winds. This circumstance very much favours coast navigation; but large vessels even when they keep well off shore may participate in the benefit of both these winds, taking care to be well out when the westerly wind becomes S.W., which is from ten to eleven in the morning, and near the coast when the wind hauls to the land, which is about eleven to twelve at night.

The difficulty in getting to windward with westerly winds increases in proportion as vessels approach the Strait, and it is such as to oblige vessels to anchor on any part of the coast for rest from the fatiguing work of beating without effect for several days. In summer, when westerly winds prevail, they will continue blowing for more than a month between West and S.W., especially between the Strait and Cape de Gat. Then it is that the anchorages of Roquetas, the bay of Malaga, Fuengirola, Sabanilla, and many others, become crowded with vessels, besides a multitude of others which keep under sail on the coast.

When this constancy of the wind happens, it is very difficult to get from East to West on the African coast; vessels going from Algiers to Oran being obliged to stand over to Ivica and sometimes to the Spanish coast to get away from the effects of the general current to the eastward, managing by this means to shorten their voyage. The same may be said of vessels from the eastern ports of Algiers desiring to get to the western.

Some navigators entertain the idea that by making long boards they gain more to windward, and allow themselves to run into the Barbary coast, and to tack under that coast for the opposite one of Spain. But what generally happens to them is to fall to leeward of the point they started from; for in the two crossings of the channel they have been under the effects of the general current, which has set them to the eastward. If instead of making these long boards they had kept working to windward in-shore on the coast of Spain, they would not have got to leeward, although they might not have gained anything to windward.

There may be a time, however, when it is well to stand over to the Barbary coast; but it must be when the meridian of Estepona is passed, from off which a vessel may be sure of reaching Tetuan Bay. When once in this, she may work with advantage without passing the

line of the current, and she will easily reach Ceuta, from whence she may stand without much harm over to the bay of Algesiras, taking care that it be with the flood tide. Of this we have already treated in a former page.

It is common in summer time, when the westerly winds prevail, for the wind to blow fresh in the day and to fall calm at night in the Strait on both shores, without any land wind from either. Only in the bays of Malaga, Marbella, and Tetuan, the land wind sets in about daylight, reaching to a short distance outside, so that coasting vessels only can make use of it. Thus it is that vessels so frequently lose in the night what they may have gained in the day if by dark they were too far off shore, on account of which they decide mostly on anchoring.

Winter Season.—If in the summer season vessels may anchor for a time in the several bays between Cape de Gat and the Strait, and even between Tetuan and Ceuta, it is not so in winter. In this season, which is that of the Vendavales the several anchorages of Roquetas, Fuengirola, Sabanillas, and other bays between them are not to be trusted, nor even in the southern one of Ceuta, because the changes to easterly winds are so sudden that a vessel is fortunate if she gets away by slipping her cable when she is caught by them. Therefore, when the westerly gales oblige a vessel to seek an anchorage, it should be a good one.

(To be continued.)

Summary of Instructions for the Management and Use of Chronometers.

I.—*On Embarking.*

1. Whenever chronometers are to be transported, clamp the catch of their gimball rings and carry them by hand, or slung with a line, or in a handkerchief, taking care not to give them any shock or circular or oscillating motion.

2. When embarked, stow them in the case prepared for them on beds of horsehair, shreds of bunting, or raw cotton, padding them around and between with the same soft material, so as to prevent the possibility of motion or concussion. The line joining their XII. and VI. hour marks should be all in the same direction, and parallel to the keel. Never use sawdust or wood shavings.

* The time for all observations on shore or on board is to be taken, in the first instance, by a pocket chronometer or an assistant watch showing seconds, and the times then shown by each of the chronometers are to be obtained from it, by comparing it with them both before and after the observations. See Sec. II.

3. Release the catch of the gimball rings; see that the gimballs work freely, but not too easily.

The chronometers being once secured in their places are *on no account to be subsequently moved or displaced** until relanded at home.

4. The chronometer case should be covered over with a covering of coarse woollen cloth to guard them from sudden changes of temperature.

II.—*On Winding and Comparing.*

1. Wind up daily at the same hour, (8h. a.m.,) counting the turns, and winding carefully until the key is felt to butt; eight-day chronometers on Sunday.

2. Immediately after winding, compare each of the chronometers with the "standard" (the best chronometer, previously selected,) and note the comparisons in the chronometer journal, form No. I.

3. Note also at the same time the thermometer (which should be kept within the chronometer box) and also the barometer.

III,—*On Errors and Rates.*

I. Chronometers being virtually intended for determining the "difference of longitude" or "meridian distance" between places visited by the ship, as well as for her safe navigation, their errors and rates must be very carefully ascertained. The ERRORS are best found by "equal altitude" observations of the sun, or in default of them, by single altitudes a.m. or p.m.; all such observations should be made with an artificial horizon on shore.

2. The RATES are to be ascertained by comparing their errors on local mean time, obtained consecutively at convenient intervals of not less than *five* or more than *ten* days; *seven* days is a convenient average interval. The difference of the errors divided by the number of days elapsed between them gives the mean daily rate of the interval.

3. At places where time signals are established for giving daily "local or Greenwich mean time," they may be taken advantage of, and the errors and rates deduced from them: but independent astronomical observations are most to be preferred; and the errors should be recorded, with the rates deduced from them, as shown in form No. II.

IV.—*On Meridian Distances.*

1. The chronometric longitudes of places visited are not required, but the "meridian distance," or difference of longitude *in time*, as shown by each chronometer between those places from the observations,* is to be carefully recorded as in form No. III.†

* The value of a meridian distance depends mainly on the care with which the errors and rates have been determined at each of the terminal stations, and the errors at intermediate ones; on the shortness of the run between the places called at, and on the number of chronometers employed.

† It is extremely desirable that a record of the mean daily temperature of the chronometer case, extracted from the chronometer journal, should always

V.—*On Position of Place of Observation.*

1. It is very important that the exact site of the observations should be distinctly specified. At a well frequented place, it is advisable that they be made on the site previously selected by former observers, as great confusion arises from the unnecessary multiplication of sites of observation.

2. If it be a new station, its situation should be carefully described, its latitude and approximate longitude be given, or its connection with some adjacent known position.

VI.—*The Chronometer Journal.*

1. The chronometer journal, kept in form No. I., is to contain the record of the daily comparisons at the time of winding.

2. Notice should be taken in the column of remarks of any circumstances likely to affect the performance of the chronometers, such as gales of wind, violent motion of the ship, her striking the ground, heavy firing of guns in action or for exercise, accidents to or stoppage or removal of any of the chronometers, storms of thunder, lightning, and general direction of the ship's head, &c.

3. The daily rates of the chronometers, determined from time to time by observation, should also be noted as a record, and for the purpose of occasional comparison with the column of second differences.

4. The chronometer journal, being *neatly* and *methodically* kept in the manner above described, there will be no necessity for keeping a fair copy of it, the *original* being carefully preserved in readiness for transmission home.

VII.—*Official Returns.*

1. As the results arising from the good management of chronometers are only permanently required for the purpose of settling longitudes, form No. III. when filled up is to be kept. But as there is much probability of the others, No. I. and No. II., being also required, special attention should be paid to all the foregoing particulars, both as to the precepts they contain and the forms directed by them to be kept, in order that when these are wanted on any occasion for the investigation of results in longitude, they may be immediately forthcoming in a satisfactory condition for reference.

accompany the returns of meridian distances, forwarded home at any time. In the present state of chronometric science the investigation of the effects of temperature is a question of much interest, and can only be successfully accomplished by aid of the records of careful observations.

Form No. I.

CHRONOMETER JOURNAL, showing Daily Comparisons of Chronometers on board H.M.S. between day of 18 , and the day of 18 .

Date.	Barometer.	Max. and Min. Ther.	Chronometer A.	2nd Diff	Chronometer B	2nd Diff.	Initial of Compārers	Remarks.
	in.	°	h. m. s.	s.	h. m. s.	s.		
1863.			*z* 2 15 0		2 15 30			Heavy gales, much motion.
Sunday,	29·91	80	10 50 7		7 20 1		C.S.	
Jan. 1.		78	3 24 53		6 55 29		W.B.	
			z 2 39 0		2 39 30			
Monday,	30·32	78	11 14 5·3	1·7	7 43 48·8	12·2	C.S.	Confused cross sea.
Jan. 2.		71	3 24 54·7		6 55 41·2		S.C.	
			z 2 35 0		2 35 30			
Tuesday,	30·41	73	11 10 5	0·3	7 39 38	10·8	C.S.	Less motion.
Jan. 3.		67	3 24 55		6 55 52		J.F.	

Note.—The chronometer journal should be kept ruled up for use in a book (foolscap size): each page may be ruled to contain ten days' comparisons (three pages thus sufficing for a month),

The column for remarks should be of ample width, and if necessary the form should stand lengthways on the page, so as to accommodate any required number of chronometers.

It will be useful to note from time to time in the column of remarks, the errors and rates of the chronometers, as determined by observation.

Great attention should be paid to the record of the temperature.

At the commencement of the book a notation is to be made of maker's name, and number, and distinguishing letter, and whether it be a one, two, or eight day chronometer.

Form No. II.

OBSERVED ERRORS and RATES of CHRONOMETERS on board H.M.S. *A. B.*, Esq., Captain. Station between the Day of 18 and the Day of 18 .

Refer. Letter	Errors of Chronometers on Local Mean Time by (1) Equal Altitudes of the Sun; Date and Time. (2)	Errors of Chronometers on Local Mean Time by (1) Single Altitudes of the Sun; Date and Time. (2)	At the Mean Epoch. (3)		Mean Daily Temperature during Period of Rating.	Place and Spot of Observation.	Remarks.
			Concluded Mean Error. (4)	Concluded Mean Rate. (5)			
Z					(6)	(7)	(8)
A							
B							
C							
D							
Z							
A	N.B.—If errors alone have been ascertained, they are to be recorded in this column.						
B							
C							
D							

(1) Here insert nature of observation, equal altitudes, single altitude a.m. or p.m., &c., &c.

(2) Here insert date and time. It will be convenient to express the latter decimally: thus, June 9th, 8 40 a.m. would be written June 8, ·861d; May 21st, 3 p.m., May 21, ·125d.

(3) Here insert the mean date and time on which the two errors depend. Thus if the first error belonged to Jan. 5, ·880d, and the second to Jan. 12, ·872d, the mean epoch would be Jan. 9, ·376d.

(4) Here insert the mean of the two observed errors.

(5) Here insert the difference of the two errors divided by the interval in days elapsed.

(6) Here insert the mean of the two thermometer readings at time of winding for every day between the period of observation for errors.

(7) Here distinctly specify the place and spot of observation. If a new station, give its latitude and approximate longitude.

(8) Here insert anything noteworthy likely to affect the chronometers or the value of the observations, weather on days of observation, &c., &c.

Approved,

A. B., Captain. *C. D.*, Master

Form No. III.

MERIDIAN DISTANCE to measured in H.M.S. *A. B.*, Esq., Captain, between the 18 and 18 .

Chronometer.	Meridian Distance.	Observed Mean daily. Temperature in interval between the Observations.		Remarks.
		Date.	Mean Temperature	
	h. m. s.			
Z.				
A.				
B.				
C.				
&c.				
&c.				

h. m. s. ° ′ ″

Arithmetic Mean . . . . . or

Estimated Mean . . . . . or

rejecting [any particular chronometers to be mentioned, for reasons specified].

Errors and rates at Chronometers (1) Day (2). Range (3)

„ at determined by

„ by

General direction of ship's head during measurement .

Approved, *C. D.* { Officer in charge of chronometer.

A. B., Captain.

(1) Number of chronometers employed in estimated mean to be specified.
(2) Number of days between the epochs of the observations.
(3) The range is the greatest difference of the resulting meridian distance by any two chronometers.
N.B.— Each meridian distance measured is to be reported separately in this form.

Compasses in Iron Ships.

The philosopher's stone is not yet found. Notwithstanding all we have heard of late years about improvement of the compass, its protection from *deviation*, and the correction of its errors, we have yet seen nothing that will cure the evil, nothing that will enable it to withstand the powerful influence of the masses of iron to be found in ships,—in fact, that will prevent deviation. Iron, indeed, is now taking the place of wood for the sake of economy, strength, and power in our ships, whether of the merchant or the State, so effectually, that the compass has become bewildered among the numerous influences to which it is exposed, and is well nigh striking work, as the saying is, altogether. How to release it, how to let it exercise its virtue free from all those influences, is the great object attempted by many, but effected by no one. Among the most recent attempts at this is a modest one, called a "Compass Corrector," which is simply obtaining an observation of the sun's bearing for the deviation; but another, which has captivated seamen most, and led to the deviation of their reasoning powers if it has not corrected the deviation of their compasses, was a very plausible one of a Mr. Gisborne, which was to assume at pleasure a cuirasse of electricity. The idea was ingenious enough. But as this electricity was to admit of the magnetic action of the earth, how could it do this without admitting also that of the ship? Much credit is due to Mr. Gisborne at all events for the novelty of his proposal, for novelty it was in these days. Still we have not heard of its success. We do not find that it has undergone the test of our ships of war, even if it has that of our noble steam packet fleet,—and we are still where we were a century ago. The compass fittings have been abundantly improved,—but magnetism is magnetism still, and the magnetic needle will obey that power, whether it be permanent like that of magnetic poles or induced like that of a ship's iron very frequently, with all her iron sides and furniture.

These reflections have occurred to us on finding a very interesting account of the effects of the deviation on the compass of one of our clipper ships, gone to a distant part of the world. But in reference to all the attempts made to annihilate deviation in the compass, we quote the following from a new edition of the *Admiralty Manual of Compass Deviations*, just published. It says first of fogs, which have been gravely heralded among the enemies of the compass, that—

It has been sometimes supposed that fogs and peculiar states of the atmosphere affect the compass. There appears, however, to be no ground for this supposition. No ordinary meteorological phenomena appears to have any appreciable effect on the compass: from this of course must be excepted the occasional effect of lightning in reversing the poles of the needle, or, indeed, rendering it useless.

It is also sometimes supposed that when a ship is near land the nature of the land affects the direcition of the compass. The effect of

particular rocks on the direction of the needle is very perceptible when a compass is taken on shore, and is in close proximity to volcanic and other igneous rocks; but there seems no ground for believing that this influence is perceptible on board ship.

From these impressions as to the effects of causes which *might* operate, though their effect is in general inappreciable, we must distinguish those misconceptions or delusions which often prevail even among persons who might be expected to know better. Thus, though nothing is more certain than that no substance whatever, magnetic or non-magnetic, conducting or non-conducting, electrified or non-electrified, has the slightest influence in intercepting the action of a magnetic body on the needle, yet many schemes have been proposed for correcting the compass by interposition of substances which it is supposed will intercept the action of the iron of a ship on the needle. So too it is sometimes supposed that the effect of an iron cargo may be diminished by the interposition of the cargo placed above it, and that the effect of iron stanchions is diminished by covering them with brass or even painting them. All such ideas are entirely groundless.

We trust, however, that we shall hear no more of such matters. But the following is a plain matter of fact, the effects of which will require all the reasoning powers and ingenuity of the captain to remedy.

Yes,—all these bugbears about the compass have been invented to account for mismanagement, which is the shortest term that includes in one word currents supposed or real, bad steering, and a host of other prolific sources of mischief. But real mischief indeed is threatened from another source, merely the heeling over of the ship under her canvas, increasing the deviation, as will be seen by the following letter published through the Board of Trade, and it is one that is sufficient to make the most careful commander look about him. The more it is studied the better, and it is well that not only should the commanders of our clipper ships have such things before them, but also our ship-owners and builders should see to what a wretched plight they have brought their best friend—the mariner's compass.

The following document on the influence of iron on ships' compasses, has been received by the Board of Trade:—

Sir,—Having followed your instructions to attend at Greenhithe to watch the swinging of the ship *City of Sydney* by the owners, I beg leave to report certain points of interest in connection with the magnetism of this ship, the arrangement of her compasses, and their bearing on her safe navigation, which I consider of sufficient importance to bring to your notice. The *City of Sydney* (chartered by government) is a new iron sailing ship of 1,180 tons, fitted with iron lower masts and rigging, steel lower yards, tautly and squarely rigged, and generally built and equipped for speed. On her poop deck, supported by iron beams, was originally fitted two low binnacle compasses, one close to the wheel, which is over the rudder-head, and the other

on the break of the poop before the mizenmast. This latter was replaced, at my suggestion, by a superior azimuth compass, and elevated much higher from the deck in order that astronomical or other bearings might be accurately observed at all times. Midway between the iron main and mizen masts, elevated 20½ feet on a skeleton framework above the upper deck, is a third compass, nine feet above the level of the poop deck, with which it communicates by a small wooden bridge. This compass, which can be illuminated at night, is therefore isolated as far as it can be from the general iron of the ship.

The following are the general results of the errors observed in the three compasses, with the ship on an even keel:—The elevated compass, notwithstanding its position, has a maximum deviation of 35½°; the azimuth, or standard compass, a maximum deviation of 24½°; and the steerage compass has a deviation of 5½ points, which was finally reduced to one point by the application of three powerful magnets secured to the deck near it. These large errors, which, from the fittings of the ship, do not admit of remedy, become very complicated under certain inevitable conditions.

1st. The azimuth compass, placed in as favourable a position as circumstances will permit, has the large error of 1½ degree of deviation for every degree of heel of the ship, the North end of the needle being drawn to the high or weather side of the ship. This I ascertained by a series of magnetic experiments. This serious error will gradually decrease as the ship goes to the southward. In the Southern hemisphere it may be even reversed, and the North end of the needle drawn to the lee side of the ship. The elevated compass will probably be free from the large heeling error, and thus serve as a check on the azimuth compass.

2nd. The steering compass cannot act in the Southern hemisphere with the arrangement of magnets which now correct it. New conditions of magnetism will arise, which the captain must be prepared to meet. He will be obliged to remove the magnets, and probably also to move the compass forward or to elevate it. Experience and experiment will alone settle this point.

3rd. The ship is recently launched (March 21st) and experience conclusively shows that the magnetism of an iron ship does not attain its normal or settled condition till some twelve months' sea service after leaving the stocks, and at the early period of the changes are sudden and uncertain. A striking example of this change was afforded by the *Great Eastern;* in this ship, in a compass favourably placed, the deviations in certain directions of the ship's head changed nearly three points in the first nine months' service.

The *City of Sydney* presents one of the numerous instances of want of attention among iron shipbuilders and owners to preliminary arrangements for the compass, in the progress of building and equipping iron ships. In a ship where iron so thoroughly takes the place of wood, her ultimate safety demands some attention to details affecting it. In the absence of legislation on this subject, the case of the *City*

of Sydney supplies two points deserving the attention of the government authorities when chartering iron ships, and especially those intended for passengers, troops, and emigrants:—

1. The inexpediency of chartering an iron ship which has not made at least one previous long sea voyage. A ship having made one ocean voyage has shown her action on her compasses, even if she has not acquired her ultimate condition of magnetism.

2. The necessity of the person in command having had experience in actual charge of some iron vessel in a long sea voyage, and, if possible, in the ship about to be chartered.

Respectfully submitting these points for your consideration.

I have, &c.,

FREDK. JNO. EVANS,

Master Superintendent.

To the Hydrographer of the Admiralty.

SHORT NOTES ON JAPAN.—*By Lieutenant G. T. Robinson, H.M.I.N.*

Leaving Kanagawa at 10h. a.m. of the 4th of August, we pursued our course in a West-south-westerly direction. Our attendants were numerous, the Vice-Governor of Yeddo was charged with our safe custody. The road from Kanagawa is the "King's Road," well kept and lined on either side with magnificent trees of the fir and cedar, so abundant in Japan. The country would require an abler pen than mine to do it justice, hill and dale, mountain and valley, succeeded each other at every turn and winding of the road; busy villages, with their fat, healthy, and good-tempered inhabitants; the entire absence of anything like *waste lands*, revealed a country at once populous and highly cultivated, and a people smiling and prosperous.

Our journey had been planned to allow us ample rest (and as it is considered the sign of vulgarity to "gallop" in Japan, our sure-footed galloways were kept at an easy amble); and divided into three portions: the first, from Kanagawa to Harconee, on the shores of a lake of that name; from Harconee to the base of the cone of Fusi Yama on horseback; and from Hushimondo to the top of the mountain on foot. Our first stage was to Sotsaka, and through the royal domain, in which it is forbidden to shoot, the game being strictly preserved; the infringement of which law by an English resident, has given rise to some very unpleasant litigation. Passing through Fussima, Hilatski, Orsa, Odawarra, Yamata, we arrived at Harconee, 17 rea* 12 skets, or about sixty-one miles, from Kanagawa. I found the altitude of the lake to be 6,250 feet, and the ascent to it so steep up the Harconee Mountains from Odawarra, that we had to dismount and lead our horses up the abrupt, though well-made, mountain road. At Odawarra we crossed the Sackawagna River, a broad stream, in barrows carried

* The rea = 36 skets = 2¼ English miles.

on men's shoulders. The Harconee Lake cuts through the boundary of the royal or crown lands, and to prevent smuggling across the border, boats on this picturesque lake are forbidden. I was thus unable to sound its depth, being too much afraid of cramp to venture on a swim to its centre. I was enabled, however, to measure parts of its shores, and estimate its mean width at 1,500 yards, and its length some three miles. It is enclosed by the high peaks of the Harconee range, and its depth must be considerable. The weather was wet and cloudy, and I was unable to fix its position, or determine the variation of compass.

From Harconee our way lay through Mussnud, Numadso, Hallah, Yosiwalia, Orino, Murigona, to Hushimondo, about eighty miles, still along a well-made wide road, bordered with trees ranging from 10 to 17 and 24 feet in circumference. From Harconee there had been a gradual descent of the land face of the mountains of that name, across numerous streams of varying breadth and strength (though few of a size to be navigable except by small boats) to Halla, from whence the country gradually rises to the base of the cone of Fusi Yama; at Murrijama we halted for the night (as we had done at several other stages), when I ascertained the height above the sea level to be 4,100 feet,—the sea shut out from view by the Harconee Hills before alluded to.

From Hushimondo we started on foot, armed with light piece Alpine-stocks to scale the face of the cone; rising at an angle of 35°, the ascent was most laborious over loose scoria. At every half rea, or about a mile and a third, there stands a rest-house, where tea and other light and agreeable refreshments are procured by the pilgrims. At the ninth rest-house we halted for the night, some 8,000 feet above the sea level.

Trees had ceased, and we found the cold rather more than we could comfortably enjoy. The morning found us above the clouds, wrapped in ice and snow that melted before the rising sun. Facing the hill side we pushed on; at 12,000 feet vegetation ceased, giving place to the snow drift; and at 13,977 feet above the level of the sea, we had planted the first European foot on the crater of the Holy Mountains of Japan. The day was glorious, clear, and fine; and exhibited a panorama the like of which poor I shall never see again. With the aid of a spy-glass we made out the ships in Kanagawa Bay, upwards of 100 miles distant, and the whole kingdom in its beauty lay smiling at our feet. The air was so rarified that we found it difficult to advance more than a few paces at a time. True to our instincts, we unfurled the British Union (Indian Navy one) Jack, fired a royal salute from our revolvers, sang "God Save the Queen," gave three British cheers, and drank her health in champagne, to the intense satisfaction of our Japanese friends, who evidently regarded our proceedings as a high religious ceremony.

Having acquitted ourselves as true and loyal Britons, I proceeded to take observations; and had the good fortune to secure them for latitude and longitude by artificial horizon and chronometer, and for va-

riation by azimuth compass, all of which instruments had been safely brought up by the hill coolies. The time of day and rest after our ascent enabled me to secure good observations, the results of which are as follows:—

Height of the edge of the crater	13,977 feet.
Ditto of highest peak	14,171 ,,
Length of crater	1,114 yards.
Breadth of crater	666 ,,
Circumference which agrees with the Japanese measurement, they having to perform its circuit in the pilgrimages	2½ naut.mls
Depth of crater	500 feet.
Latitude of temple or rest-house on top	35° 21′ N.
Longitude ,, ,,	138° 42′ E.
Variation of compass	3° 2′ W.
Temperature of air in sun at noon	54° Fah.
Boiling point of water	186° ,,

Leaving the mountain top we made for Atami, a place some few miles outside the bay of Yeddo, and celebrated for its intermittent thermal springs; the waters are sulphurous, and issue from the rocks near the beach at a temperature far above the boiling point, intermitting four times in the twenty-four hours. The roar of their discharge can be heard for miles round the country, and the vapour rises like a dense white cloud, visible many miles to seaward. There is no anchorage off Atami, and the *Berenice* was forced to anchor in a neighbouring bay, having come round to pick the party up; and, alas! the *Camilla* was no more, having foundered in one of those terrible cyclones that render the coast of Japan a terror to navigators at this season of the year. On our route I recognized the pine, oak, maple, beech, lime, alder, chesnut, apple, pear, peach, waxtree, tea, bamboo, orange, camphor, cherries, cotton, figs, grapes, walnut, rice (two kinds), millet (three kinds), sweet potato, egg-plant, Indian corn, beans in variety, peas, carrots, turnips, onions, pumpkins, tobacco, sugarcane; in fact, I should say that Flora holds a year long jubilee, and Ceres a daily feast in the golden islands of Japan. Coal is in abundance—the authorities are reluctant to give information as to which are the mining districts—all the islands produce it; as yet it is only surface coal, and of a quality far superior to Burdwan, and very cheap; one dollar for about 3 cwt. The islands are volcanic and subject to frequent earthquakes, so much so, that the houses are constructed of wood, and the fortifications, which are extensive and highly scientific, are built of huge slubs of stone, and without mortar. On the northern island, and about Hakodadi, the potato and hop grow in abundance. Near Hakodadi are several considerable active volcanoes, from whence sulphur in large quantities is procured, and the island of Vires, at the entrance of the bay of Yeddo, is in full play. Gold, iron, copper in large quantities, and silver, are also among the mineral products.

The people of Japan are civil and good tempered; and as far as I

could judge, the rows and disturbances we read of, are brought on by the misconduct of foreigners resident in and visiting the seaport towns. The eastern shore of the bay of Yeddo is yet unsurveyed. I found good anchorages behind the islands marked as Saka Sima and Youka Sima, in 6 fathoms, mud, shut in from N.N.W. round to West, Saka Sima W. ¼ N., one and a quarter miles.

The coast from Son Saki to Cape King, is very incorrect; from Sirake to Kako Jama (Oosigassi Saki on the chart) I obtained 25 to 15 fathoms close in shore; between Cape Tamietsi and Singa Saki I obtained from 20 to 10 fathoms, sandy bottom. The line of coast was much out, and having native pilots, saw the folly of giving "fancy" names to headlands and capes, for few of the names given on the chart were recognized; and I trust that the able officers who are now endeavouring to effect a survey of the coast, will follow the example of the surveyors of the Indian Navy, and give the *native* names to their discoveries; and it would help future navigators if the names were inserted in the native as well as in English characters. The whole coast was alive with fishing boats. From Oosima up the Kino Channel the coast is unknown, and out in longitude from Sira Saki North and N.E. to Oozaka; the coast is very much out; the straits on the East side of Avasi Sima safe, and well fortified; regular soundings from the straits to Oozaki from 25, 18, 11, 10, 9, 4, to 3½ and 2½ fathoms, where I grounded in soft mud close to the beach.

Fioka is under the point marked Cape Avodine, 5 to 7 fathoms, mud, open to the E.N.E. The Sinanoda Sea is a most wonderful place, and consists of a rapid succession of lakes and channels of all sizes and depths, now in the ship's own draft, and a mile further off no bottom with 100 fathoms of line: at one place I ran in to anchor I got 50 fathoms, no bottom, my jibboom was poking into a house window, and I had no room to turn the ship, had to back out and run for seven hours before I found a resting place for my "mud hook." In about long. 134° E. another channel out of this inland sea exists, not laid down in the chart. The water traffic is very great, and the towns on the shores are numerous and well fortified. Cultivation is carried up to the hill top. Vast quarries of stone exist. The dangers and rocks are marked with well-built beacons that would shame Bombay with her wretched attempts. The customs officials numerous, vigilant, clean, and civil. I did not land *en route*, as it was contrary to the wishes of the government; and offence had been already offered them by some silly people who were allowed to land from one of the Bengal transports. The current runs with a whirl through some of the narrow channels; the old *Berenice* was more than once spun round like a teetotum, and a screw steamer with her two transports in tow was nearly coming to grief. In lat. 34° N. and long. 135° 3′ E. I found shelter in a secure cove or inlet, called by the pilots Kisu-urano-utsa, during a heavy cyclone, which lasted for two days, and but for the friendly cove the *Berenice* and her crew would have gone to "Davy Jones," and ground to powder on the iron coast. The winds that

prevail on the East coast of Japan are:—January to May, West and N.W.; May, variable; June to August, East to E.N.E. and sometimes S.E.; September to December, West and N.W.

October is a bad month for navigation; and from the middle of August to the middle of October is the worst season for cyclones, which blow with great fury, and give but little warning. From December to June the climate is delightful; clear, cool and bracing: and at Hakodadi the snow lies foot deep on the ground. The mean range of the barometer throughout the year is from 29·70 to 30·06, falling to 27·50 in the cyclones. The range of the thermometer, mean 26° to 70°, extreme 14° to 74°.

The Russians have extended their possessions on the coast of the Corea from the Amoor to the parallel of Hakodadi, which they make their winter quarters. The northern half of Saghalin, with its rich fields of coal and mineral ores, has fallen to their share, whilst the shipwright and the armourer ply the busy hammer on the banks of the Amoor and its rapidly increasing arsenals.

Japan is one of the geographical wonders of the world; and its teeming millions, with their quaint mixture of barbarism and high civilization; its wonderful system of police; the military elements so largely diffused; almost a nation of sailors; its proud feudalism, and yet exclusive monarchy, should hardly be left the prey of unprincipled adventurers, who call themselves merchants, and disgrace the name.

Additional Notes.

King's Road.—The roads in Japan are well kept, and the main road of the empire, or King's Road, extends to all the principal towns. Of the one we traversed, though not macadamised it was a made road, and about thirty to fifty yards wide, and cutting through the towns I have named in my "Short Notes." There are other or Part Roads, these also are well kept, and as I coasted along the shores of the islands, could see the mail *en route* from station to station. The wheel carriages are few, and for goods' traffic only, strong wooden springless carts, with solid wooden wheels, drawn by cattle shod with straw. Pack horses are in general use as well as pack bullocks; the saddles of these pack animals are well made and very handsomely ornamented with brass and coloured leather. Their drivers seemed to be regularly licensed and very honest, and their services are procurable at all the towns on the road. The royal domain extends for a considerable distance from Yeddo, and is divided off by boundaries, as are all the different provinces or estates of the nobles. At the entrance of the estates that cross the public road is stationed a guard, always under arms, whose duty it is to examine the passports of travellers, and drive back any one who does not possess the authority to travel on that particular road. The guard houses we passed were perfect models; they mount guard as we do; each soldier has his lord's crest worked into and with the material of his dress. The Damios shewed their civility by sending a guard of honour with an officer of rank to pass us through their gates, and escort us to our next resting place; and

very imposing they looked sometimes. Absence of waste lands is remarkable, and the country a perfect garden. Their markets well stocked with vegetables and fruits of all descriptions; their carrots, turnips, and onions made up into bunches that would do credit to Covent Garden; their fruit exposed for sale in neat baskets, and sold by weight or measure; dried beans and peas are exposed in great variety, as well as potatoes. And here I may mention a curious thing; although the grapes are of a very fine quality and sold in plenty, I never saw them growing; the reason is, that the Damios or nobles are the only people allowed to grow grapes or to sit under their own vines (the restriction does not extend to the fig tree); and they, with a chivalrous gallantry, permit their ladies to cultivate the vine and sell the proceeds for—oh dear!—pin money, so you may suppose how sweet the grapes all tasted after I learned this interesting fact.

At Odawarra we were much surprised at the superior manufactures in wood: all kinds of household useful and ornamental work were procurable at the most reasonable prices. Their ingenuity in wood-working is great, and each article packed in a neat wooden case. Another peculiarity of the Japanese also struck us very forcibly, their love of gardens, running water, and dwarf trees. Every house has its garden, tastefully laid out and kept with the greatest care, and all seem to aim at having lockwork and falling water or cascades, and coloured fish of the carp tribe. Their dwarf trees are perfect marvels of smallness; many were shown us not a cloth-yard high, and more than two hundred years old, while their children of forty years and less, towered to the skies in the open and surrounding country.

The Harconee Lake is said to be the favourite resort of devils, and no wise Japanese would venture on its bosom alone after dark. No doubt that the salamander abounds in its waters. I saw several very fine ones: they feed them on fish. Murrijama is a halting station, kept by the Priests of the Mountain: they were very civil to us: they collect alms from the pilgrims. The mountain is only accessible during the summer months, when the rest-house keepers and the "strong men of the mountains" or, as we should call them, Hill Coolies, ply their trade. They are a simple, civil set, and attempt no extortion. Women are allowed or commanded to make the pilgrimage once every five years, and this was a woman's year: they don the pilgrim's dress, white, and it is difficult to tell men from women unless their faces are visible. It is hard work to ascend the mountain, and many perish in the attempt. Hurricanes often rage, and woe betide the poor creatures caught on the mountain side, for the mount rises in a perfect cone with smooth sides, and the loose rocks and stones and travellers are often blown down—literally blown away. The rest-houses are built on the natural ledges of the hill side, those of the lower ones are built of wood, those above the line of vegetation of loose stones piled and fitted into one another. The one we slept in was a single-roomed house, and full of fleas. After supper we wrapped ourselves in blankets, rugs, sea-boots, and stowing cheek by jowl, tried hard for sleep; but the cold was intense, and few of us enjoyed what could be called a

night's rest, tired as we all were. Looking from the top of the crater it appeared that several of the mountain ranges were higher than the one we stood on; but the peculiarity of Fuse Yama, rising as it does abruptly from the plain, makes it a "wonder of nature," while the others are ranges of mountains.

The crater of Fuse Yama is only accessible on one side, although the base to a height of about 4,000 feet can be approached on all sides. The cone must be about 10,000 or 12,000 feet on its sloping side. The last eruption occurred about 200 years ago. The bottom of the cup of the crater is quite flat, and would make a good circus, or cricket ground. I picked up a few pieces of the rock of which the mountain is composed, and made them over to the Curator of the Bombay Museum, Dr. Birdwood. The presiding priest in the temple on the top of Fuse Yama receives a fixed fee from all pilgrims, and in addition stamps the clothes, papers, and alpinstock of visitors for a consideration: this is of importance to the Japanese, but only two of our party showed any ambition to shine in the eyes of the untravelled Japaners. The mystic mark is stamped in ink by a metal hand stamp, and burned into wood, if required; no extra charge. The story about the daughters of the priests pursuing a naughty calling, is all gammon; and as to the wonderful stories told of these people and their morals, I should say that imagination has lent enchantment to the view. Their scale of morality is lower than ours, for the simple reason that we are Christians they are Pagans. Vice is not thrust on the wayfarer: if he seeks it he will find it, but will not be insulted if he do not indulge his passions. Among the married women infidelity is simply *unknown*, and they make themselves so jolly ugly, that I can readily believe it,—ugh! The men are bad enough surely, but as they do not profess to be better than they seem, we can only deplore their want of divine precepts and good example.

The grandest house in Hukahama was built by the Japanese government, at a cost of 80,000 dollars, for the accommodation of foreigners visiting the country. It is a beautiful palace, and judging from some of the scenes enacted there, the poor benighted Japanese must think us rare "peep o' day boys," and our morals none of the best. Ah me! poor human nature, if we had no one to pity, I believe we should begin to look at home and mend our own ways.

Atâmi is the Cheltenham of Japan; the real pump-room is in the open air, and the water led through all the houses. The De Courcys and the Fitzs of Japan take their villas at Atâmi for the season. The Joneses and the Robinsons do it in lodgings only. Every house has its bath-rooms, with hot and cold water let on, so that the bather can please his taste: the waters run through the baths. They have public bath-houses for the Robinsons and Joneses, clean and cheap. I must confess that I cut my namesakes and secured a Belgravian bath in a villa,—but then I was with the representative of royalty,—and besides that, the Japanese Robinsons are a distinct branch of the (human) family. I may add here, that bath-rooms in the houses are common, and supplied with hot or cold water. Each bath-room has a nice clean

water-closet attached, and a urinal filled with fresh aromatic fern. They are a cleanly people. They make one grand mistake, and that is, after washing two or three times a day, they put on the same dirty clothes, that is, the poorer classes.

The tea tree grows wild in Japan. I saw miles and miles of country covered with the tea shrub, and as far as I could learn no care is taken with its culture. They do not bake the leaf, like the Chinese, and that is the reason it will not stand the voyage to Europe; that which is sent home is first shipped to China, baked, and then shipped off to England. The Japanese drink their tea warm without milk or sugar. It is very pale, but acts like green tea. The camellia grows in great beauty. Some of the trees I saw were thirty to forty feet in height, and again, long hedges of the shrub ten to fifteen feet high; they flower twice in the year, the flower white striped with pink. The camphor and wax trees also grow in great perfection on the northern island and near Hakodadi. The hop grows wild; the variety I saw was a very fine one, and quite equal to our best Kentish,—they make no use of it. The Irish potato is largely cultivated; they are very fine and very cheap,—125lbs. for one dollar, picked. Salmon abound in the North, caught in the sea, also mackerel. Fish abound on the coasts. They are bold fishermen and I have met their small boats in very bad weather far off from the land, fishing mackerel with rod and line. Fish is their staple article of food, with rice. Meat they do not eat; fowls they will. Pickles they are very fond of, and cabbage, onions, and gherkins are sold in the grocers' shops by the pennyworth, as at home, out of what might be taken for the identical tub to be seen in the bye-streets of London. Wood is very plentiful and generally used for fuel, as is charcoal.

No Japanese is allowed to leave his country, and those who have left and returned are ignored. To prevent an infringement of this law, their ships or junks are not to be above a certain size, so that they may not leave the coasts and venture into the ocean. The junks are well-built, and are a cross between the Arab buggalow and the Chinese junk. They are well built and *copper*-fastened, impelled by one sail, almost square. The poop is built with sloping sides and very strong, with double doors; so that when a typhoon overtakes them they take in sail, retreat to the poop, and wait until it is over, the sea making clean breaches over them, but they are well fastened and float like buoys.

The trading community are anxious for foreign trade, but as yet they do not carry much weight; like as in Russia, the trader or merchant is looked down upon. The Damios are averse to foreign intercourse: it will lower their social position, raise that of the trader, and besides that the prices of everything will go up (as they have done already), and entail a much larger outlay to keep their host of retainers, and as many of them can count their followers by tens of thousands, it is a serious matter for them.

A curious crab is found on the coast, said to exceed twelve feet from tip to tip of its claws. The body is not larger than a medium-

sized dish. It is edible, and only appears in the hot months, when the children keep aloof from the sea. The largest I saw did not exceed three feet across. Sharks abound and are consumed as an article of food. I saw them exposed by dozens in the markets. Their soups, pickles, and dishes of fish are very good indeed; for about 1¾ of a penny I have had rice, soup, pickles, fish—two kinds, tea, served up by two charming young women by way of breakfast. Living in Japan is cheap. Butter and milk they are ignorant of, and curious stories are told of the means they adopted to supply milk to the foreigner when the ports were first opened: they did not call in the aid of poor piggy wiggy, as John Chinaman does, but stinted their own little squallers of their natural food.

Their police system is very good; each street is divided into sections by gates and railings, and at each gateway is a police station. In the event of a fire or disturbance the gates are shut, and the dwellers therein are called upon to make matters right again or pay the penalty. Their tea-houses are a curious institution; they are taxed by the government. Should a girl be taken out of one of them as housekeeper, she is held responsible for the native servant's honesty and good conduct. Their shops are large and good,—the silkmercers would hold their own with Howell and James. Their crapes are very fine and cheap. Jewellery they do not seem to wear. The women ornament their hair; the men dress richly but plainly, and all above a certain rank must wear silk: cotton is for the common herd.

The Japanese are by no means a bigotted people, they are open to conviction, seek eagerly for information, and all evince a desire to learn English; and I have no doubt that European literature, translated into their own language, will soon grace their book shelves. The Dutch is the medium of communication now, but they despise the Dutch now they know more of Europe and Europeans, or rather the Anglo-Saxon. I have no doubt but that a translation of the Bible would be well received. As yet the missionaries have done nothing but study the language, and win respect and esteem by their consistent walk and conversation, so very different to that of the majority of foreigners in Japan. It is contrary to the spirit of the treaty to touch their religion, and the missionaries have done wisely in acting as becomes the servants of the God of Truth, for too often they almost quibble in their zeal; and here, as in many other things, America has set us the example: she has her missionaries and missionary doctors, who do much good.

We find the following in the *Daily News*, taken from a private letter, dated Yokohama, June 14th, from a medical naval officer now on service in the Japanese waters to his friends at Manchester:—

Nagasaki is beautifully situated at the head of a deep bay and at the foot of green hills, backed up by lofty mountains. The scenery is most beautiful; the land is most fertile, and almost every available spot is cultivated with rice, barley, &c., somewhat in the terraced manner of the Chinese. The approach and the passage to Yokohama

is among innumerable islands, all clothed with cultivation or forests of every shade of green, with the white sandstone peeping out here and there. Each island is a gem in itself—the brilliant green of the young rice was beautifully contrasted with the many-coloured forests, and the whole was set in a broad frame of the purest blue water, dotted in every direction, as far as the eye could see, with islands or capes. The whole scene recalled to me the travels of Sinbad the Sailor, and was more like a dream from a fairy tale than an actual reality.

The shores were very populous. We passed numerous large towns with their toy-like temples and sombre-coloured low houses, as clean and neat as those in China are dirty and untidy; innumerable junks of all sizes, whose captains threw up their arms as we passed in token of friendship; innumerable fishing boats, with two men, or a man, or perhaps a single urchin, who grinned a good-humoured smile; innumerable pretty villages and houses to the water's edge—one I well remember where we passed within a cable of a sort of balcony, which was crowded with Japanese girls, who greeted us with waving their fans and chattering in a way that women only can.

The people at Yokohama do not appear so hostile as at Nagasaki, probably because there are here no Damios. The trading classes are, indeed, everywhere for us, and some of the Damios, but the majority of the Damios are decidedly against us, and they hold all the power in their hands. One thing is quite certain, if we wish to extend, or even preserve, our trade with Japan, the power of the Damios must be broken, and a war of a very bloody and expensive kind ensue sooner or later. No one of the fleet wishes war; the coolies and common classes are so civil and good that we should be sorry to fire a single shot at them, for they, and not the Damios, would suffer. All we can possibly do is to bombard their towns, of which, indeed, they are now so afraid that Jeddo is nearly deserted. We cannot march into the interior, or force Miako, without a very large army. The Japanese fight desperately, and are in such respects totally unlike the Chinese, for whom they entertain a profound contempt.

These Damios, or Princes, some of whom, as Satsuma, are enormously rich and powerful, with their proud swaggering retainers, resemble much the old feudal barons of the middle ages. They resemble them further in having continual feuds amongst themselves, which are handed down from generation to generation. They are very cruel and exacting in their conduct to the lower classes. A day or two ago, before we entered Nagasaki, a Damio was passing with his suite along the great road, when two little girls ran across in front of the procession. Now this, to a Japanese, is the greatest insult you could offer, but these children were too young to know it. They were immediately seized and decapitated, and their bodies left on the road with the Damio's mark.

Yokohama is a considerable town of 80,000 inhabitants. The Japanese houses are rarely more than one story, and most consist of two rooms, a front and a back. Built of bamboo and mud, and rarely of stone, they are always painted nicely outside, or varnished, and gene-

rally kept very clean. All ornamentation is eschewed, except on the roof, which is generally edged with chequered tiles. Wherever it can be afforded a small garden, with dwarfed trees, is sure to be in good condition; and in almost every room you see vases with flowers or dwarfed trees growing in them.

The floors are carpeted with a very even kind of matting, laid in strips a yard wide—the edges bound in black, so as to make an agreeable *parqueterie*, and it is always kept very clean, even by the poorest classes. They take off their shoes before entering a house, leaving them outside the entrance, and look as jealous at your boots when you enter as any English lady could, proud of a new drawing-room carpet. They never sit on chairs or stools, but squat down on the floor with their feet underneath, so that they appear to sit on their heels. And as you pass through the street thus you see them round a kind of square trough in the front room, in which there is always charcoal burning. They are either working or eating, or smoking a very fragrant tobacco out of a small bowled pipe, enjoying it immensely, and puffing it out slowly through the nostrils,—women, even girls, smoke as much as the men, and with equal pleasure. Or they are chattering with great earnestness and volubility in a language much softer and more liquid, less twanging and more harmonious, than the Chinese. Or they are singing, accompanying themselves on an instrument like the banjo, which they play with great dexterity. They enjoy their own music immensely, and turn up their eyes, and beat time and look wisely critical, all in the most approved style. I cannot see much, or rather hear much beauty in their music, though some of the airs are plaintive; but, on the other hand, they can see none in ours, and say it is too loud, and fit only for deaf people. Or they are washing themselves without any reservation, and apparently quite unconscious of any harm therein. Indeed, in the baths, which they frequent very often, the women are always washed all over by men, smiling in the most innocent manner. This almost total disregard of modesty, as we should say, is one of the most curious features in Japan, and does not appear to lead to any licentiousness. Or they are busy at their toilette, which is soon accomplished, all but the hair.

A Japanese lady appears to spend all her talent on her head. Her hair is black, glossy, thick, and long, and is done up in a most imposing superstructure with the aid of cushions, false hair, combs, and daggers or cross bars of tortoise shell. I cannot describe it exactly, but there appears to be this plan:—Brushed back in two lateral and one central mass from the forehead, it meets with the back hair brushed straight up, and the consequence is a series of rolls intertwined with gold thread and silk stuff, and curiously fastened up with coral-headed pins, gilt combs, and tortoise-shell bars. It really has a very pretty effect. The married ladies further adorn themselves by pulling out their eyebrows and blackening their teeth, though I believe the origin of this was with the husbands, who, always free themselves, wished to make their wives unattractive to others. Any infidelity is punished by death; but before marriage women are perfectly free. Their faces,

when they do not powder themselves—which they are very fond of doing, and painting their lips with red—are very pretty when you are become a little accustomed to the genuine Mongolian type. Their figures are absolute perfection, and their hands and feet smaller and better shaped than any I ever saw in Europe. This is owing to their dress, which is never tight, and to their never wearing boots, but only straw sandals, or a kind of patten in wet weather.

The dress of men and women is almost the same. A long "kee-mo-no," descending to the ancles in men, and to the ground with women, though tucked up any height in walking out, is like a nightgown open in front right down, folded over the breast, and secured at the waist by a girdle. The sleeves are very large, and hang down nearly to the knee. In addition, the women have a long piece of figured silk, which they wind twice or thrice round the waist, and then hang up behind so as to droop in a kind of rectangular festoon down to the back of the knees. Colours are generally sombre, and, as well as the patterns, which are commonly checks, are regulated by the laws for the different classes. No cap is worn, but the coolie class generally bind round their head a piece of coarse stuff. The Yakonins wear a closer kind of kee-mo-no, and over this a kind of mantle, generally of gauze or crape, and marked with the devices of the Damio to whom they belong. They wear various shaped hats, and always carry two swords at the left side, one longer than the other, and both generally in admirable working order. You must always keep an eye on these two-sworded men. If they draw, you must shoot them *sur le champ*, for there is a law (originally doubtless with a humane object) that if they draw their sword they must use it, otherwise they are either decapitated or commit hari-kari, that is slit up their bowels.

The Japanese eat like the Chinese with chop-sticks, and appear to live chiefly on rice and fish. With this simple diet, however, they have very robust frames, and though not tall or fine men, appear able to endure much fatigue. If you enter a house, they rise up and make a deep salaam, saying, "O-hoe-io," and do the same when you leave, saying, "Siy-Morr-o" ("May you be happy"). They generally bring you something to sit on in deference to your European customs, and present you with a cup of tea. The lady will then take a sweetmeat between her fingers, and you will be expected to open your mouth, swallow it, look as if you liked it, and say "A-ring-a-to" ("Thank you"), to which she will bow and say "Do-it-ashimasti" (equivalent to "Don't mention it"). Afterwards, she will light a pipe, and transferring it from her lips to yours, will watch you smoke it, and then give you some more tea. They are exceedingly polite, and are much gratified if you are equally so. They are very curious, and examine everything about you—buttons, cloth, watch, knife, pipe, &c.—with various exclamations of astonishment, almost invariably asking how much you gave for this or that.

I think them a most intelligent and interesting people. All classes appear to be able to read and write, and to calculate, which is more than can be said of us at home.

The Sea Coasts between Antwerp and Boulogne.—*The Causes which have Changed the State of the Coast of the Scheldt to Calais.*

(Continued from page 316.)

The natural flatness of the coasts under our consideration is very favourable to the formation of downs by the sand which is thrown up by the sea. These downs are formed by the drifting of dry sand, and the sand does not dry unless it is left several days entirely free from water. But once dried, nothing forms more quickly than the downs. As soon as the wind becomes strong the dry sand is set in motion, and drifts with the wind until it meets with some obstacle or with water. If it encounters any obstacle, such as a tuft of hoza, (which grows in the dry sea sand, and grows to the height of more than two feet,) it stops with it, grows about it, and forms the foundation of a down, which gradually enlarges as the wind supplies sand, and the tuft of hoza has time to grow above the bank. A fresh down thus continually rising, will in course of time attain a considerable height.

Nature seems specially to have provided for the formation of downs by adapting the hoza (*Arundo arenaria* of Linnæus) to vegetate in sand. The more excessive is the heat and dryness of the atmosphere, the more perseveringly it grows, and thus this remarkable plant flourishes most luxuriantly in the most arid sands. By means of an admirable mechanism it imbibes from the air the moisture required by its roots. The stems open during the night, shewing a white pith divided into slips, with which their interior is covered. Here is a mass of spongy matter imbibing the moisture of the night air and dew of the morning, which is no sooner come than these stems close, assuming their original shape, as round as rushes. But tufts of this plant offer insurmountable obstacles to the progress of the sand. Three strong plants of this kind, well placed, will collect about them more sand than the largest waggon could contain. The more frequently the hoza receives fresh sand, the more it grows, in fact the sand becoming fixed in proportion as it rises, increases vegetation.

But these downs forming no real consistence, are destroyed almost as easily as they are formed. Thus, foot tracks of men and animals, by destroying the hoza, caused a great part to be carried away by the first gust of wind. If this be very strong, the sand between two of these downs will sometimes be seen carried up as in a whirlwind, and precipitated in a shower, falling one or two leagues distant. The wind having its full range, so strong here that the sand flies with it, and at a distance resembles a waterspout.

These breaches of the downs, however frequent and evident they may be, cannot be compared with the effect of the drifting sand occasioned by the sea wind. This is not so evident in a short space of time if the downs are well guarded with hoza; but becomes so in the course of years. For instance, it is very evident in an interval

of twenty or thirty years, according to the locality, and the care taken of the plants, that the inner border of the downs encroaches on the land. The sand thus raised by the wind is always replaced by that which the same wind brings from the strand, unless the sea in receding deposits a stratum of clay, as it does West of Dunkirk. The wind thus continually bringing sand from the flat ground left bare to form the downs, lowers the level, especially if the current of the ocean also tends to raise the sand of the coast, instead of bringing fresh, as is the case from Nieuport to the Scheldt. The sea will then soon reach the foot of the downs, and will soon destroy what has taken some time to form.

The first high wind which comes in the direction of the tide, especially if with a full or new moon, will send the sea rolling on the coast, gradually reaching the downs, when each wave will carry away considerable portions of them,—and they are swept away by the current. Thus the downs disappear, and seem to melt away like salt. The high tides destroy the downs thus for the distance of several miles every year between Ostend and the Scheldt. It is true that the sand thus taken away by the waves returns in part the next summer; but the down has been disturbed, the hoza rooted up, and the wind has driven towards the interior a portion of what the sea could not reach.

We may thus perceive how the heights along the coast have been carried away, and how the sea has formed a way for itself across the downs, as if to penetrate again to a part of the basin it has abandoned.

From local conditions of soil differing in different points along the coasts, although scarcely perceptible, we may readily perceive that the sea has not at once dispersed the whole chain of downs, but has worked gradually, making holes, sometimes in one place sometimes in another. For instance, the downs not having everywhere the same height, nor the same size, and the sea approaching their base at different levels, it is evident that those points where the circumstances were most favourable to its entrance were the first invaded, while a number of others long remained untouched. The direction of the currents will also contribute to effect an entrance in some parts sooner than others.

It is not easy to say when those inundations commenced, which carried everywhere terror and death, or even where the first one took place. The course of the interior waters, which is generally northward as far East as the Baltic Sea, favours the opinion that the land slopes northward, and that thus the northern portions of it were first exposed.

The people of Jutland were formerly obliged, on account of inundations, to quit their country and seek other far distant homes. Those inundations are known by the name of the Cimbric deluge. Several modern authors have, it is true, considered that this deluge was not confined to the country of the Cimbri, but extended over a great part of the Netherlands, including much of Holland, Flanders, Brabant,

and that the submerged trees found in the marshes of Holland, in the bogs of Ostend and Furnes, even as far as Cologne, belong to this period. But this opinion has been shown erroneous.

This deluge is certainly a remarkable event, since, according to Plutarch, it furnished more than 300,000 men for war, and obliged a large number of women and children, Cimbrians as well as others, to quit their habitations to seek shelter from the fury of the sea. Those people mostly lost their lives in the different wars they sustained in Spain and Italy. It would appear that this deluge has been nothing more than a considerable inroad of the sea; that it did not extend a great distance from the coast, and not much exceeded the limits assigned to the Cimbri, and that it certainly was not felt West of the Scheldt.

Pliny, who visited the coasts of Gaul and Germany towards the year 73 of our era, found the sea invading a portion of these coasts. He gives the following remarkable picture of this inroad of the sea. "The ocean (he says) spreading twice a day in large waves over these lands, makes us actually doubt whether this country is land or sea. The wretched inhabitants place their cabins on the eminences, raised in some places by nature, in others by the hand of man, to a height at which the tides never rise. To see these habitations surrounded by the waves, you would take them for vessels at sea, and when the waters have retired, they look like vessels on shore." This description is strikingly true; but in this passage of Pliny he speaks of the country of the Cauches, a people placed generally beyond the mouths of the Rhine. Tacitus, when speaking of the island of Batavia, says, it is situated in a flat, and seems to infer that it is visited by the tides; but this island was beyond the Scheldt, and between the branches of the Rhine.

Cæsar, who was more particularly acquainted with the coasts on this side of the Scheldt, never tells us explicitly that the sea inundated them then. It is true he seems to mean something of this kind when speaking of the conquered Eburons: he said that those on the borders of the ocean took refuge in the islands formed by the tides. But he does not mention the position of these islands, nor possibly alluded to the islands of Zealand, which were not then formed, but to some further North, or else admits that he here speaks of the Flemish banks.

Des Roches imagines that this last supposition is inadmissible, and is founded on the depth of water between these banks, which is so great that it is not possible to ford it in this part. But these banks were not then what they are at present. Possibly since the time of Cæsar these banks have become lower, and the space between them deeper, and from what we find elsewhere, and especially by the islands of Zealand, and those near the Zeiderzee, if these banks were then under water they must have experienced the disastrous effect of the tides. Besides, all the banks are not separated by such deep spaces, and we see by M. Beautemps-Beauprés' surveys, that some are connected with the shore. At low water they are hardly sub-

merged, and are even partially dry. We must not therefore look on them as islands.

Cæsar in his Commentaries says, that the Venetes and other people inhabiting the coasts of the Channel lived on islands, whose communications with the land were intercepted during the high tides. All the islands, with the exception perhaps of St. Malo, having disappeared, why may we not also believe that in this strait islands formerly existed which time has likewise destroyed.

That the sea had not overrun the downs between the Scheldt and Calais before the Roman dominion, would appear from works of art being found in the bed of clay and in the turf dating from that time. The fine potteries which have been dug up there are well wrought, the figures on many of them are well executed, of too classical a kind to be attributed to any other epoch than that in which the Romans introduced them into those regions.

It appears probable that during this dominion the sea advanced for the first time and covered these lands. Pliny seems clearly to intimate that in his time the Scheldt flowed towards the sea, and he afterwards enumerates the maritime people inhabiting the environs of this river. As in the time of Cæsar it flowed into the Meuse, this change must have taken place during the 130 years which elapsed between Cæsar and Pliny. Perhaps the first inundation with which we have to do is that which gave rise to the branches of the Scheldt, of which Ptolemy, who wrote about two centuries after Cæsar, speaks of under the name of Tabuda, and which he calls a fresh mouth.

The sea continuing to exercise its power over these shores, the inundations have continued always advancing more and more towards the West, and it was only during the latter part of the third century that it seems to have reached that part of the continent now forming the island of Walcheren. This accounts for the antiquities and Roman medals which have been found near Domberg and Westkapelle. The statues and bas-reliefs of the goddess Nealennia, discovered among the ruins of a temple, proclaim a place inhabited by rich people, which does not agree with the situation of a country inundated and devastated by the sea at the time these statues were raised. It could not have been long after this that the invasion happened, since the coins which have been discovered, the latest of which are of Tetricus, and dated the year 268, lead to the conclusion that this event happened shortly after his reign.

According to some authors, the West Scheldt was dug by the Emperor Otton I, in order to establish a line of demarcation between the German empire and France. But others contend that the canal of Otton is not this branch of the Scheldt. Amongst others, Meyer, Marchand, Eyndius, and Des Roches seem to be of this opinion. The latter gives us two reasons for it.

Whatever opinion may be adopted with regard to the canal of Otton and the passage of Cæsar relative to the Scheldt, where, according to several authors, he has only said, from ignorance of the locality, that this river flowed into the Meuse, it is nevertheless cer-

tain that the branches of the Scheldt are not very ancient. The turf dug from the islands of Zealand, on the borders of these branches, like that on the strand before the downs, proved that the sea had not always had access to these parts, and that the immense marsh spoken of was not intersected by these arms of the sea. But we do not think with Redius that this state of things existed in the time of Charles the Bald, in 861, and that the islands of Zealand were then only elevations in the marsh. Alcuin, who lived at the close of the eighth and the beginning of the ninth centuries, speaks of the island of Walcheren as being in the sea; and St. Willebroad, who, according to him, landed in this island, lived in the beginning of the eighth century.

It was doubtless towards the close of the Roman dominion that the Zevin Sluys, the ports of Ostend, Nieuport, and Dunkirk were formed. Oudegherst assures us that Oudenbourg, a village a league and a half from Ostend, and Rodenbourg, now Aerdenbourg, were known about the middle of the fifth century as two maritime towns of great importance.

Such irruptions as those which formed the ports of Ostend and Nieuport, and which extended over a surface of several leagues in length and two in width, would have been attended with most fatal consequences, and would have cost the lives of millions of human beings, had this land been inhabited. But it was then, happily, too low and marshy to be cultivated and inhabited. History makes no mention of any of these events, although it speaks of the inundations in Friesland, infinitely more peopled, during the fourth and fifth centuries, when these ports were formed. There have been, however, some victims to these irruptions, as numerous skeletons show which have been found near Ostend, and which appear to have belonged to fishermen.

An irruption not less remarkable is that which took place in the basin of Aa, or rather in the part beyond Dunkirk. Here also the sea has left clay, but in a smaller quantity, which accounts for the soil being higher to the East of Dunkirk than to the West.

Marin-Bailleul, curé of Sangatte towards the year 1635, gives, in his *Collection of Antiquities of the Town and Port of Calais* (chap. ii) a panegyric of the town of Terouane, which leads to the conclusion that some traditions were preserved in the country of an overthrow such as this. "The whole country," he says, "suffered as much by the sea, which overflowed and inundated many places on the coast, as by the descent made on it by the Cimbrians and Saxons, who quitted their country on learning that Belgic Gaul was scarce of people, and established themselves on the coasts of Gaul, then almost desolate." Eutropius has also written that under Diocletian, Caransius was sent to Boulogne, and charged to restore freedom to the sea along Belgium and Amorica, which the Franks and Saxons had ravaged by their piracies. We here see that these incursions of the Saxons took place about the end of the third or beginning of the

fourth century; which shows the date of the inundations mentioned by Marin-Bailleul. These incursions of the Saxons, to which the coasts of France were exposed, and those of Brittany, relating to Gaul, were called Littus Saxonicum in the account written in the beginning of the fifteenth century, under the Emperor Honorius.

In a charter of 1156, Louis VII, King of France, calls St. Omer an ancient town situated on the sea shore, at the extremity of the land. Ortelius says, "We need only to examine the environs of St. Omer to acknowledge that it was formerly very elevated, particularly in the surrounding parts, and a knowledge of the locality will evidently show that this town was a sea-port, and that the ocean formed a gulf there."

The excavations which have been made confirm what has been said. According to Jean Chifflet, anchors and other marine objects have often been dug up near this town. In digging the canal of Pierrettes, from Calais to Ardres, in the bank of stones near Calais some ancient vases and glasses were discovered fifteen feet deep. The same have been found at different periods, showing visible traces of the presence of the Romans in Calais, such as vases, tombs, altars, phials of glass, coins, pottery, and other objects,—of which the greater part, especially the red and black pottery, is found in the turf four, six, eight, and ten feet deep.

This state of things lasted several centuries in Calais, and it is evident that it only ceased in the tenth, at least in that portion lying at the foot of the heights. In 995 the port of Calais was dug, and it is certain that the foot of the heights was at that period visited by the sea. One of the villages on these heights is named Fretu, derived, doubtless, from Fretum, a canal or arm of the sea. Towards the end of the tenth century this village was called Werethe, a word expressing a fordable part; and we see by the history of the martyrs of Ghent, in the works of Father Pommeray and Dom Mabillon, that in the tenth century the sea rushed into this part with such force that the Abbé Geroald and all his suite were nearly drowned in the passage of Werethe; from whence they went to the village of Oye, near Gravelines.

(To be continued.)

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*The Chairman's Address—The Prime Minister on Sailors and Sailors' Homes—Enlargement of the Well Street Sailors' Home—Report of the Royal National Life-Boat Institution—The Port of Mutlah.*

One of those noble acts, said the Chairman, has taken place since our last meeting that peculiarly distinguishes this country from every

other, and long may it do so. It is that of the Prime Minister, who has enough of state affairs on his hands, stepping aside from his official duties to lay the foundation stone of an enlarged Sailors' Home in London. It was an act worthy of the Prime Minister of Great Britain—the country which owes its place in the scale of nations to her ships and her seamen. We have had some account of this establishment before at our meetings, but the little history of it addressed to Lord Palmerston will be well preserved here, and the excellent remarks made by his lordship on the occasion.

The Home was established in 1830, and was opened in 1835; and it has proved the precursor and parent of many similar establishments in England, America, and other parts of the world. Its object, as is well known, is to provide comfortable accommodation for sailors, and its benefits have been so much appreciated that increased space has become necessary. "The demand for accommodation," say the committee, "has now reached such a painful crisis, more than a hundred men having been frequently refused admission, even when seventy or eighty impromptu beds have been made up on the floors of the dormitories, that the directors feel imperatively called upon to enlarge the Home. The outlay, with the most rigid economy, will exceed £10,000. The committee therefore most earnestly appeal to the public for the assistance absolutely necessary to enable them to carry out this good work on behalf of the British sailor. The Home was opened in 1835 for the reception of 100 seamen. The number received during the past year is 8,993; the total number received since the opening, 139,180."

Lord Palmerston was received at the entrance of the courtyard, next the Seamen's Church, by the patron, the Lord Bishop of London; the president, vice-presidents, chairman, and directors of the institution, and was thence conducted to the ground. His lordship was received with the greatest enthusiasm.

The following address was read by Admiral Bowles, the president of the society:—

May it please your Lordship,—We, the president, vice-presidents, chairman, and directors of the Sailors' Home, desire to express our lively gratitude to your lordship for having kindly consented to lay the foundation stone of the proposed building, which is intended to form an important and necessary addition to the original structure. During the last six years the demand for accommodation has been gradually increasing, and has now reached such a crisis that the measure of enlargement has become the crowning point in the history of the institution; to delay which measure any longer would be to bring the sailor face to face with his enemies beyond its fostering walls, and defeat the cause to which we are committed. It has, therefore, been determined to erect an auxiliary building for the reception of 160 additional seamen. The plans, which embrace all the various contrivances conducive to light, comfort, and health, have been prepared by Mr. E. L Bracebridge, architect. The cost of the building, as per

contract, will amount to £10,626; to realise which, together with a further sum of £2,000 for fittings, &c., an appeal has been made by the directors to the public at large, more especially to the shipping and mercantile community of the port of London.

The Home owes its origin to the devoted energies of three naval officers—Captain Robert James Elliot, R.N., deceased, Admiral George Charles Gambier, and Lieutenant Robert Justice, R.N. It was instituted in 1830, and opened in 1835; and its object is to provide a home—combining security, freedom of action, and social enjoyment—for the sailor on his return from a perilous voyage; and to promote his moral elevation and religious improvement. As a proof that these objects have, in large measure, been accomplished, we beg to call your lordship's attention to the fact that since the opening of the institution 139,180 seamen have availed themselves of the advantages it holds out; and such is the confidence inspired by its operations that no less a sum than £1,110,980 has been received from these men, and directed into legitimate channels for their benefit. These statistics bear most striking testimony to the remarkable success which has, under Providence, hitherto attended this institution, and inspire us with the hope that, under the same Divine blessing, we shall meet with that public support commensurate with the present need and the important end of affording protection to a larger number of seamen from the profligate system to which they are exposed. In conclusion, we shall always retain a pleasing recollection of the evidence of practical sympathy with the cause of the British sailor which your lordship's presence and countenance on this interesting occasion so amply afford.

Lord Palmerston, in reply, said—Sir William Bowles, ladies, and gentlemen,—I can assure you that I feel great pleasure, and I may say pride, in having been permitted to take part in this most interesting ceremony. We are, by our insular position, necessarily a seafaring nation. All our interests—I may say our national independence—are connected with the skill and enterprise, the daring courage of our seamen. It is needless to point out that by the great extension which the principles of free trade have received of late years our commercial intercourse with other nations, carried on on every ocean, have incredibly increased, and that we are now dependent upon our commerce for the elements of national industry, for the subsistence of a great part of our people, and for the markets to which the produce of our manufacturers are destined to go. If, then, nothing but commercial interests were concerned, it would be needless to point out how greatly the strength and prosperity of the country depended on our seafaring population.

But there are still higher considerations than that to point out their value, and how much they deserve encouragement from their fellow-countrymen. It is true that something near thirty millions of people could not be conquered by any invasion that might reach their shores. But short of that, if we lost the command of the sea we might be blockaded, and by the cutting off of all foreign supplies, and by the prevention of our export trade, be reduced to very distressing ex-

tremities. Therefore, from that point of view we ought to feel and highly appreciate the value of our sailor fellow-subjects. Well, it is the result of their life, separated in a great measure as they are from intercourse with their fellow-men on land, that sailors are peculiarly a simple-minded and guileless set of men. But simple-minded and guileless men are too often, when they come into contact with them, made the victims of men of a different character. The sailor when he comes into port cannot probably go to the seat of his family; he cannot go to his friends and relations. He must remain in the port where he has landed, and in that port he is exposed to every temptation, and to the loss of both his money and his health.

These institutions tend to provide him with a home. It is said, indeed, that "his home is upon the deep," but here we provide him with a home on *terra firma*. It is needless to point out how much his physical and moral interests are promoted by the reception he meets with in these institutions. They are indeed a part of those great social improvements which have been made in recent times; and I may truly say that among them few are more deserving of public encouragement than this, and that few are more conducive to the real interests of the country. I therefore am glad—and return thanks to those who have given me the invitation—I am glad to be permitted to be present and contribute to the foundation, which is calculated to confer such great national advantages.—Loud cheers.

The Bishop of London, assisted by the chaplain, the Rev. Mr. Greatorex, offered a prayer suitable to the occasion, after which the usual formula of lowering the stone took place. Lord Palmerston took the trowel in hand in thoroughly masonic style, and completed the ceremony in a manner which elicited the approving cheers of all present.

Here the Secretary reminded the Chairman that the report of the Royal National Lifeboat Institution would appropriately follow the account of that establishment which protected sailors on shore.

The Chairman then called on the Secretary for his account of the last meeting of the National Lifeboat Institution. He (the Chairman) said, it was satisfactory to find that the lifeboats of the institution and shore boats, to the crews of which the society had granted rewards, had been the means of saving 339 persons from various shipwrecks on our coasts during the first seven months of the present year.

The report stated that a reward was voted to the crew of a fishing boat for putting off and rescuing, during equally weather, the crew of five men from the brig *Pelican*, of Drogheda, which was in a disabled condition, off the coast of Lamlash, on the West coast of Scotland, on the 2th of June.

A reward was also granted to two fishermen for putting off in a small boat and rescuing two out of four persons whose boat had been capsized during a sudden squall, near Kenmare, county Kerry, on the 10th of June. A man and woman had unfortunately perished on the occasion before assistance could possibly reach them.

The Carmarthen Bay lifeboat of the institution had put off with the view of rendering assistance to the French lugger *Jean P. Baptist*, which during very foggy weather had struck on a dangerous sand bank, on the night of the 22nd of July. Fortunately, however, the vessel succeeded in getting off from her dangerous position, and afterwards proceeded on her voyage. The expence of this service, amounting to £5 4s., was paid by the institution.

It was reported that the lifeboats of the institution had during the seven months of the present year saved 123 shipwrecked persons, in addition to assisting several vessels into port. The crews of shore boats to whom the institution voted pecuniary rewards, had also saved 216 lives, making altogether a total of 339 lives saved during the present year. For these joint services £648 18s. 2d. had been granted by the institution. It had also during the same period paid £7,055 9s. 1d. on various lifeboat establishments. The committee earnestly appealed to the public for continued support, to enable them to maintain the large fleet of lifeboats of the institution, now numbering 125, in a state of efficiency.

The silver medal voted by the institution to the coxswain of the Thorpeness lifeboat had been presented to him by the Mayor of Ipswich, at a public meeting held in the Town Hall on the 16th of July. The cost of this lifeboat was presented to the institution by the town of Ipswich, and since she was sent to her station last winter she has been the means of saving two shipwrecked crews.

It was reported that R. W. Hollon, Esq., and Mrs. Hollon, of Spellow Park, had presented to the society the cost of a new lifeboat, to be stationed at Filey, on the Yorkshire coast.

During the past month the institution had sent two new lifeboats to the coast; one to be stationed at Tenby, and the other at Lytham, Lancashire. The cost of these lifeboats had been presented to the society by benevolent persons, and the several railway companies had given the boats a free conveyance over their lines to their respective destinations.

Messrs. Forrestt reported that the government of Mecklenburgh had ordered them to build a lifeboat on the plan of the institution.

The trustees of the late Mrs. Adams, widow of Mr. Adams, naval and military outfitter, Plymouth, had kindly remitted contributions amounting to £100 to the institution.

Payments amounting to £1,250 having been made on various lifeboat establishments, the proceedings terminated.

Albert then observed that he had not heard yet of any of our ships visiting the port of Mutlah, which he had understood was looking for the *Great Eastern*. Instead of running to India she was running to America; but that port was quite ready for her. He understood that the Calcutta and South-Eastern Railway has been completed the whole distance from Calcutta to the Mutlah, twenty-eight miles, and that it was opened on the 15th of May. The new port, which is intended as an auxiliary to the port on the Hooghly, was designated by Lord Can-

ning the Birkenhead of Calcutta, and it has been determined to honour his memory by giving it the official name of Canningtown. It is now ten years since Lord Dalhousie, with the view of relieving the overcrowded port of Calcutta, laid down the plan of a new harbour at the Mutlah, and in the interval the shipping has more than doubled. Arrangements have been made for the accommodation of vessels at the new port. The river has been again surveyed and buoyed, and a floating lightship has been stationed at the entrance. A chart of the river has just been published by the Admiralty. An establishment of pilots has been appointed by government, and the pilotage and harbour dues have been fixed by Act i.,1863, on favourable terms. A screw pile jetty was sent out at the beginning of the year, alongside of which vessels of the largest tonnage will be able to lie and transfer their cargoes to the trucks which will convey them to the terminus at Calcutta, whence they will be distributed to the warehouses of the merchants by an arrangement with the Carrying Company. The dangers of the Hooghly are unknown in the Mutlah, and a vessel with the aid of steam can always go up and down in a single day. The tides vary from two and a half to four miles an hour, and two vessels like the *Great Eastern* could steam up abreast in it and turn in the port.

There is a very good chart of the Mutlah River published by the Admiralty, observed Albert, by an officer of the Indian navy, showing abundance of water everywhere.

A considerable amount of discussion ensued on the doings of the *Alabama*, *Florida*, *&c.*, and the case of the *Alexandra*, the government appeal on which comes forward in November. A good deal of feeling was exhibited by no means favourable to the builders of Birkenhead and Glasgow, and no measured terms of reproach on them freely used, which we shall not repeat, produced by reading the following letter in the *Daily News*.

Sir,—Our Foreign Enlistment Act forbids any person from equipping, fitting out, furnishing, or arming any ship or vessel within any port of the United Kingdom, or in any port of her Majesty's dominions beyond the sea, to be employed by any foreign power either as a transport, store ship, or ship of war, against any nation or people at peace with Great Britain. Either of these offences—that is, fitting out, equipping, furnishing, or arming a vessel, for either a store ship, transport, or a ship of war, to be used against a friendly power, is declared by our laws to be punishable by fine, imprisonment, and forfeiture of the vessel so fitted out, equipped, or armed.

Now, it is a notorious fact that there are at least three ships of war of the most powerful class, made as effective for destruction as the highest skill and latest improvements in naval architecture will permit, now nearly completed in ports of the United Kingdom, and being fitted, equipped, furnished, and at least partly armed, in such ports with all possible dispatch, to cruize against the commerce and attack the cities and towns of a friendly power now at peace with this coun-

try. One of these ships is yet on the stocks in the building-yard of the Messrs. Laird, at Birkenhead, and it is said will be launched this week. One has been recently launched from their yard, and is now in the dock of the builders, fitted out, furnished, equipped, and partly armed, and is about ready for sea.

She is equipped with armour plating throughout her whole length, with turrets to shield the gunners, gun ports, and other unmistakeable equipments of a ship of war. No person having the most limited idea of a ship of any kind can mistake her for a merchantman, yacht, or anything but a ship of war. Being equipped for such a purpose, then, and being for the Confederates, she comes fully and unmistakeably under the condemnation of the Foreign Enlistment Act. But this ship is not only equipped for war purposes, and therefore a proper subject for seizure and condemnation, but she is already armed with a most effective weapon for offensive war. When a weapon called a ram is attached to the bow of a vessel, for the purpose of piercing and sinking an antagonist, it is certainly arming the ship or vessel with a destructive offensive weapon, and, as it appears to me, brings her directly within even the extremely contracted and unsustainable rule laid down by Judge Pollock in his decision in the *Alexandra* case.

These ships, then, are not only fitted, equipped, and furnished as ships of war, but are already armed as such, and are built and intended for the Slave States now in rebellion against the United States of America, as yet at peace with this country. They cannot be suffered to leave our ports without openly violating the laws of the land, and permitting this country to take sides with a slaveholders' rebellion—at a time, too, when it appears to be tottering on the verge of ruin. Whatever tricks may be resorted to to get them out—whether they run away under the pretence of making a trial trip, or whether they are permitted to go quietly out at the pleasure of their real owners under a pretended foreign ownership, they will surely go directly into the Confederate service, and will, as was intended from the beginning, commence at once operations against the United States. Let the officers of the government, therefore, look sharply into any device that may be resorted to to get them out of our ports in violation of the laws of England and of the law of nations, that the country may not be disgraced by having the stain of a fraudulent neutrality indelibly fastened upon it, and also making enemies of a kindred people.

In another article I will show that Judge Pollock has no support from the decision of any American court to countenance or uphold the decision he gave in the case of the *Alexandra*, and that the American decisions are directly adverse to his.

H. F.

Nautical Notices.

China Sea: Islands and Dangers.

[The following important hydrographic information is the substance of a report by Staff Commander J. W. Reed, R.N., employed by the Admiralty in examining the dangers in the route through the China Sea,—a service which, in H.M.S. *Rifleman*, is well entrusted to this officer.]

The ship was anchored on the Five Fathom Shoal, Victory Island bearing N.E.$\frac{3}{4}$E., half a mile, in 3$\frac{1}{2}$ fathoms (reduced to low water spring tides), the least water found. The shoal is coral, one-third of a mile long N.E. and S.W., and quarter of a mile broad. Its outer edge, in 8 fathoms, is S.W.$\frac{1}{4}$W. three-quarters of a mile from the island. This is, most probably, the "Doubtful Reef" of Horsburgh, alluded to in vol i., page 305:—"Said to have been seen in the Arab brig *Bombay Merchant*, Captain Hughes, in January, 1825, and was nearly in one with Victory Island bearing N.E. five or six miles."

This account may mean that the ship was distant from the island five or six miles when breakers were seen in one with it. However, after a careful search under favorable circumstances—the water being so clear that we could very distinctly see the formation of the coral all over the shoal, we could find no indication of any other danger in that direction.

Considering this shoal to be the same that was seen by Captain Hughes in 1825, we have named it "Hughes Shoal."

From Victory Island a line of soundings was carried to the position of a doubtful rock on the chart, a few miles S.E. of the Pyramid Rocks, off the West coast of the Great Natuna. We passed close to it without discovering any danger, with soundings in 33 fathoms.

We passed within four miles of the Pyramid Rocks, which appeared as described by Horsburgh, their position on the chart agreeing within a mile of ours.

From the Pyramid Rocks we carried a line of soundings to the position of the French Rocks, on the first sheet of the Admiralty chart of the China Sea: three rocks above water N.N.W.$\frac{1}{2}$W. of Pulo Laut or the North Natuna. We approached it on a W.b.N.$\frac{1}{2}$N. bearing, and at noon were two miles due North of it; then steering South 7$\frac{3}{4}$ miles, N.W. 9 miles, and N.E. 6$\frac{3}{4}$ miles, saw no signs of the rocks. Soundings, 35 to 40 fathoms.

These rocks are not mentioned in Horsburgh.

Holland Bank.—Captain Ross has placed this bank in its correct relative position with Pulo Ceicer de Mer, and has given an accurate description of it in Horsburgh, vol. ii, page 337. It is an extensive coral bank with very varying depths. Its greatest length—in ten fathoms—is 6$\frac{1}{2}$ miles in an E.N.E. and opposite direction, and its breadth 4 miles.

The shoalest patches are the N.E. From the centre of them, in lat. 10° 39′ 17″ N., long. 108° 43′ E., the S.W. hill of Pulo Ceicer de Mer bears about E.S.E. fifteen miles; and high rock about E.b.S. 10½ miles. The soundings on these shoal patches are very irregular, the least water we could find being 2½ fathoms, reduced to low water springs.

Vessels passing northward of the Holland Bank should not bring the S.W. or high and sloping hill of Ceicer de Mer to the eastward of S.E.: and those passing South of that danger should not bring it to the southward of East.

The soundings round the bank are very irregular, affording no guide, but it is much steeper on its eastern edge than elsewhere. The lead is not at all to be relied on in approaching that edge of the bank, for 20 fathoms may be had one cast and 4 fathoms the next. Excepting the eastern part, however, as Horsburgh remarks, "If the lead be attended to and hove quickly, it will point out the edge of the bank before a ship gets into danger."

Horsburgh's directions to avoid this bank on its western side are "not to raise Pulo Ceicer de Mer more than to have the summits of the two hills visible from the poop of a large ship when the island is bearing betwixt E.¼S. and S.E.; for if the low part of the island between the hills be *in sight from the poop*, bearing from E.b.S. to E.S.E., you will be near the edge of the bank." These are valuable remarks and we cannot improve upon them.

Pulo Ceicer de Mer.—This island is wrongly described by Horsburgh. The two small hills there said to form its extremities, and shown on the charts, one on the North and one on the South end, are, in fact, both situated towards the North end of the island, and bear E.N.E. and W.S.W. a mile from each other. The S.W. and higher hill of the two is in lat. 10° 32′ 36″ N., long. 108° 56′ 30″ E. It is 360 feet high, has a round top, and slopes gradually until it joins the low land. It is visible 24 or 25 miles. The N.E. hill is 306 feet high, of a conical form rising abruptly from the low land, and has several irregular masses of rock near its summit, that give it a somewhat remarkable appearance.

The island is 3½ miles long, N.E. and S.W., and 1½ miles broad. Half a mile off its S.E. end is a smaller island, lying North and South, the highest point of which is 133 feet above water. The S.E. part of the large island is nearly the same height, and both present steep rugged cliffs to the eastward.

In the middle of the channel between the islands stands a mass of rocks showing above the water; between which and the small island is a channel for boats.

A quarter of a mile S.E. of the small island is a conspicuous black rock about 30 feet high, with smaller rocks round about it. Two cables S.E. of which, again, are two rocks awash.

The small island, therefore, should not be approached within a mile when bearing to the westward of North.

Nearly half a mile off the N.E. end of the island are several

patches of rock, with foul ground round them. The most conspicuous is a large black rock 60 feet high.

This end should not be approached by a large ship nearer than a mile and a half or two miles, nor by a small one nearer than a mile.

In case of emergency it is possible to anchor in shelter from the S.W. monsoon off the N.E. end of the island, in 14 or 15 fathoms; but the bottom is rocky and bad holding ground, and cannot be recommended as an anchorage.

A sandy bay on the East side of the island appears to afford anchorage, but is filled by a coral reef. Ships should be extremely cautious in approaching it, as the soundings decrease so suddenly from no bottom with 40 or 50 fathoms that the lead cannot be relied upon.

The whole West and S.W. coast is a sandy beach, the S.W. point rocky. Vessels may conveniently anchor off the S.W. point in from 10 to 14 fathoms, but the depths rapidly decrease from 11 to 4 fathoms.

The S.W. point of the island is in lat. 10° 31′ 6″ N., long. 108° 56′ 30″ E., or 1° 51′ 5″ East of the lighthouse on Cape St. James.

The island is mostly inhabited by fishermen, and is well cultivated, but we could not obtain any supplies there. The natives brought us fowls upon one occasion, and were very pleased to receive some empty bottles, biscuit, &c., in return. But they would take no money and would sell us nothing. They disliked our remaining so long, and kept up an almost incessant noise with drums and gongs all the time we were at anchor there. They always lined the beach, armed with spears and other Chinese weapons, when any of us landed, but did not attempt to molest us in any way. They evidently feared that we had some designs upon their island.

High Rock.—A white rock, 60 feet high, the resort of sea birds and named High Rock in the charts, stands N.W.½N. nearly five miles from the N.W. point of Pulo Ceicer de Mer. Nearly half a cable North of it is a small rock a few feet above water; close to the northward of which is a rock awash.

In the channel between the island and High Rock the depths vary from 8 to 12 fathoms, coral. Near the rock are patches of 5 and 6 fathoms, but no danger was discovered.

The channel between Pulo Ceicer de Mer and Holland Bank is about 12 miles wide, with irregular depths from 26 to 10 fathoms. The bottom sand or sand and shells in deep, but rocky in shoal water.

Caution.—Vessels should keep a good look out when passing between Pulo Ceicer de Mer and High Rock or the Holland Bank, as some small patch may have escaped the lead.

Catwick Islands.—Are not so large as represented in the charts.

Pulo Sapata or Shoe Island.—The summit, by our observations, is in lat. 9° 58′ 23″ N., long. 109° 6′ E., and bears S. 17° 30′ E. 35½ miles from the S.W. hill of Pulo Ceicer de Mer. It is well described in Horsburgh, being an inaccessible barren rock, 346 feet high, one-third of a mile long North and South, and about half as broad. It is visible 22 or 23 miles.

The Pyramid or Little Catwick.—N.W.b.W.½W. 2½ miles from Pulo Sapata is a small peaked rock, visible about 9 or 10 miles. It is steep close to, with no danger near it.

Round Island or Great Catwick.—In lat. 10° 3′ N., long. 108° 55′ E., bearing W.N.W. from Pulo Sapata 11¾ miles, and nearly South from Pulo Ceicer de Mer about 30 miles. It is a barren rock 196 feet high, about a cable and a half in diameter. It is bold close to, with from 30 to 50 fathoms at a short distance from it in all directions.

The Yoosun Shoal.—Is a very small coral patch of 4 fathoms, lying in the fairway of the channel between Pulo Ceicer de Mer and the Catwicks, in lat. 10° 16′ N., long. 109° 2′ 15″ E. Close round it is 45 and 50 fathoms, but about a mile W.N.W. of the shoal is a patch of 24 fathoms. In fine weather the Yoosun is not easily seen, but when blowing hard in the strength of the monsoons the sea has been frequently observed to break heavily upon it.

The channel betwixt the Great and Little Catwicks may be considered safe, with the exception of the following danger.

La Paix Rock.—Is a small pinnacle awash nearly in the fairway of the channel. Ross's bearings and description, as given in Horsburgh, are good, but Horsburgh's position is the best. Except in exceedingly fine weather, the sea always breaks upon this rock. Vessels should not attempt the channel at night unless their position is well known and circumstances are favourable.

Julia Shoal—is a small coral patch about a quarter of a mile in extent, with 2½ fathoms at low water, S.E.b.E. 3¾ miles from Pulo Sapata. Pyramid Rock in line with the right extreme of Pulo Sapata clears it to the north-eastward.

This shoal seems to have been the cause of more anxiety, perhaps, than any other in the China Sea. No doubt many of the reported positions of dangers in that locality—for instance, the Hopkins Bank—have proceeded from this shoal having been seen and its position wrongly estimated. The *Christopher Rawson*, it appears, was lost upon the Julia. From the impossibility of correctly calculating the ship's position at the time of striking, the navigation of the China Sea has for twenty years been encumbered with the

Christopher Rawson Shoal,—which appears on the charts and in Horsburgh as a doubtful danger about twenty miles E.S.E. of Pulo Sapata. It was hereabouts that the vessel was supposed to have struck. But when it is borne in mind that the accident occurred in the middle of the night, when the ship was running under double-reefed topsails before a strong N.E. monsoon, and that she went down a few minutes after striking, the crew having barely time to save their lives by taking to the boats,—it is manifest that under such circumstances it was not possible to determine the position of the ship when the accident occurred with any degree of certainty. It must have been a matter of mere conjecture.

It happens that the gunner's mate of the *Rifleman* belonged to the *Christopher Rawson* when she was lost. Overhearing him speak of the wreck in the passage out from England, I questioned him as to

the circumstances. He asserted that they had seen no land before the vessel struck; but shortly after they had taken to the boats, which were running before the wind, an island was seen on the starboard quarter, about 4 or 5 miles off. I have since examined him very closely as to this island. He adheres to the same statement, and declares that he is quite positive on the point.

If this statement be true, and I see no reason to doubt it, the *Christopher Rawson* could not have been lost in the position shown in the charts, for the island is only visible from the bridge of the *Rifleman* at a distance of 22 miles.

He describes the *Christopher Rawson* as a vessel which could hardly be steered within four points either way when running before the wind, and I think it may be fairly inferred that the *Christopher Rawson* was lost on the Julia; and that there is no good reason for believing that any other danger exists in that locality.

The Raglan—is another doubtful danger which we were unable to find, having had no bottom with 300 fathoms in its position.

The *Lightning* steamer also passed over it recently, without observing any appearance of danger, although circumstances were very favourable for doing so.

The Raglan, however, had no bottom, and the danger was assumed from deceptive appearances.

The Forth, Columbia, and Alexander Shoals.—A day was spent in carefully searching for each of these doubtful dangers, but nothing of the sort could be met with. On the positions of the Forth and Alexander we had no bottom with 500 fathoms; and no bottom with 350 fathoms on that of the Columbia.

Captain White, late of the *Lanrick* and *Fiery Cross*, a gentleman of great experience in the China Sea, in a very able paper communicated to the *Nautical Magazine* in 1853, thus mentions these shoals.

"The Shepherdess, Christopher Rawson, Forth, and Alexander Shoals, I do not believe to exist.

"The *Rawson* was no doubt bilged on the 3 fathom patch lately found a few miles S.E. of Pulo Sapata.

"The Forth Rock is said to have been seen at 2h. a.m. in a dark squally night; and the *Alexander's* wreck is asserted to have been seen on the western reef. Nor need we be much surprised at this latter discrepancy, when it is known that in the strength of the S.W. monsoon observations are often not to be had for thirty-six or forty-eight hours, and the current in that season often runs from 30 to as much as 56 miles in twenty-four hours, varying in directions from E.b.S. to N.E.b.E."

Captain Crockett, now of the steamer *Clan Alpine*, who has had similar experience in the China Sea to Captain White, informs me that he has passed over the positions of all these supposed shoals, and has never seen any sign of danger. I have also received many similar statements from other captains, not so well known as those I have referred to, but in every way worthy of credit.

Thus, then, from our examinations it does not appear that the main

route to China is so much beset with difficulty and danger as has been imagined. With the exception of the Julia, there is no good reason for believing in the existence of any dangers between Pulo Sapata and the western edges of the reefs known to extend from the North danger far to the south-westward.

The Minerva Bank.—Although we did not find bottom with 200 fathoms in its position, there is no doubt that it is somewhere near that place. But 28 fathoms, the least water reported on it, does not demand a close search for it at the expence of time.

Corsair Rock.—The existence of this rock has been frequently denied, and we passed so close to its reported position that our look-out man reported a *small island* exactly on the bearings of the Corsair, which turned out to be a large ship.

Royal Bishop Bank—appears to be a coral patch, having 10 fathoms as the least water on it, lat. 9° 40′ N., long. 108° 14′ E., is 3½ miles long, W.N.W. and E.S.E., and about a mile and a half broad. There are 28 to 30 fathoms all round it.

Currents.—The current was so strong from the north-eastward all the time the monsoon lasted from that quarter, that we could scarcely work over it. Immediately we had southerly winds we also had the current from the same direction. We came down between the Anambas and Natunas, where we experienced a set of one knot an hour to the northward.

All meridian distances have been referred to Fort Fullerton, Singapore, in lat. 1° 17′ N., and long. 103° 51′ 18″ E. All bearings are magnetic.

The following positions of the highest points of the islands are deduced from Mr. Reed's operations.

Place.	*Ht. of Summit.*	*Lat. N.*	*Long. E.*
		° ′ ″	° ′ ″
Tambelan Island	1300	1 1 5	107 32 22
Victory Island	285	1 34 46	106 18 40
Barren Island	80	1 31 50	106 25 35
Camel's Hump	574	1 11 46	106 52 58
Saddle Island.....	387	1 19 20	107 2 17
St. Julian Island	587	0 55 40	106 43 31
St. Esprit, largest island ..	817	0 37 31	107 0 50
St. Barbe Island	762	0 8 6	107 13 32
Direction Island	639	0 14 39	108 1 53
Cape St. James Light	482	10 19 14	107 5 25
Pulo Ceicer de Mer	360	10 32 36	108 56 30
Pulo Sapata	347	9 58 23	109 5 57
Great Catwick	196	10 2 56	108 55 7
Little Catwick	56	9 59 30	109 3 57

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

OCTOBER, 1863.

San Francisco to Valparaiso.

We stood off the land with the wind at N.W. and N.N.W., which soon hauled round to N.N.E. On Sunday, 22nd of October, we tacked with the wind at S.E. and S.E.b.S., and on the 24th crossed the line in 105° W. Then we stood to the southward, making westing withal, keeping the wind from E.S.E. and E.b.S., crossing the southern tropic on November 4th in 111° 30′ W.

Our time had been much occupied in discussing the California papers. Some extracts from these give a lucid description of this rapidly progressing city but five years ago.

It was in the summer of 1849 that we strolled from the warehouse of G. B. Post and Co., located at the then terminus of California Street, San Francisco, along the beach a distance of half a mile or more, to Rincon Point, without meeting a building to obstruct our course, though a few rough cottages and tents were scattered over what was then and is still called Happy Valley. An original sketch of the town as it appeared at that time is still preserved in our sanctum as a memento of the pioneer days of '49. Since then a most wonderful change has taken place in every feature of the city. From a few scattering houses, which constituted the chrysalis state of San Francisco in 1849, it has been transformed to a densely settled city, stretching in every direction over and beyond the amphitheatre of hills which then *enclosed* it, but which are now *within* it. Happy Valley and Rincon Hill, which then were an unbroken thicket of wild shrubbery and only dotted with white canvas tents, are now covered

with stately mansions and blocks of stores and manufactories. And even on the identical spot where we spent two or three days taking a sketch of the place nine years ago now stands the United States Hospital, a lofty building of extensive dimensions, and an ornament to the city. San Francisco of 1849, from a small town of 4,000 or 5,000, has expanded to a city of at least 60,000 inhabitants. To witness and realize this change fills one with wonder at the almost omnipotent power of gold, for gold alone has been the agent which has wrought it.

There is no question that California is destined to be a wealthy and powerful state, and San Francisco a commercial mart of no ordinary size and importance. This is apparent at a glance. It is the immense traffic created by her gold that has given her the impetus which she has received, and which is destined to impel her forward with still greater strides. But though her gold has created it, yet not that alone; but the vast agricultural resources which she possesses constitute the power which is destined to sustain that progress and make her truly great.

The present growth of the city is apparently as great as at any former period, though the improvements are mostly to be found in the suburbs. The number of stores erected is probably in excess of the actual demands of the trade, and as a necessary consequence we find that the rate of rents in all parts of the city is rapidly decreasing. Good fire-proof stores for retail purposes can now be had in favorable locations at from 100 to 150 dollars per month; and for wholesale trade from 150 to 300 dollars per month, according to the size and storage room attached. All who are acquainted with the heavy rents paid there only three or four years ago will notice a great change. But in the rents of dwellings the fall has been still more marked. Good hard-finished brick dwellings can now be obtained at from fifty to seventy-five dollars per month, while well finished frame houses in the suburbs can be had at from twenty to thirty dollars per month.

But rapid as is the growth of the city it would be still greater were the facilities for immigration increased. Much complaint is made, and very justly too, against the monopoly of the steamer travel to and from New York, which unquestionably tends to check immigration by the exorbitant prices now demanded. This monopoly, though detested and complained of by the public, is not an easy matter to get over. The opposition line, which of course looks out for its own interest, is now bought off, and their steamers will probably remain "laid up" in full view of the town as long as they continue to receive half a million per annum for so doing.

The cost of passage through to New York, including incidentals, is now 309 dollars. The steamer of April 20th took not far from 1,400 passengers. They do not report so many, as the company is liable to fine for any excess of passengers over the legal rate. The last steamer from Panama is reported to have brought over 1,500 passengers. A gentleman purchased an entire state room in the May 5th steamer, for himself and family to New York, for 675 dollars,

and was offered 1,000 for the same four days after he purchased it. All the state-rooms in the steamer to sail that day were taken up ten days before her sailing, so great is the crowd of travel on this route. It appears very doubtful whether any permanent rival line of steamers will be established before the expiration of the contract with the present mail company, although it is a matter of vital importance to the growth of that state, as well as the other Pacific states, that the price of passage to and from New York be placed so low as to allow the working classes to come and bring their families with them. These are the classes that develope the wealth of the country, and whatever tends to shut them out is opposed to its true interest.

But it is not simply in the appearance of the city that one discovers a marvellous change. The days of scarcity and high prices are fast passing by, and abundance, not only of the necessaries of life but of its luxuries, is everywhere found. This is especially noticeable in the markets. A visitor at Washington Market will find the various stalls as fully supplied with every description of vegetables, meats, &c., as the best market in Boston or New York. If in anything the soil of California excels it is in the production of vegetables and fruits, for these are the finest in the world, whether as regards flavour or size. The prices have been lowering every season, till now most kinds of vegetables can be had about as cheaply as in Boston or New York. Meats of all kinds, however, yet command high prices, stock growing being still behind the demands of the country. The markets are supplied mostly by German gardeners, who bring in their products in wagons from the country round San Francisco, which is admirably adapted for growing vegetables. Many of the vegetables and fruits are, however, raised across the bay and brought to the city by the ferries. A large supply of fruits will come from the valley of the Sacramento during the coming summer. The supplies of fresh butter are large, and it does one good to witness the piles of golden butter, equal if not superior to the best Orange county. The price at present is from thirty-five to forty cents per pound, but is said to vary much with the different seasons.

This great change from the scarcity and exorbitant prices which prevailed there a few years since, is in a great measure owing to steam, which enables the gardeners, fruit-growers, and farmers, at a trifling expense, to bring in their products with little or no delay and loss from their gardens scattered along the shores of the large bay of San Francisco; and we need never expect to see any substantial progress in *our* marketing or fruit-raising here, at the Sandwich Islands, until we have steam introduced.

To a stranger the streets of San Francisco present the appearance, particularly in the lower sections, of a city emerging from a swamp. A few of the central streets are well paved and resemble those of older cities, but generally they are planked, or rather *bridged*, being built, in many cases, on piles over the water. These piles are continually giving out, and in some of the wharf streets it is dangerous to walk or drive during the night, owing to the number of holes.

The papers almost daily record accidents of children, horses, houses, and even cargoes, falling through the wharves. These lower streets are, however, being slowly filled in with dirt from the hills, which in some places are cut through one hundred feet in depth. This is the case with Broadway, which will have houses on one side of it a hundred feet above the level of the road. It is unfortunate that the appearance of the place should be disfigured in this manner. Would it not have added much to the beauty of the city to have let it remain in its natural topography, and become, like ancient Rome, a city built on seven hills?

In its wharves the city is far behind the requirements of its commercial interests. Generally they appear to be built on the most economical plan possible, piles alone being used, and many of them very inferior. Owing to the strong tides, these piles are subject to rapid decay, and are now fast giving out. But a more serious evil is the filling up of the harbour with mud, carried to and fro by the strong tides, which flow past the city at the rate of two and a half to three miles an hour. In the northern part of the harbour large ships can only come up to the wharves at high water, and generally ground at low tide. The mail steamer landing was changed from North Point to Rincon Point mainly to avoid this inconvenience of shallow water.

This evil can only be effectually remedied by building a substantial sea-wall from Rincon to North Point, which alone will retain the dirt now being deposited to extend and fill out the streets. It is a formidable undertaking, but will eventually have to be resorted to, whatever may be its expense, and the earlier it is commenced the less will be the labour attending it, owing to the continued deposit of mud on what will be required for its foundation. The cost will depend much on the facility with which suitable stone can be obtained for the work. The length of the sea-wall would probably be 5,000 feet at least, and its cost at least a million dollars. Our new wharf front now being built in Honolulu is probably superior to anything of the kind to be seen in California (excepting only the government works at Mare Island), and its cost when completed will not exceed 100,000 dollars, though about 2,440 feet in length. The above sum, however, includes the cost of filling in the adjoining wharf lots, convict labour being principally relied on in the work. This wharf in Honolulu is a stone coral wall, laid in twenty feet water, with coppered piles driven outside of it. As now being constructed it is an ornament to the port, and will probably last fifty years.

Although San Francisco is still the centre of the gold transactions of California, very little gold dust is now seen there, and the contrast in the absence of those piles of dust and gold coin which were to be seen almost everywhere in 1849, is very marked. We were informed that very little gold dust now leaves the state. Nearly all of it finds its way to the mints in the city, where it is coined into United States' currency and also into bars, and the treasure shipped to New York by each steamer is not in gold dust, as is generally supposed, but in

coin and bars, but principally twenty dollar pieces. Formerly the miners used to deposit their earnings with private banking houses, but the heavy losses caused by the failure of Adams and Co. and other private banks have led them to be more careful. They now generally take their dust to the United States mint in San Francisco, have it assayed, and let it remain in the mint, taking a certificate of deposit. They consider Uncle Sam as the safest keeper of their funds.

The currency of California, as well as all the Pacific coast, is limited to gold and silver. Small silver coin does not appear to be abundant in San Francisco. This want of change has probably caused the introduction of every description of silver coin which is found there, all of which pass freely, including the adulterated South American silver coins. Five franc pieces pass as dollars, as with us. Indeed, they constitute the large majority of the silver dollars, while Mexican dollars command so high a premium that they are now deemed only as merchandise. Ten cent pieces pass as rials, and *vice versa*, rials as ten cents. There is no paper currency. The business interests of San Francisco would unquestionably be vastly promoted by the establishment of a strong chartered bank of deposit and discount, but the chartering of a banking institution is not allowed by the present constitution, or at least the issue of bills is illegal. This feature of the constitution will doubtless soon be modified, as credit and trade become more settled in that state.

November 5th.—Passed sixty miles to the westward of Easter Island. The wind hauling round to the N.E., we were able to make a little more easting and to lay up for Masafuera; but on the 9th it shifted suddenly to S.E. and S.S.E. and our hopes of making a quick passage were checked. This change of wind seemed to produce a considerable swell. We continued making easting nearly along the thirtieth parallel until the 16th, in 30° S. and 90° W., we were baffled with easterly winds, calms, and light variable airs until, on Tuesday, 21st, in 32° 30′ S. and 89° W., after a calm of nearly thirty-six hours continuance, a fine breeze sprung up from the northward; with which we made Masafuera on the 24th, bearing E.½N., seven or eight leagues distant.

We had been told at Valparaiso that there are now no inhabitants on this island, although there are still a few on Juan Fernandez itself, who subsist in a lazy indolent manner by cultivating potatoes, pumpkins, and fruit, and breeding pigs and bullocks for the supply of any casual whale-ship that may call there.

It is generally stated that there is no anchorage off Masafuera, but I am inclined to believe this is a mistake. Although the shelter may not be very good, it is certain that both Byron and Carteret anchored here in 1765 and 1767.

Commodore John Byron, who will ever be remembered by his interesting narrative of the loss of the *Wager*, thus speaks of his anchoring off this island in H.M.S. *Dolphin*:—

"At daybreak on Saturday, 27th April, 1765, we sent an officer

with a boat from each ship to sound the eastern side. About noon the middle of the island bore West, distant about three miles, and as I saw the boats run along the shore, without being able to land anywhere for the surf, I bore down to the North part of the island, off which a reef runs for the distance of about two miles, and lay by for them. The island is very high, and the greater part of it is covered with wood; but towards the North end, where I lay, some spots seemed to have been cleared, upon which great numbers of goats were feeding, and they (the spots) had a green and pleasant appearance.

"When the boats returned, the officer informed me that he had found a bank on the East side of the island nearest to the South point, at a considerable distance from the shore, where we might anchor, and opposite to which there was a fine fall of fresh water; but near the North point he said he could find no anchorage. The boats brought off a great quantity of very fine fish, which they had caught with hook and line near the shore. As soon as we had taken them on board, which was late in the afternoon, we made sail and worked to windward in the night.

"At seven o'clock in the morning we anchored with the small bower on the bank which the boats had discovered, in twenty-four fathoms, with black sandy ground. The extreme points bore from South to N.W., and the fall of water bore S.S.W. distant about a mile from the ship's station. This part of the island lies North and South, and is about four miles long. The soundings are very regular, from twenty to fifteen fathoms within two cables' length of the shore."*

Commodore Byron's description of wooding and watering is both interesting and useful, not only as regards the island, but also in relation to the manners and customs of seamen in that day.

Carteret, who was a lieutenant in the *Dolphin* on this occasion, visited Masafuera in command of the *Swallow*, of twenty guns, in a voyage of discovery two years later. His account of the island is much longer and more interesting than Byron's. He was off and on, two or three times at anchor, between the 12th and 24th May, 1767, and during that time experienced heavy gales from N.W., which he was quite unprepared for, but which, as is now well known, are very prevalent at that time of year. Captain Carteret mentions the anchorage as follows:—

"On the 12th May, 1767, we arrived off the south-easternmost part of Masafuera, but it blowing hard with a great sea, we did not dare to come near it on this side, and therefore went round to the West side; where, in the evening, we cast anchor upon an excellent bank, fit to receive a fleet of ships, which in the summer might ride here with great advantage."†

Captain Carteret found wooding and watering difficult here, and

* Commodore Byron's Voyage, Hawkesworth, vol. i, chap. viii, pp. 86–87.
† Hawkesworth, vol. i, pp. 542–543.

shifted his berth to the East side, where he anchored in about the same place that Byron had anchored two years before. But he endured great hardships, endangered his boats, and was obliged to leave almost all the wood his men had cut behind him, and did not by any means get the supply of water he wanted. It is probable, however, that after the run of bad weather and hard N.W. gales, had he waited a few days longer he would have had fine mild weather and been enabled to refresh his men. The account is very interesting, and well worth reading when in the neighbourhood of this classical spot to seafaring people.

Carteret gives a view of the island and a few soundings about a mile and a half off shore, taken from the *Swallow's* anchorage on the West side of the island:—twenty-two fathoms, fine black sand, about a mile off shore; extremes S.b.E. and N.E.¼E.; hole in the rock, S.S.E.; extreme of reef, S.b.W.; bluff with rill of water near it, East.

On the S.W. point of the island there is a remarkable rock with a hole in it, which is a good mark to come to an anchor on the western side, where there is the best bank of any about the place. About a mile and a half to the northward of this hole there is a low point of land, and from this point runs a reef, in the direction of W.b.S., to the distance of about three-quarters of a mile, where the sea continually breaks upon it. To anchor, run in till the hole in the rock is shut in about a cable's length on this low point of land, then bearing S b.E.½E., and anchor in twenty and twenty-two fathoms, fine black sand and shell. There is anchorage also at several places on the other sides of the island, particularly off the North point, in fourteen or fifteen fathoms, fine sand.*

Although there is a great surf on the island and landing is mostly dangerous, yet it would not be difficult to find coves for boats to enter, or even to make a commodious wharf, if it were necessary to obtain supplies here. Commerce has so altered all our ideas in this respect, and we now so constantly look for depots, storeships, or the ease with which supplies can be purchased, that we are apt to overlook those which Nature has placed within our reach. It is, however, well to remember that such islands as these exist, where wood and water, to say nothing of fish, birds, and goats, might be found.

In making a passage it is not advisable to hug the land. We were baffled during the whole day with light winds from S.W., which perhaps we might have avoided by passing to the southward. We made the summit of the island 2,500 feet high. The longitude by our chronometers 80° 44′ W.

* Hawkesworth, vol. i, pp. 554–555, Captain Philip Carteret's Voyage.

(To be continued.)

The Western Division of the Mediterranean.—*Navigation: Passages from West to East.*

(Continued from page 466.)

When the Levanter sets in in winter without that sudden change, which it sometimes does, it generally begins at N.E., which allows vessels to leave an exposed anchorage, and the same may be said of Torre Molinos, Sabinilla, and others; but there are cases when the wind changes suddenly from West to East and the difficulty of getting away is very great. At other times the sea which sets in from the eastward is anticipated from the wind; in which case the anchor should be got immediately, however strong the wind may be, for it will soon be settled at East. The signs which generally precede an easterly wind should also be considered as to whether or not to abandon an anchorage which is exposed to it.

When bound to the Strait with a westerly wind the same directions should be observed as are noted for summer, keeping in mind that the land being generally more humid than in summer, the wind comes more from it during the night, which is of service to vessels beating up.

In January and February, when the ground is saturated with moisture and the summits of the mountains are capped with snow, a violent contest takes place between the Vendavales and the land winds. Thus vessels may be seen frequently running with a strong S.W. wind from the Strait of Gibraltar for Malaga, and when off Fuengirola they will have it from N.W. The same may be said of the whole coast of Spain, while outside, and at the distance of three or four leagues, it will be blowing hard from S.W. or S.S.W., and inland the wind will be from West or W.N.W., the sea outside running from the S.W. In such cases vessels should navigate inshore, and if the Vendaval should become so strong as to oblige a vessel to seek refuge in some port, a safe one should be adopted, and no attempt made to take any anchorage along the shore.

In winter N.E. winds are common in the Gulf of Valencia, blowing so hard sometimes that it is impossible to show sail to them, at least for the first twelve hours. Westerly winds, again, in winter are just as common and lasting. With these the passage is made as in summer, that is by closing with the Spanish coast in proportion as the vessel approaches the Strait of Gibraltar.

But the easterly winds are generally very dirty, obscuring the sky and concealing the land. On this account the land should be kept at a moderate distance, so as to correct the reckoning for the vessel's position occasionally, and the Strait should not be steered for before having made out distinctly the heights of Estepona and Marabella, or other parts of the coast if these should not be seen. It is common for ships to arrive in the mouth of the strait without seeing land on either side; but no ship should persevere in a course for it when ignorant of her position, but should avail herself of some opportunity of a clear

to make Gibraltar or Mount Bullones. For if a vessel should have entered the Strait out of sight of the coast nothing is easier than to mistake one mountain for the other, and thus get down in the bay of Almadraba or that of Ceuta, supposing that she is then entering the Strait, an error which has proved fatal to many navigators, who have not been able to prevent a total loss even when they have discovered the mistake.

There are times when the misty haze which is collected in the mouth of the strait is so considerable that at night the lights of Ceuta and Point Europa cannot be seen, notwithstanding their great brilliancy, vessels being then obliged to keep the sea until daylight, or until a clear enables them to see the lights. Fortunately, a few hours of this work is not generally attended with bad consequences in the eastern part of the Strait, for the general current keeps the vessel to windward, and she has only to contend with a high sea, to which the current itself contributes something.

For all the foregoing reasons, vessels should keep along the coast of Spain, at least from Cape Sacratif, when they are running in bad weather with an easterly wind for the Strait of Gibraltar; and should not fail to keep it until up with Points Fuengerola or Burra, which are well known, and from which a vessel may shape a course for Point Europa. But they should avoid the Gulf of Valencia in a heavy easterly wind coming from the coast of Catalonia, because the current which is occasioned by this wind sets them into the interior of it so completely that instances are known of vessels that have been considered to have passed far enough clear of it, and with their heads towards Ivica, perishing on the shores of Denia.

Routes from North to South.

Summer Season.—Vessels when crossing the part of the Mediterranean on which we are treating from North to South, or the reverse, should have regard not only to the general but also the local currents, in order to avoid falling to leeward of their port of destination, and also the prevailing winds of the season in which they make the passage.

Vessels from Marseilles or any other part of the Gulf of Lyons, bound to Algiers or any one of its ports, should pass East of Minorca in summer time. In this season N.W. winds prevail in that gulf, and generally become North off Minorca; while between the Balearic Isles and the African coast winds from East to S.E. prevail. Hence it is easy for a vessel to gain the parallel of these islands, and it will be better to get as much to windward of them as the port of destination is more to the eastward. Thus a vessel will be well to windward and prepared for the S.E. wind which prevails South of Sardinia.

A vessel bound to any of the western ports of the Mediterranean may pass between Majorca and Minorca, and will find herself to windward of her port if she should have an easterly wind on the Barbary coast; and she may run along this coast at a moderate distance, for her port of destination.

Vessels from the coast of Catalonia bound to any port in Algiers may pass East or West of Majorca, according as they may start from East or West of their port of destination, keeping in mind that on the the African coast in summer time easterly winds nearly always prevail. But if, on leaving the islands, westerly winds are found, or the appearance of a westerly wind, it would be prudent to keep more to the westward of her port, so as not to be set to leeward with the general current as the shore is approached.

Those from the coast of Valencia, Alicante, and Murcia, bound to Algiers, have but a short distance to run, and should regulate their tracks according to the prevailing winds, taking care to make the land well to the westward of their ports should westerly winds prevail, so as to allow for the effect of the general current.

Winter Season.—Passages made in the winter by vessels from the coasts of France and Catalonia to Algiers or ports to the eastward of it, should be between Minorca and Majorca if they get the prevailing winds of the Gulf of Lyons. These generally follow them to the said islands, where they change more to the N.W.; and it is not improbable that to the South of them they will be more westerly, degenerating into S.W. on approaching the African coast. On this account they should be close to Majorca, and vessels should not leave this island without being North and South of Cabrera, from whence a course may be shaped to windward of the port bound to, so as to allow for the effects of the current.

In winter time it will be best to pass between those islands when the wind hangs to N.W., and not to leave the eastern shore of Majorca until the islet of Cabrera is close by, for if, on leaving it, a S.W. breeze is met, which renders it impossible to cross to Algiers, the vessel will be to windward and may take shelter in Alcudia Bay or in Port Mahon, in case it should freshen into a gale. And these precautions are still more desirable if the destination should be a western port of Algiers.

If, on leaving the Gulf of Lyons with a N.W. wind signs appear of an easterly wind and the barometer begins to fall, vessels should pass East of Minorca, because it may be probable that the wind will haul to N.E. and change successively to E.N.E. and East, until it settles at S.E., in which case they will be to windward to make sure of the port of Algiers.

It is quite common for a vessel to leave Marseilles with a fresh N.W. wind, which will go on changing to North as she gets out of the Gulf of Lyons, blowing stronger as the Balearic Islands are approached. If it were summer this would gradually slacken on making Minorca; but in winter it is quite the contrary, becoming much stronger off the island, and only becoming less on nearing it. When off the island it will haul more to N.W., and will veer to West and S.W. between it and the African coast. If the northerly wind lasts as far as Cabrera it will last until Algiers is reached.

Vessels in this season going from the coasts of Catalonia or Valencia for Algiers may pass between Majorca and Ivica, supposing that

they sail with N.W. winds, which go on shifting to West and S.W. in the Balearic Channel and on the African coast. But if the destination is Oran it would be better to pass between Ivica and Cape San Antonio, and not quit the Spanish coast until reaching the meridian of Cape Palos, or further West if the wind continues N.W. With these winds vessels should make the land further to windward of the port of destination when they cross from Cape San Antonio, Palos, or Gata, because in crossing they receive the whole effect of the general current. With easterly winds it is enough to lay the vessel's head for her port, for the current will set her sufficiently to windward to make sure of it.

In crossing from the Spanish ports West of Cape Palos to Chafarenas and other departments of Africa, all that is necessary is to attend to the prevailing wind, whether it be from East or West, with which the voyage may be always made, taking care only to make the land sufficiently to windward of the port.

Passages from South to North.

Experience has proved that the voyages from Algiers to the coast of France are longer than the return passage by one or two days as a mean. The reason is evident. The N.W. and N.E. winds are most prevalent from the Balearic Islands to the Gulf of Lyons, and to these is owing the current, tolerably constant, which is observed from the northward off Minorca. Sailing vessels have therefore to contend with this wind and current against them from Algiers to Marseilles and the ports of Provence.

Summer Season.—If it be necessary to pass to the East of Minorca to go to Algiers from Marseilles, it will be well to pass to the westward of that island, and perhaps Majorca, in making the opposite voyage, so as to avoid the whole force of the current from the Gulf of Lyons. Besides, as in summer time N.W. winds prevail in that gulf, while in the channel between Africa and the Balearic Isles S.E. winds prevail, a vessel will make a good voyage to the West of Majorca, keeping along the coast of Catalonia and clawing towards it, so as to be to windward of the port when on entering that gulf westerly or N.W. winds are met.

Should a vessel intend passing East of Minorca, even when the wind is favourable, she would very likely meet with scant winds on nearing the Gulf of Lyons and N.W. winds in it, which would delay her progress. To pass to the eastward of Minorca could only be justified in the case of leaving Algiers with an easterly or S.E. wind, which would last as far as the Balearic Isles, and from the conviction that this wind is general to the northward of them, so as to last to the port of destination. Navigators accustomed to this passage always keep the Spanish coast, in all seasons, when entering the Gulf.

Winter Season.—The passage to the West of Minorca should be adopted in winter for two reasons; for if Algiers be left with a S.W. wind, which is the most prevalent at this season, it is nearly certain that it will draw westerly on nearing the islands, and it is mostly from

N.W. in the Gulfs of Valencia and San George; with which the coast of Catalonia may be run down and the Gulf of Lyons entered by Cape Creux.

In making passages from Algiers to the Gulf of Lyons it must be remembered that the heaviest gales occur between Minorca and the coast of Provence: consequently, in winter it will be prudent to pass between the Balearic Isles, in order to have a safe port in case of bad weather from the northward, and to run down the coast of Catalonia, so as to be sure of the bay of Rosas. Even the French steamers which carry on the trade between Algiers and the coast of Provence in winter time adopt the custom of passing through the Majorca Channel, especially on the return passage, because between the islands and the coast of Spain there is less sea and they have to contend with as much current as if passing East of Minorca.

A vessel finding herself assailed by a strong northerly wind between the Balearic Isles and the coast of Catalonia should not begin a long, tedious beating against them. It would be much better for her to be under Minorca if she is on a meridian that will permit her to approach it from the westward, or to take the Bay of Alcudia if she cannot make the island; and in case of her being further to the westward she will gain the Bay of Palma. If there be any easting in the northerly wind East of the meridian of Minorca she may take this island on its eastern side, approaching it near Ayre for the excellent shelter which the southern shore of that island affords with northerly and N.E. winds. Port Mahon should never be attempted with a northerly gale, from the risk that is run of missing the entrance.

Vessels from the eastern coasts of Algiers bound to the Gulf of Lyons also, in winter time, should keep to the Balearic Isles, so as to have a safe port in case of not being able to continue the voyage from northerly winds. Those from the western ports of Algiers should adopt the Majorca Channel; but it would be mostly better to pass between Ivica and Cape San Antonio, with the view of crossing more freely the Gulf of Valencia, in case of N.W. winds prevailing.

With respect to vessels which have to go to Marseilles or other places in the Gulf of Lyons from the Balearic Isles, they should adopt the same track as is laid down for those proceeding from Algiers.

Vessels from the western ports of Algiers and Morocco, bound to the southern ports of Spain, should regulate their voyages in all seasons according to the prevailing wind and current, keeping their heads to the westward of the port, as observed with the westerly wind.

These rules cannot always apply in accelerating voyages either from North to South or from East to West and the contrary, as there may be occasions in winter when there are fifteen days or more of the finest weather, with a smooth sea, when a direct course may be steered without the necessity of allowing anything so as to keep to windward of the port; while in summer such severe weather may be experienced as to oblige a vessel to seek a port of refuge. They will assist the navigator with his judgment to avail himself of the opportunities of

fine weather whatever may be the season, and to avoid the bad in keeping his ship free from harm. In so confined a sea, a port is soon found, and as bad weather may be said to be seen when coming on, the experienced and wary navigator will know how to avoid it.

Port Mahon.—The following remarks on Port Mahon will be useful in case of vessels being obliged to take it on account of bad weather:—

The shelter of Port Mahon, a master work of Nature, is sufficient in its several anchorages to protect a multitude of vessels of all sizes, either when working in or lying alongside of its piers, or by the shore. Whole squadrons of vessels from different countries have been lying there, and nothing but their masts visible, besides hundreds of transports waiting convoy. The coves of Taulera, San Jordi, and Calallonga can each hold from 200 to 300 vessels in quarantine, and in the interior the number is almost without end that may be accommodated, all in the most perfect security. La Plana and Figuera coves are good berths for them, and in winter the vicinity of the arsenal.

The most troublesome wind in the port is that from North to N.E., from the strength with which it blows, especially in winter. But as it comes off the land, which is at a very short distance, and besides as a sea never enters the port, a vessel well secured with her fastenings is always safe, and even if those fastenings give way she runs no risk.

Besides, it affords complete convenience for careening and repairing, and its building yards provide ships with everything that they want. Mercantile operations are also facilitated, and very seldom suspended. Water is excellent and abundant, no less than provisions of all kinds, which are excellent, and of moderate prices.

The circumstance of the island lying off the entrance of the Gulf of Lyons, in which so many disasters are experienced by ships, and midway between France and Algiers, renders Port Mahon a good refuge harbour, particularly in winter, for vessels which have to make that very trying passage across. The only inconvenience to sailing vessels is the difficulty of taking it with strong northerly winds; but in exchange for this there is the South shore of the island, which is an admirable shelter against that wind, and where a vessel can lie in the utmost security.

As the entrance channel is long and narrow, running exactly N.W. and S.E., the winds favourable for entering are those from N.N.E. by the East round to S.S.W. Large ships and frigates frequently run in with fresh northerly winds by keeping a press of sail until off La Mola, shave the flat rock of Fore, and with good way on them they fetch the South coast; then luffing up to shake the sails and shooting to the North shore, from which they fill again to repeat the same operation, managing thus with two or three boards to clear the rocks at the entrance and to take an anchorage inside the lazaretto. This mode of entering, however, can only be done with smart and fast vessels, besides the risk of it, making and shortening sail to anchor rapidly, and therefore not applying to merchant vessels.

Hence it is that we advise all navigators who may be caught with a

northerly gale in the Gulf of Lyons not to go to Port Mahon, nor to attempt to take it for refuge in it, as they will most likely be lost. But if they arrive under the lee of the island they may skirt it, the Mola, and the South side of the Isle of Ayre, and if sufficiently acquainted with it, pass through its channel, hauling up with small sail to W.N.W., running along close to the South shore of the island, and when reaching Cape Dartuch to change the shore and do the same. Continuing thus, with little sail, excellent shelter will be had from the sea and no inconvenience felt from the wind, for it will be steady, and the gale will pass off and soon admit of the voyage being continued.

Even should Mahon be the vessel's destination she should not attempt to enter the port with a strong northerly wind, and should prefer taking refuge on the South side of the island, where she may await the wind going down. But a vessel taking shelter under the island must take care that it does not become a lee shore for her during the night. It has often happened that vessels, being fearful of night on the coast, miss it and find it difficult to recover, the instances being not a few where it has been impossible to do so, and they have to run for Majorca, or perhaps to the coast of Africa, with the chance of losing all on board. A vessel, therefore, should not part with the coast of Minorca, and when night comes should keep at four or five cables from the shore, so as to make it at daylight, working up then to recover what has been lost to windward at night. Fortunately for the navigator, the coast is remarkably clean, and a vessel may stand without risk of any kind to half a mile from it between Point Bini-beca and Point Dartuch. There is the advantage also that now this point has a lighthouse and the Island of Ayre another, these two excellent marks contributing to distinguish the two extremes of the South coast; so that when a vessel is assailed by a northerly gale at night there should be no hesitation in running there for shelter, giving the shore a good berth at its eastern end with the view of sighting the Ayre light, and then to approach the island, or doing the same from the westward to open the Dartuch light, and so to pass the cape.

Even when, with the wind at N.N.E., a vessel can work into the port it is necessary to go well prepared for reducing sail, and to carry lofty sails in preference to low ones, because the walls of the lazaretto screen the wind and it is necessary to have it to run well up. Besides, it is generally more scant inside and the buildings serve to deaden it, so that the anchors should be ready and cables clear. With a N.E. wind a vessel runs in very well, but with that also lofty sails should be used.

With winds from S.W. and W.S.W. the same high sails should be adopted, for being obliged to pass very close to the castle of San Felipe the lower sails will not draw, and become aback. With other winds from the eastward a vessel may enter easily, taking the middle of the channel.

Running for the port with a N.W. or westerly wind, and from the

North coast, a vessel should keep as near to the mole as possible, and get as close to the shore as she can between it and Isle Ayre. It will be easy to work along the shore sheltered from the wind and sea as far as the anchorage at the entrance, where she would find good shelter to wait the wind going down, and then to warp in. If coming from the South coast, pass through the Ayre Passage keeping the land on board, and so work up for the port. If the N.W. wind is moderate a vessel easily gains the mouth of the port with it.

A vessel having anchored outside the mouth of the port, especially in winter, with a N.W. wind, should avail herself of the first lull of the wind to get in by towing, for which she should keep things ready, and the line should be as long as possible. A vessel in such a position would be in great danger if a breeze came on from N.E. or East.

As the shore in the vicinity of the port is rocky, wherever a vessel may touch it she will suffer if there be any sea. With N.N.W. to westerly winds as far as South there is shelter from the sea in the mouth of the port. But with northerly winds, fresh, all the rocks are showing breakers, as well as the shore between the mouth and Ayre. The only shelter then found is that formed by the South side of the mole, called the *Clot de la Mola;* but the swell which runs into it renders it bad for the vessels which would lie there any time when secured to the shore.

With gales from East to South there is much break in the mouth of the port, and it is necessary in running for it to carry plenty of sail, so as to have good way. However little sea there may be, the rocks show breakers, and they are then well marked and the channel defined, rendering it easy then to keep mid-channel.

In Port Mahon tides are unknown, and the rise and fall of the water, tolerably great sometimes, is due to the effect of the winds and from being so near to the Gulf of Lyons. The water gets a high level when it blows fresh from the S.E. or S.W., and is low when from the opposite quarters. A considerable rise of the surface is also observed at times without any apparent cause. In such cases the ports and bays of that gulf are in the same condition, and this is the prelude of a strong northerly wind, which will not be long coming, and with which the level will rapidly subside.

When northerly and N.E. winds prevail, a strong current is experienced off Cape la Mola and Isle Ayre, that runs to the S.W. This current is nearly constant, and it is only with fresh breezes from the S.W. that it runs in the opposite direction.

It may be said that northerly winds prevail over Minorca for two-thirds of the year, sometimes with so much force that the foam of the sea from the northern shore is driven over to the opposite one, covering the intervening ground with a thin saline deposit. These northers last in winter for periods of half a month or more at a time; and they have been known to last for the space of two months, with but small interruption from N.W. In summer time they usually blow very hard for the space of twenty-four hours, generally falling about the third day. In this season they are generally clear and very often

the sea gets up without any wind. In winter time the first days of them are generally dirty.

N.W. winds do not fail to blow hard, bringing showery weather with them; but they seldom last beyond three or four days, and they have the advantage of subsiding at nightfall. Hence it is that vessels which arrive off the mouth of the port in strong N.W. winds should endeavour to wait close off it, and even to anchor, with the view of profiting by the stillness which prevails at night to get in by towing.

The S.W. and southerly winds, although not frequent in winter, are very severe when they set in, for, besides being wet, they blow with much strength. They leave off generally between West and North. In summer there is fine weather with S.E. winds, as well as S.W., which are most common at this season.

In winter the S.E. wind is very trying, when it freshens to a gale, for vessels coming from the Levant South of Sardinia bound to Mahon. As this wind brings a great deal of wet, it completely obscures the island. On the other hand, the currents between Sardinia and Minorca set vessels from their course; and as it is very easy to run by the island without seeing it, as has often happened, vessels should run for the middle of it, for they get far to leeward sometimes before finding out their mistake.

(To be continued.)

BRIEF ACCOUNT OF A VISIT TO MOSES' WELLS (AYOUN MOUSA), NEAR SUEZ.—*Ruins of the Monastery of St. Paul's, Highland of Aboo Deraj, and the Wady Towareek (the Wady Mousa of Moresby).—By Captain W. C. Barker, H.M.I.N., Vice-President of the Bombay Geographical Society.*

On the morning of the 22nd of August, 1848, prior to our quitting Suez for a small cruize to southward, Lieutenant Cruttenden and myself waited on Maalim Godsey, formerly British agent here, to obtain such information as we could regarding the monastery of St. Anthony at Zaffarana. He kindly sent for a man who had visited the place, and from him we gleaned as follows:—

The monastery is situated on the North brow of the highland of Zaffarana, distant about twelve miles from the beach. I will endeavour to give his account of the place in his own words:—

"I was one of a boat's crew from Jeddah bound to Suez, when, falling short of provisions and water, owing to a continuance of unfavourable weather, we put into Zaffarana, and seeing the monastery, myself and three others set out for it to endeavour to obtain some provisions. Water we had already procured from some wells in the

valley formed by the mountains of Aboo Deraj (or the Father of Steps) and Zaffarana (the mountain of Zaffron?) where there is a date grove. Quitting the buggalow or native boat at sunrise, we proceeded towards the monastery, where we arrived about noon. We were quite long walking there owing to our being very weak and hungry almost to starvation. We walked round the monastery, but could find no entrance. The walls are very high. At length, by dint of shouting, we attracted the attention of the Rohban or monks inside; and making known our wants, they threw us from a kind of window four loaves of bread, with which we returned to the vessel. I have been given to understand there are about thirty or forty monks there. They have a large garden and wells within the walls of the Durh or monastery; and they are sometimes seen on the coast fishing. They obtain their supplies from the Nile, which is distant three days' journey, or about 100 miles. There is no road from Suez along the sea coast, but there is at the back of the highland of Aboo Deraj. This part of the coast belongs to the Mahaza Bedouins, who are not to be trusted unless you can get hold of their Sheik, and make an agreement with him. He is now at Cairo. And again, it is necessary that you should have camels or donkeys sent there, as you would not be able at this season of the year to walk: and you should be provided with a letter of introduction from the Superior, who also is at Cairo."

Thus from his narrative, and the advice of Maalim Godsay, we concluded that we could not go there; but still the information gained is interesting.

These monks are most of them Copts. There has been a monastery here from the early ages of Christianity. We know that during the persecutions of the Christians many fled to the desert to escape the wrath and cruelties practised by their persecutors.

About the year 305 A.D., Anthony, an illiterate youth of the lower parts of Thebais, distributed his patrimony, deserted his family and native home, and executed his monastic penance with original and intrepid fanaticism. After a long and painful noviciate among the tombs and in a ruined tower, he boldly advanced into the desert, three days' journey to the eastward of the Nile, discovered a lonely spot which possessed the advantages of shade and water, and fixed his last residence on Mount Colzim, near the Red Sea, where an ancient monastery still preserves the name and memory of the saint. "He lived between the years of 251 and 356, thus attaining the venerable age of 105 years."* Numbers followed his example. The monastery of St. Anthony is no doubt that on Mount Zaffarana, distant fifty miles in a direct line from Suez.

We also received intimation of the ruins of an ancient monastery at the place from which our ships are supplied with water, which is known by the name of the Monastery of St. Paul.

We returned to the vessel, and after having partaken of an early

* Gibbon's *Decline and Fall of the Roman Empire*, chap. xxxvii, p. 602.

dinner, we left for Moses' Wells, in a native boat, well stored with the good things of this world, and having also a very convenient sized tent. We arrived at the Wells in time to get ourselves pretty comfortably settled for the night in the garden of Maalim Godsey.

These Wells are very ancient, but it is only within the last few years that the people of Suez have ever turned them to account. The first garden was laid out by Nicolo Costa, French consular agent. In his garden there is a spring sufficient to irrigate the whole garden, which is 300 yards in length and 200 yards broad. They have formed a large basin round the vicinity of the springs, with ducts or canals leading in different directions, which are closed up during the night, and in the morning the basin is filled almost to overflowing; the gardener then opens out the ducts or canals where the water is required, and as these springs are in the highest part, there is no necessity for raising the water. There are, besides these springs, several others which do not rise to the surface. These are formed into good wells, built up with stone. There are also several aqueducts leading in different directions, but all out of repair, and one leading from the wells to within 70 yards of the beach, distant about one mile.

There are now four gardens, which form, as it were, country seats. The one just mentioned, the others belong to Maalim Godsey, Mr. Livick, H.C. Packet Agent, and another to one Georgis, a wealthy merchant at Suez. There is also a very substantially built well about a mile and a half to the eastward of this place, which is almost filled up with rubbish, but still used by the Bedouins for their camels. The water is slightly brackish from the nature of the soil, which is deeply impregnated with salt.

We remained at the Wells till the evening of the 24th, preferring to live in the tents, (as all their houses swarm with vermin,) which, however, made us feel the heat very much. The thermometer ranging as high as 100° of Fahrenheit, falling to 70° during the night, owing to the very heavy dew. Quitting Moses' Wells, we proceeded along the coast southward for better anchorage, and brought up under Ras Maselia, four miles from the Wells, to allow our boatmen to break their fast. This being the month of Ramazan, they neither eat nor drink during the day. Observing a rude stone building on the beach, we went to it, and found there stone-cutters' implements. The people are sent here from Suez to cut stone for the house of the P. and O. Company building there. I thought it spoke much in favour of the honesty of the people, that they should leave their tools lying about on the beach.

On a low range of sand hills, about three miles from the beach, there is a pillar. It was too late for us to visit it, but I must do so at some other time. At 9 o'clock p.m. we started for Aboo Deraj, where we arrived during the night.

Early in the morning of the 25th, we landed at Aboo Deraj, and walked up to the Well, which is situated at the foot of a ravine: from this well our ships are supplied with water. It is merely a hole dug in the ground, about eight feet below the surface, about five feet in

diameter, and at the time we visited it it had about four feet depth of water. It rises and falls with the tide, or rather the water does. It is singular that this is not marked on the charts. It bears from Suez true S. 8° W., distant thirty-one miles, and is about 400 yards from the beach; good ground for rolling the casks to it. The anchorage bad; deep water close to the shore, and a shelving beach. Our boat was anchored under a small patch of rocks, moored head and stern. In North-westerly winds there must be a good deal of surf here, but still more in southerly winds. Here we found a mass of ruins; one apparently had been a kind of fort, (the South-western angle was formed of one large mass of sandstone,) evidently been built strong and high; inside it measured sixty paces, each side being square. There were the remains of a wall to be seen, which appeared to have been built so as to enclose the well, and another well, now filled up, was in the centre of the building. There was another building similar to this, and an immense heap of ruins, covering an extent of at least half a mile in diameter. At a short distance there is a small detached ruin, called by the Arab boatmen "The Church." It appears to have consisted of two rooms, an arch connecting them, part of which now remains, and along the walls are several niches about three feet high. The plaster is in good condition, and about three quarters of an inch thick.

The hills in the vicinity are formed principally of red sandstone, clay, slate, granite, with strata of magnesian limestone, talc and trap, and most, but more particularly the sandstone, appears to have been subject to the action of fire. The whole bears the mark of great antiquity, and as if some violent convulsion of nature had taken place at some very distant period. In the ravines huge masses of rocks have been hurled and tossed about, and there are deep rents and fissures where the mountain torrents have poured down from time to time. All indeed has a most extraordinary and wild appearance. The first broken range of hills are about 1,200 feet above the level of the sea shore in the background, distant about four miles; they tower to the height of at least 2,000 feet, apparently of the same formation as the near range. In the valleys some few stunted specimens of the tamarick abound, and a coarse kind of grass. The marks of the gazelle, hyena, and jackals are very thick; but we did not see a single creature.

We halted here, having our tent pitched close to the North side of the church, which latter we made use of as a kitcher, thinking that perhaps we might have a chance of shooting something (not that we were at all in want of any food, for we were amply supplied with all sorts of good things, and our boatmen kept us supplied with fuel), but it was in vain, for, as before mentioned, nothing was to be seen.

After wandering through one of the ravines as we returned, we cast our eyes around on the desolate scene, fancying that we were the first Europeans that had ever visited the spot, we were surprised on observing an inscription which we had no difficulty in deciphering; it ran thus:—"A BALL ACBAR, 1848," in three lines! It quite destroyed all our remaining romance; it looked little less than sacrilege thus to

treat a huge block of time-honoured sandstone, that had probably some centuries ago been hurled from its proud position on the very summit of the range! I declare I felt quite vexed.

On Sunday the 27th we again at daylight embarked and started on our voyage, coasting along the highland of Aboo Deraj to N.W. We, at about 10h. a.m., arrived at a place called "Goobul el Boos," or the Bay of Reeds, and immediately to the North of the hills we found a spring of mineral water, of bitter flavour; there are also numerous springs of salt water. The ground for the space of a mile in diameter is thickly covered with salt of the very purest quality.

There is an extensive swamp, filled with reeds, and a coarse kind of grass. These reeds are used for thatching and mats.

We pitched our tent on the beach close to a small but powerful stream of tepid water, which rushes out to the sea with great velocity and a loud murmuring sound. It is used by the Bedouins for their sheep.

We were visited by several of the Bedouins of both sexes of the Terah-bin tribe, who were very civil. At about 4h. p.m. they brought their flocks down to water, at least 200 or 300 head of very fine-conditioned looking sheep and goats thus passed in review before us, and were then driven off to some caves in the mountain side, where they are closed up for the night for fear of the prowling hyenas. These people of the nineteenth century are of the same kind of manners and customs as their ancestors 2,000 years before the birth of Christ; they still dwell in the caves of the mountains, and according to the old customs the women do all the work, while the "lords of the creation" wander and saunter about in the most indolent manner, spending their whole time in smoking and talking. The women follow and tend the flocks, with a child perhaps slung on one side, and at her back a bag full of goat's hair, which she is engaged in spinning into yarn to make their abbas or cloaks for the winter. The women all carefully concealed their faces, and were all *dressed*—if such a term can be used—in rags of blue dungaree, very dirty, and savouring strong of all that is unpleasant, so strong that even in passing by one could not help inhaling the noxious smells.

In the evening we prepared to embark by striking the tent, but could not start, as the boat lay aground, and we had to wait for the tide to rise. The swamp soon began to throw off its noxious vapours, and the mosquitoes were very troublesome. We got away, however, about 9h. p.m.; the wind being very light, we only made thirteen miles during the night.

The Arabs do not know the valley between Aboo Deraj and Ataka or the "Valley of Moses,"* as it is marked on the charts. They call it Wady Towareek,† from the name of the tribe, or at least the principal tribe, that wanders through it.

* Wady Mousa.

† I have since been told that Towareek signifies the little or contracted pass.

About six hours' journey from this commences the petrified forest. One of the Bedouins has promised to bring me a camel load of specimens from thence to Suez. He offered to conduct us and provide us with donkeys or camels, but we were afraid of the heat.

A little after sunset I tried the temperature of the mineral waters; while the atmosphere was 85° that of the water was 90°, rising instantly to that, and falling when taken out to 82° on account of the evaporation.

These springs have, I believe, never before been visited by any Europeans. I have never heard any mention of them, neither are they noticed on Moresby's charts. I must make another visit to them at some more convenient time. It is too hot to expose oneself this weather.

On the 28th we pitched under the highland of Ataka, and having breakfasted, we again embarked, and arrived on board the ship at 8h. p.m.

HIGH SPEED IN THE NAVY.

The exploits of the *Florida* and *Alabama* convey too important a lesson to be lightly passed over. They afford an example from which much may be learned, much gained, if we please to profit by the information which their career—almost unexampled in the history of maritime warfare—supplies to the nation and the government. We have here two steamers of small size, with light guns, unprotected by armour, and with crews of, perhaps at most, a couple of hundred men each, doing an unparalleled amount of injury to an enemy's commerce and trade, burning and destroying wherever they please, and setting at defiance the entire Federal navy; fighting when so disposed, flying when occasion requires; intangible, vanishing from the grasp of the destroyer only to destroy.

The characteristics of the *Alabama* are well known. The *Florida* is described as a "screw steamer of extraordinary swiftness; her hull long and low; no external traces visible of her real strength and power." It is stated on evidence, which we see at present no reason to doubt, that this little vessel has destroyed not less than 9,700,000 dollars worth of Federal property up to the 11th of last May, and, most suggestive fact of all, she has managed to elude thirteen Federal cruizers sent specially in pursuit of her. Even if we take these statements *cum grano salis*, the mere fact of the *Florida* and *Alabama* being still in existence proves how difficult it is for regular men-of-war to capture or destroy vessels whose great speed permits them to act the part of guerillas, the rapidity of whose movements prevents the acquirement of accurate knowledge of their whereabouts. The history of naval warfare shows unmistakeably that heavy frigates

and ships of the line are totally unfitted to pursue and capture privateers; just as regular troops usually fail in operations undertaken against men who carry on a predatory, half savage warfare—half savage in that each man acts more or less on his own responsibility, exposes himself to danger as little as possible, and invariably selects those moments when his enemy is off his guard as the best opportunity for making an attack.

In the face of such evidence we continue to devote all our energies to the production of a magnificent fleet of iron-plated vessels, admirably suited for performing the weightier operations of warfare—ships which may probably add hereafter to the long list of sea battles in which England has been victorious. But we state without hesitation that these are not the vessels to cope with such craft as the *Alabama* and *Florida*. The *Warrior* could not waste her time in looking for such ships. True, she might haply fall foul of one of them now and then, sink, burn, and destroy; but we imagine ships of the *Alabama* class would take particular care to keep at that safe distance which prudence dictated from our heavy frigates; and very little examination or inquiry is necessary to show that we have at present no other steamships built or building really competent to undertake the destruction of such dangerous foes to commerce. It is folly to propose the despatch of a frigate costing over half a million sterling in pursuit of a craft not worth the tenth part of the sum. We may rest assured that recourse will never be had to such an expedient while it remains possible to avoid it.

What the exact amount of destruction to our commerce may be which would render it impossible we can form no idea,—that it would be very considerable we have no doubt. Thus, in 1812, an American war brig, the *Argus*, at one time took up her station off the South coast of Ireland, cruising between the Tuskar and the Saltees, about the 1st of August. "The West India fleet now began to return, the ships of war leaving them at the chops of the Channel, and proceeding to Portsmouth. Now began the *Argus's* destruction of the homeward-bounds. For several days and nights captures were made, and with their rich and valuable cargoes consigned to the flames, which were seen blazing and smoking as they drifted by. No large ship of war could be spared at the time for the Cork station." After doing an incalculable amount of mischief, the *Argus* was destroyed by the *Pelican*, sloop of war, sent specially in pursuit of her.

We are not a whit better prepared for such foes now than we were in 1812. It is not with gun-brigs we would have to deal in the event of a modern war, but with steamers whose speed would enable them to laugh our ships to scorn; and it is, therefore, well that the attention of those in power should be drawn to the necessity of providing a fleet of small steamers, specially constructed to encounter the privateers—for so we will term them—which a hostile government would launch by the hundred against our mercantile marine.

The construction of such a fleet would entail little expense. Half a dozen serviceable war steamers might be built, engined, and fitted

for the price of the *Warrior;* but, to be efficient, they would require to be extremely unlike any of the small sloops or despatch vessels we have now afloat. The first consideration must be speed. On this their powers of attack, their capabilities for making reprisals, and the facility for escaping when threatened by an overwhelming force would entirely depend. Length would be necessary to ensure velocity; light draught of water to enable them to pursue or fly into shallows; a qualification which would seem to dictate a recourse to the twin-screw principle, or something analogous.

To cover such vessels with armour plates would be simply to render them useless. As a rule, they would have to contend only with ships as unprotected as themselves. They would no more attempt to encounter a modern frigate than one of our 10-gun brigs of fifty years ago would a 120-gun ship. It might, probably, be found advantageous to fit them with a single strake of armour plates between wind and water; even this is doubtful, and should only be done after mature consideration.

The question of armament is not one difficult of solution. A single 100lb. rifled gun on Whitworth's, or some other principle equally good, and a couple of 68lb. muzzle-loaders would, we conceive, be amply sufficient. Did we possess any large guns perfectly trustworthy, they could find no place more suitable for the exercise of their powers than on the upper decks of such ships. The evils attending the discharge of the heaviest ordnance between decks, in comparatively confined situations, is well understood. In the open air, however, and with plenty of room to work them, their use would quickly become as habitual to the sailor as the carronade or the long 68; but, unfortunately, the success of any gun throwing shot over 100lb. weight is too exceptional to enable us to calculate with certainty on their capabilities.

Masts and sails would, we conceive, be out of place in the ships we speak of. Depending wholly on their engines for the excessive speed which would really be the measure of their efficiency, spars would be of little service, and being liable to be shot away, might foul the screw at the most critical moment. They are inimical to the attainment of speed, unless when going dead before the wind, or nearly so. It is very well understood that the top hamper of our steam-frigates is a principal cause why they do not attain the speed of our merchant vessels; and ships intended to steam seventeen or eighteen knots an hour could not tolerate their retarding influence. It is generally considered that a steamer without spars would be powerless if her engines broke down. Perhaps,—but there is no reason whatever that when placed in such a predicament she should not resort to the same expedient as a sailing vessel which has lost her masts; nothing would be easier than to stow jury masts, &c., so that they could be rendered available when occasion required. The absence of masts and top hamper would render a steamer burning Welsh coal almost invisible at the distance of a few miles: one of the most desirable objects in the kind of warfare we are speaking of.

When we remember how light the armament necessary to these vessels would be, it is easy to understand that great size would be out of place. The real measure of their carrying capacity would depend on the size of their engines, and the quantity of coals stowed. Seventeen to eighteen knots could be got in fair weather from vessels propelled by engines of some 3,000 effective horse-power. 800-horse power has been developed ere now by a 35-ton locomotive; and there is no reason that marine engines should be much heavier proportionately to their power. Screw engines and boilers, with water, of 3,000-horse power might, by a liberal use of steel and wrought iron, instead of cast, be so constructed as not to weigh more than 200 tons. Making every allowance, seventy tons of coal in the twenty-four hours would supply the engines with steam; and a cruise of eight days, nearly at full speed, would thus come within the powers of the ship.

The mere fact, however, of a ship being able to steam seventeen or eighteen knots an hour is no reason whatever that she should always run at that speed. The consumption of fuel increases as the cube of the velocity, and a very slight reduction in the number of knots steamed per hour would enable coal to be reserved for those moments when the engines would be exerted to the utmost. A powerful blower, arranged suitably, would double the evaporative power of the boiler at such a time. The mechanical engineer would experience no difficulty in constructing engines which, while very light, would be extremely trustworthy. Although run occasionally at the high speed for which they should be specially designed, their ordinary rate would be moderate, consequently repairs would not be heavy; and not only the engines but the ships could be refitted in almost any port on our coasts, as their moderate size would place them within the powers of any private shipbuilding establishment or engineering firm.

These war vessels would be admirably adapted as well to afford a secondary protection to our own commerce as to destroy that of the enemy, while their comparatively trifling cost would deprive the loss of one or two now and then of any very serious consequences. We have not at present a single ship of the kind. The old steam-frigates of the *Bulldog* and *Cyclops* class are fast disappearing, their slow speed rendering them utterly worthless. The all-absorbing subject of iron-plating has thrown every other question connected with the navy or the protection of our commerce comparatively into the shade, and our naval establishment will soon be composed of nothing but costly first rates. That the construction of heavy war ships is of importance we admit; but that it is of an importance great enough to banish all other considerations we deny. A *Florida* or an *Alabama* may play havoc with our commerce to-morrow; and we feel pretty certain that our iron-plated frigates will be far too busily engaged to prevent them.

The government may, perhaps, contemplate taking up and arming our merchant steamers in the event of a war. The evidence given before the House of Commons some fourteen or fifteen years ago was

scarcely sufficiently encouraging, even then, to warrant any great reliance on the aid to be derived from such a force. There is not a ship of the kind which would not require immense strengthening before she could be considered fit to carry one or two 68-pounders, and war might be half over before they could be qualified to take any part in it. To be at peace, let us be prepared for every description of naval attack and defence. A few hundred thousand pounds properly laid out now may possibly prevent the loss of millions hereafter; and our readers may rest assured that the question we have placed before them is one of vital importance, well worthy the careful study of thinking men.—*Mechanics' Magazine.*

THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE:—*Meeting at Newcastle, August*, 1863:—*Address of the President, Sir William Armstrong, Bart.*

A quarter of a century has elapsed since the Association assembled in this town, and in no former period of equal duration has so great a progress been made in physical knowledge. In mechanical science, and especially in those branches of it which are concerned in the application of steam power to effect interchange between distant communities, the progress made since 1838 has no parallel in history. The railway system was then in its infancy, and the great problem of trans-Atlantic steam navigation had only received its complete solution in the preceding year. Since that time railways have extended to every continent, and steamships have covered the ocean.

These reflections claim our attention on this occasion, because the locality in which we hold our present meeting is the birthplace of railways, and because the coal mines of this district have contributed more largely than any others to supply the motive power by which steam communication by land and water has been established on so gigantic a scale. The history of railways shows what grand results may have their origin in small beginnings. When coal was first conveyed in this neighbourhood from the pit to the shipping place on the Tyne, the pack-horse, carrying a burden of 3 cwt., was the only mode of transport employed. As soon as roads suitable for wheeled carriages were formed, carts were introduced; and this first step in mechanical appliance to facilitate transport had the effect of increasing the load which the horse was enabled to convey from 3 cwt. to 17 cwt. The next improvement consisted in laying wooden bars or rails for the wheels of the carts to run upon, and this was followed by the substitution of the four-wheeled waggon for the two-wheeled cart. By this further application of mechanical principles the original horseload of 3 cwt. was augmented to 42 cwt.

These were important results, and they were not obtained without

the shipwreck of the fortunes of at least one adventurous man, whose ideas were in advance of the times in which he lived. We read in a record published in the year 1649, that "one Master Beaumont, a gentleman of great ingenuity and rare parts, adventured into the mines of Northumberland with his £30,000, and brought with him many rare engines not then known in that shire, and waggons with one horse to carry down coal from the pits to the river, but within a few years he consumed all his money and rode home upon his light horse."

The next step in the progress of railways was the attachment of slips of iron to the wooden rails. Then came the iron tramway, consisting of cast-iron bars of an angular section; in this arrangement the upright flange of the bar acted as a guide to keep the wheel on the track. The next advance was an important one, and consisted in transferring the guiding flange from the rail to the wheel; this improvement enabled cast iron edge-rails to be used. Finally, in 1820, after a lapse of about two hundred years from the first employment of wooden bars, wrought iron rails, rolled in long lengths and of suitable section, were made in this neighbourhood, and eventually superseded all other forms of railway.

Thus the railway system, like all large inventions, has risen to its present importance by a series of steps; and so gradual has been its progress that Europe finds itself committed to a gauge fortuitously determined by the distance between the wheels of the carts for which wooden rails were originally laid down. Last of all came the locomotive engine, that crowning achievement of mechanical science, which enables us to convey a load of 200 tons at a cost of fuel scarcely exceeding that of the corn and hay which the original pack-horse consumed in conveying its load of 3 cwt. an equal distance. It was chiefly in this locality that the railway system was thus reared from earliest infancy to full maturity; and amongst the many names associated with its growth that of George Stephenson stands pre-eminent.

In thus glancing at the history of railways, we may observe how promptly the inventive faculty of man supplies the device which the circumstances of the moment require. No sooner is a road formed fit for wheeled carriages to pass along than the cart takes the place of the pack-saddle; no sooner is the wooden railway provided than the waggon is substituted for the cart; and no sooner is an iron railway formed, capable of carrying heavy loads, than the locomotive engine is found ready to commence its career. As in the vegetable kingdom fit conditions of soil and climate quickly cause the appearance of suitable plants, so in the intellectual world fitness of time and circumstance promptly calls forth appropriate devices. The seeds of invention exist, as it were, in the air, ready to germinate whenever suitable conditions arise, and no legislative interference is needed to insure their growth in proper season.

The coalfields of this district, so intimately connected with the railway system, both in its origin and maintenance, will doubtless receive much attention from the Association at their present meeting. To

persons who contend that all geological phenomena may be attributed to causes identical in nature and degree with those now in operation, the formation of coal must present peculiar difficulty. The rankness of vegetation which must have existed in the carboniferous era, and the uniformity of climate which appears to have prevailed almost from the poles to the equator, would seem to imply a higher temperature of the earth's crust and an atmosphere more laden with humidity and carbonic acid than exist in our day.

But whatever may have been the geological conditions affecting the origin of coal, we may regard the deposits of that mineral as vast magazines of power stored up at periods immeasurably distant for our use. The principle of conservation of force and the relationship now established between heat and motion enable us to trace back the effects which we now derive from coal to equivalent agencies exercised at the periods of its formation. The philosophical mind of George Stephenson, unaided by theoretical knowledge, rightly saw that coal was the embodiment of power originally derived from the sun. That small pencil of solar radiation which is arrested by our planet, and which constitutes less than the two thousand millionth part of the total energy sent forth from the sun, must be regarded as the power which enabled the plants of the carboniferous period to wrest the carbon they required from the oxygen with which it was combined, and eventually deposit it as the solid material of coal. In our day the reunion of that carbon with oxygen restores the energy expended in the former process, and thus we are enabled to utilize the power originally derived from the luminous centre of our planetary system.

But the agency of the sun in originating coal does not stop at this point. In every period of geological history the waters of the ocean have been lifted by the action of the sun and precipitated in rain upon the earth. This has given rise to all those sedimentary actions by which mineral substances have been collected at particular localities, and there deposited in a stratified form with a protecting cover to preserve them for future use. The phase of the earth's existence suitable for the extensive formation of coal appears to have passed away for ever; but the quantity of that invaluable mineral which has been stored up throughout the globe for our benefit is sufficient, if used discreetly, to serve the purposes of the human race for many thousands of years. In fact, the entire quantity of coal may be considered as practically inexhaustible.

Turning, however, to our own particular country, and contemplating the rate at which we are expending those seams of coal which yield the best quality of fuel, and can be worked at the least expense, we shall find much cause for anxiety. The greatness of England much depends upon the superiority of her coal in cheapness and quality over that of other nations; but we have already drawn from our choicest mines a far larger quantity of coal than has been raised in all other parts of the world put together, and the time is not remote when we shall have to encounter the disadvantages of increased cost of working

and diminished value of produce. Estimates have been made at various periods of the time which would be required to produce complete exhaustion of all the accessible coal in the British Islands. These estimates are extremely discordant; but the discrepancies arise not from any important disagreement as to the available quantity of coal, but from the enormous difference in the rate of consumption at the various dates when the estimates were made, and also from the different views which have been entertained as to the probable increase of consumption in future years. The quantity of coal yearly worked from British mines has been almost trebled during the last twenty years, and has probably increased tenfold since the commencement of the present century; but as this increase has taken place pending the introduction of steam navigation and railway transit, and under exceptional conditions of manufacturing development, it would be too much to assume that it will continue to advance with equal rapidity. The statistics collected by Mr. Hunt, of the *Mining Record* office, show that at the end of 1861 the quantity of coal raised in the United Kingdom had reached the enormous total of eighty-six millions of tons, and that the average annual increase of the eight preceding years amounted to two and three-quarter millions of tons.

Let us inquire, then, what will be the duration of our coal-fields, if this more moderate rate of increase be maintained. By combining the known thickness of the various workable seams of coal, and computing the area of the surface under which they lie, it is easy to arrive at an estimate of the total quantity comprised in our coal-bearing strata. Assuming 4,000 feet as the greatest depth at which it will ever be possible to carry on mining operations, and rejecting all seams of less than two feet in thickness, the entire quantity of available coal existing in these islands has been calculated to amount to about 80,000,000,000 tons, which, at the present rate of consumption, would be exhausted in 930 years; but with the continued yearly increase of two millions and three-quarters of tons would only last 212 years.

It is clear that long before complete exhaustion takes place England will have ceased to be a coal-producing country on an extensive scale. Other nations, and especially the United States of America, which possess coal-fields thirty-seven times more extensive than ours, will then be working more accessible beds at a smaller cost, and will be able to displace the English coal from every market. The question is, not how long our coal will endure before absolute exhaustion is effected, but how long will those particular coal-seams last which yield coal of a quality and at a price to enable this country to maintain her present supremacy in manufacturing industry. So far as this particular district is concerned, it is generally admitted that two hundred years will be sufficient to exhaust the principal seams, even at the present rate of working. If the production should continue to increase as it is now doing the duration of those seams will not reach half that period. How the case may stand in the other coal mining districts I have not the means of ascertaining; but as the best and most accessible coal

will always be worked in preference to any other, I fear the same rapid exhaustion of our most valuable seams is everywhere taking place.

Were we reaping the full advantage of all the coal we burnt, no objection could be made to the largeness of the quantity; but we are using it wastefully and extravagantly in all its applications. It is probable that fully one-fourth of the entire quantity of coal raised from our mines is used in the production of heat for motive power; but much as we are in the habit of admiring the powers of the steam-engine, our present knowledge of the mechanical energy of heat shows that we realise in that engine only a small part of the thermic effect of fuel. That a pound of coal should, in our best engines, produce an effect equal to raising a weight of a million pounds a foot high is a result which bears the character of the marvellous, and seems to defy all further improvement. Yet the investigations of recent years have demonstrated the fact that the mechanical energy resident in a pound of coal, and liberated by its combustion, is capable of raising to the same height ten times that weight. But although the power of our most economical steam-engines has reached or perhaps somewhat exceeded the limit of a million pounds raised a foot high per pound of coal, yet if we take the average effect obtained from steam-engines of the various constructions now in use we shall not be justified in assuming it at more than one-third of that amount. It follows, therefore, that the average quantity of coal which we expend in realising a given effect by means of the steam-engine is about thirty times greater than would be requisite with an absolutely perfect heat-engine.

The causes which render the application of heat so uneconomic in the steam-engine have been brought to light by the discovery of the dynamical theory of heat; and it now remains for mechanicians, guided by the light they have thus received, to devise improved practical methods of converting the heat of combustion into available power. Engines in which the motive power is excited by the communication of heat to fluids already existing in the aeriform condition, as in those of Stirling, Ericsson, and Siemens, promise to afford results greatly superior to those obtained from the steam-engine. They are all based upon the principle of employing fuel to generate sensible heat, to the exclusion of latent heat, which is only another name for heat which has taken the form of unprofitable motion amongst the particles of the fluid to whch it is applied. They also embrace what is called the regenerative principle, a term which has, with reason, been objected to, as implying a restoration of expended heat. The so-called "regenerator" is a contrivance for arresting unutilised heat rejected by the engine, and causing it to operate in aid and consequent reduction of fuel.

It is a common observation that before coal is exhausted some other motive agent will be discovered to take its place, and electricity is generally cited as the coming power. Electricity, like heat, may be converted into motion, and both theory and practice have demonstrated that its mechanical application does not involve so much waste of power

as takes place in a steam-engine; but whether we use heat or electricity as a motive power we must equally depend upon chemical affinity as the source of supply. The act of uniting to form a chemical product liberates an energy which assumes the form of heat or electricity, from either of which states it is convertible into mechanical effect In contemplating, therefore, the application of electricity as a motive power, we must bear in mind that we shall still require to effect chemical combinations, and in so doing to consume materials.

But where are we to find materials so economical for this purpose as the coal we derive from the earth and the oxygen we obtain from the air? The latter costs absolutely nothing, and every pound of coal which in the act of combustion enters into chemical combination, renders more than 2½ lbs. of oxygen available for power. We cannot look to water as a practicable source of oxygen, for there it exists in the combined state, requiring expenditure of chemical energy for its separation from hydrogen. It is in the atmosphere alone that it can be found in that free state in which we require it, and there does not appear to me to be the remotest chance, in an economical point of view, of being able to dispense with the oxygen of the air as a source either of thermodynamic or electrodynamic effect. But to use this oxygen we must consume some oxydisable substance, and coal is the cheapest we can procure.

There is another source of motive power to which I am induced to refer, as exhibiting a further instance in which solar influence affords the means of obtaining mechanical effects from inanimate agents. I allude to the power of water descending from heights to which it has been lifted by the evaporative action of the sun. To illustrate the great advantage of collecting water for power in elevated situations, I may refer to the waterworks of Greenock, where the collecting reservoirs are situated at an elevation of 512 feet above the River Clyde.

The daily yield of these reservoirs is said to be nearly 100,000 tons of water, which is derived from the rainfall on an area of 5,000 acres. The power obtainable from this quantity and head of water is equal to that of a steam engine of about 2,000 horse power, and the whole effect might be realised on the margin of the river by bringing down the water in a pipe of sufficient capacity, and causing it to act as a column on suitable machinery at the foot of the descent. But the hydraulic capabilities of the Greenock reservoir sink into insignificance when compared with those of other localities where the naturally collected waters of large areas of surface descend from great elevations in rapid rivers or vertical falls. Alpine regions abound in falls which, with the aid of artificial works to impound the surplus water and equalise the supply, would yield thousands of horse power: and there is at least one great river in the world which in a single plunge develops sufficient power to carry on all the manufacturing operations of mankind if concentrated in its neighbourhood.

Industrial populations have scarcely yet extended to those regions which afford this profusion of motive power, but we may anticipate the time when these natural falls will be brought into useful operation.

In that day the heat of the sun, by raising the water to heights from which to flow in these great rapids and cascades, will become the means of economising the precious stores of motive power, which the solar energy differently directed has accumulated at a remote period of geological history, and which, when expended, may probably never be replaced.

I have hitherto spoken of coal only as a source of mechanical power, but it is also extensively used for the kindred purpose of relaxing those cohesive forces which resist our efforts to give new forms and conditions to solid substances. In these applications, which are generally of a metallurgical nature, the same wasteful expenditure of fuel is everywhere observable. In an ordinary furnace employed to fuse or soften any solid substance, it is the excess of the heat of combustion over that of the body heated which alone is rendered available for the purpose intended. The rest of the heat, which in many instances constitutes by far the greater portion of the whole, is allowed to escape uselessly into the chimney. The combustion also in common furnaces is so imperfect that clouds of powdered carbon, in the form of smoke, envelope our manufacturing towns; and gases, which ought to be completely oxygenised in the fire, pass into the air with two thirds of their heating power undeveloped. Some remedy for this state of of things we may hope is at hand, in the gas regenerative furnaces recently introduced by Mr. Siemens. In these furnaces the rejected heat is arrested by a so called "regenerator," as in Stirling's air engine, and is communicated to the new fuel before it enters the furnace. The fuel, however, is not solid coal, but gas previously evolved from coal. A stream of this gas raised to a high temperature by the rejected heat of combustion is admitted into the furnace, and there meets a stream of atmospheric air also raised to a high temperature by the same agency. In the combination which then ensues, the heat evolved by the combustion is superadded to the heat previously acquired by the gases. Thus, in addition to the advantage of economy, a greater intensity of heat is attained than by the combustion of unheated fuel. In fact, as the heat evolved in the furnace, or so much of it as is not communicated to the bodies exposed to its action, continually returns to augment the effect of the new fuel, there appears to be no limit to the temperature attainable, except the powers of resistance in the materials of which the furnace is composed.

With regard to smoke, which is at once a waste and a nuisance, having myself taken part with Dr. Richardson and Mr. Longridge in a series of experiments made in this neighbourhood in the years 1857-8, for the purpose of testing the practicability of preventing smoke in the combustion of bituminous coal in steam-engine boilers, I can state with perfect confidence that, so far as the raising of steam is concerned, the production of smoke is unnecessary and inexcusable. The experiments to which I refer proved beyond a doubt that by an easy method of firing, combined with a due admission of air and a proper arrangement of fire-grate, not involving any complexity, the emisions of smoke might be perfectly avoided, and that the prevention of the

smoke increased the economic value of the fuel and the evaporative power of the boiler. As a rule, there is more smoke evolved from the steam-engines than from any others, and it is in these fires that it may be most easily prevented. But in the furnaces used for most manufacturing operations, the prevention of smoke is much more difficult, and will probably not be effected until a radical change is made in the system of applying fuel for such operations.

Not less wasteful and extravagant is our mode of employing coal for domestic purposes. It is computed that the consumption of coal in dwelling-houses amounts in this country to a ton per head per annum of the entire population; so that upwards of 29,000,000 of tons are annually expended in Great Britain alone for domestic use. If any one will consider that one pound of coal applied to a well constructed steam-engine boiler evaporates 10 lb. or one gallon of water, and if he will compare this effect with the insignificant quantity of water which can be boiled off in steam by a pound of coal consumed in an ordinary kitchen fire, he will be able to appreciate the enormous waste which takes place by the common method of burning coal for culinary purposes. The simplest arrangements to confine the heat and concentrate it upon the operation to be performed, would suffice to obviate this reprehensible waste. So also in warming houses we consume in our open fires about five times as much coal as will produce the same heating effect when burnt in a close and properly constructed stove. Without sacrificing the luxury of a visible fire, it would be easy, by attending to the principles of radiation and convection, to render available the greater part of the heat which is now so improvidently discharged into the chimney. These are homely considerations,—too much so, perhaps, for an assembly like this; but I trust that an abuse involving a useless expenditure exceeding in amount our income tax, and capable of being rectified by attention to scientific principles, may not be deemed unworthy of the notice of some of those whom I have the honour of addressing.

The introduction of the Davy lamp was a great event in the history of coal mining, not as effecting any great diminution of those disastrous accidents which still devastate every colliery district, but as a means of enabling mines to be worked which, from their greater explosive tendencies, would otherwise have been deemed inaccessible. Thus, while the Davy lamp has been of great benefit both to the public and the proprietors of coal, it has been the means of leading the miners into more perilous workings, and the frequency of accident by explosion has in consequence not been diminished to the extent which was originally expected. The Davy lamp is a beautiful application of a scientific principle to effect a practical purpose, and with fair treatment its efficiency is indisputable; but where Davy lamps are entrusted to hundreds of men, and amongst them too many careless and reckless persons, it is impossible to guard entirely against gross negligence and its disastrous consequences. In coal mines where the most perfect system of ventilation prevails, and where proper regulations are, as far as practicable, enforced in regard to the use of Davy lamps, deplorable

accidents do occasionally occur, and it is impossible at present to point out what additional precautions would secure immunity from such calamities. The only gleam of amelioration is in the fact that the loss of life in relation to the quantity of coal worked is on the decrease, from which we may infer that it is also on the decrease taken as a percentage on the number of miners employed.

The increase of the earth's temperature as we descend below the surface, is a subject which has been discussed at previous meetings of the British Association. It possesses great scientific interest as affecting the computed thickness of the crust which covers the molten mass assumed to constitute the interior portions of the earth, and it is also of great practical importance as determining the depth at which it would be possible to pursue the working of coal and other minerals. The deepest coal mine in this district is the Monkwearmouth Colliery, which reaches a depth of 1,800 feet below the surface of the ground, and nearly as much below the level of the sea. The observed temperature of the strata at this depth agrees pretty closely with what has been ascertained in other localities, and shows that the increase takes place at the rate of one degree Fahrenheit to about sixty feet of depth.

Assuming the temperature of subterranean fusion to be 3,000°, and that the increase of heat at greater depths continues uniform, (which, however, is by no means certain,) the thickness of the film which separates us from the fiery ocean beneath will be about thirty-four miles—a thickness which may be fairly represented in comparison with the crust of the earth by the skin of a peach taken in relation to the body of the fruit which it covers. The depth of 4,000 feet, which has been assumed as the limit at which coal could be worked, would probably be attended by an increase of heat exceeding the powers of human endurance. In the Monkwearmouth Colliery, which is less than half that depth, the temperature of the air in the workings is about 84° Fahrenheit, which is considered to be nearly as high as is consistent with the great bodily exertion necessary in the operation of mining. The computations, therefore, of the duration of coal would probably require a considerable reduction in consequence of too great a depth being considered as practicable.

At the last meeting of the British Association in this town the importance of establishing an office for mining records was brought under the notice of the council by Mr. Sopwith, and measures were taken which resulted in the formation of the present Mining Records Office. The British Association may congratulate itself upon having thus been instrumental in establishing an office in which plans of abandoned mines are preserved for the information of those who at a future period may be disposed to incur the expence of bringing those mines again into operation. But more than this is required. Many of the inferior seams of coal can be profitably worked only in conjunction with those of superior quality, and they will be entirely lost if neglected until the choicer beds be exhausted. Although coal is private property, its duration is a national question, and government interference would be justified to enforce such modes of working as the national interests

demand. But to enable government to exercise any supervision and control a complete mining survey of our coal fields should be made, and full plans, sections and reports lodged at the Mining Records Office for the information of the legislature and the public in general.

Before dismissing the subject of coal it may be proper to notice the recent discovery by Berthelot of a new form of carburetted hydrogen possessing twice the illuminating power of ordinary coal gas. Berthelot succeeded in procuring this gas by passing hydrogen between the carbon electrodes of a powerful battery. Dr. Odling has since shown that the same gas may be produced by mixing carbonic oxide with an equal volume of light carburetted hydrogen and exposing the mixture in a porcelain tube to an intense heat. Still more recently, Mr. Siemens has detected the same gas in the highly heated regenerators of his furnaces, and there is now every reason to believe that the new gas will become practically available for illuminating purposes. Thus it is that discoveries which in the first instance interest the philosopher only, almost invariably initiate a rapid series of steps leading to results of great practical importance to mankind.

In the course of the preceding observations I have had occasion to speak of the sun as the great source of motive power on our earth, and I must not omit to refer to recent discoveries connected with that most glorious body. Of all the results which science has produced within the last few years, none has been more unexpected than that by which we are enabled to test the materials of which the sun is made, and prove their identity, in part at least, with those of our planet. The spectrum experiments of Bunsen and Kirchhoff have not only shown all this, but they have also corroborated previous conjectures as to the luminous envelope of the sun. I have still to advert to Mr. Nasmyth's remarkable discovery that the bright surface of the sun is composed of an aggregation of apparently solid forms, shaped like willow leaves or some well known forms of *Diatomaceæ*, and interlacing one another in every direction. The forms are so regular in size and shape as to have led to a suggestion from one of our profoundest philosophers of their being organisms, possibly even partaking of the nature of life, but at all events closely connected with the heating and vivifying influences of the sun. These mysterious objects, which since Mr. Nasmyth discovered them have been seen by other observers as well, are computed to be each not less than a thousand miles in length, and about a hundred miles in breadth. The enormous chasms in the sun's photosphere, to which we apply the diminutive term "spots," exhibit the extremities of these leaf-like bodies, pointing inwards, and fringing the sides of the cavern far down into the abyss. Sometimes they form a sort of rope or bridge across the chasm, and appear to adhere to one another by lateral attraction. I can imagine nothing more deserving of the scrutiny of observers than these extraordinary forms.

The sympathy also which appears to exist between forces operating in the sun and magnetic forces belonging to the earth, merits a continuance of that close attention which it has already received from the

British Association, and of labours such as General Sabine has with so much ability and effect devoted to the elucidation of the subject. I may here notice that most remarkable phenomenon which was seen by independent observers at two different places on the 1st of September, 1859. A sudden outburst of light, far exceeding the brightness of the sun's surface, was seen to take place, and sweep like a drifting cloud over a portion of the solar face. This was attended with magnetic disturbances of unusual intensity, and with exhibitions of aurora of extraordinary brilliancy. The identical instant at which the effusion of light was observed was recorded by an abrupt and strongly marked deflection in the self-registering instruments at Kew. The phenomenon as seen was probably only part of what actually took place, for the magnetic storm in the midst of which it occurred commenced before and continued after the event.

If conjecture be allowable in such a case, we may suppose that this remarkable event had some connection with the means by which the sun's heat is renovated. It is a reasonable supposition that the sun was at that time in the act of receiving a more than usual accession of new energy; and the theory which assigns the maintenance of its power to cosmical matter plunging into it with that prodigious velocity which gravitation would impress upon it as it approached to actual contact with the solar orb, would afford an explanation of this sudden exhibition of intensified light in harmony with the knowledge we have now attained that arrested motion is represented by equivalent heat. Telescopic observations will probably add new facts to guide our judgment on this subject, and, taken in connection with observations on terrestrial magnetism, may enlarge and correct our views respecting the nature of heat, light, and elecrticity. Much as we have yet to learn respecting these agencies, we know sufficient to infer that they cannot be transmitted from the sun to the earth except by communication from particle to particle of intervening matter. Not that I speak of particles in the sense of the atomist. Whatever our views may be of the nature of particles, we must conceive them as centres invested with surrounding forces. We have no evidence, either from our senses or otherwise, of these centres being occupied by solid cores of indivisible incompressible matter essentially distinct from force. Dr. Young has shown that even in so dense a body as water these nuclei, if they exist at all, must be so small in relation to the intervening spaces, that a hundred men distributed at equal distances over the whole surface of England would represent their relative magnitude and distance. What then must be these relative dimensions in highly rarified matter?

But why encumber our conceptions of material forces by this unnecessary imagining of a central molecule? If we retain the forces and reject the molecule, we shall still have every property we can recognize in matter by the use of our senses or by the aid of our reason. Viewed in this light, matter is not merely a thing subject to force, but is itself composed and constituted of force. The dynamical theory of heat is probably the most important discovery of the present cen-

tury. We now know that each Fahrenheit degree of temperature in a pound of water is equivalent to a weight of 772 lbs. lifted one foot high, and that these amounts of heat and power are reciprocally convertible into one another. This theory of heat, with its numerical computation, is chiefly due to the labours of Mayer and Joule, though many other names, including those of Thompson and Rankine, are deservedly associated with its development. I speak of this discovery as one of the present age because it has been established in our time; but if we search back for earlier conceptions of the identity of heat and motion, we shall find (as we always do in such cases) that similar ideas have been held before, though in a clouded and undemonstrated form.

In the writings of Lord Bacon we find it stated that heat is to be regarded as motion, and nothing else. In dilating on this subject, that extraordinary man shows that he had grasped the true theory of heat to the utmost extent that was compatible with the state of knowledge existing in his time. Even Aristotle seems to have entertained the idea that motion was to be considered as the foundation not only of heat but of all manifestations of matter; and, for ought we know, still earlier thinkers may have held similar views.

The science of gunnery, to which I shall make but slight allusion on this occasion, is intimately connected with the dynamical theory of heat. When gunpowder is exploded in a cannon, the immediate effect of the affinities by which the materials of the powder are caused to enter into new combinations, is to liberate a force which first appears as heat, and then takes the form of mechanical power communicated in part to the shot and in part to the products of explosion which are also propelled from the gun. The mechanical force of the shot is reconverted into heat when the motion is arrested by striking an object, and this heat is divided between the shot and the object struck, in the proportion of the work done or damage inflicted upon each.

These considerations recently led me, in conjunction with my friend Captain Noble, to determine experimentally, by the heat elicited in the shot, the loss of effect due to its crushing when fired against iron plates. Joule's law, and the known velocity of the shot, enabled us to compute the number of dynamical units of heat representing the whole mechanical power in the projectile, and by ascertaining the number of units developed in it by impact, we arrived at the power which took effect upon the shot instead of the plate. These experiments showed an enormous absorption of power to be caused by the yielding nature of the materials of which projectiles are usually formed; but further experiments are required to complete the inquiry.

Whilst speaking on the subject of gunnery I must pay a passing tribute of praise to that beautiful instrument, invented and perfected by Major Navez, of the Belgian Artillery, for determining, by means of electro-magnetism, the velocity of projectiles. This instrument has been of great value in recent investigations, and there are ques-

tions affecting projectiles which we can only hope to solve by its assistance. Experiments are still required to clear up several apparently anomalous effects in gunnery, and to determine the conditions most conducive to efficiency both as regards attack and defence. It is gratifying to see our government acting in accordance with the enlightened principles of the age by carrying on scientific experiments to arrive at knowledge, which, in the arts of war as well as in those of peace, is proverbially recognized as the true source of human power.

Professor Tyndall's recent discoveries respecting the absorption and radiation of heat by vapours and permanent gases constitute important additions to our knowledge. The extreme delicacy of his experiments and the remarkable distinctness of their results render them beautiful examples of physical research. They are of great value, as affording further illustrations of the vibratory actions in matter which constitute heat; but it is in connection with the science of meteorology that they chiefly command our attention. From these experiments we learn that the minute quantity of water suspended as invisible vapour in the atmosphere acts as a warm clothing to the earth. The efficacy of this vapour in arresting heat is, in comparison with that of air, perfectly astounding. Although the atmosphere contains on an average but one particle of aqueous vapour to 200 of air, yet that single particle absorbs eighty times as much heat as the collective 200 particles of air. Remove, says Professor Tyndall, for a single summer night the aqueous vapour from the air which overspreads this country, and you would assuredly destroy every plant incapable of bearing extreme cold. The warmth of our fields and gardens would pour itself unrequited into space, and the sun would rise upon an island held fast in the grip of frost.

Many meteorological phenomena receive a feasible explanation from these investigations, which are probably destined to throw further light upon the functions of our atmosphere. Few sciences have more practical value than meteorology, and there are few of which we as yet know so little. Nothing would contribute more to the saving of life and property, and to augmenting the general wealth of the world, than the ability to foresee with certainty impending changes of the weather. At present our means of doing so are exceedingly imperfect, but such as they are they have been employed with considerable effect by Admiral Fitzroy in warning mariners of the probable approach of storms. We may hope that so good an object will be effected with more unvarying success when we attain a better knowledge of the causes by which wind and rain, heat and cold, are determined.

The balloon explorations conducted with so much intrepidity by Mr. Glaisher, under the auspices of the British Association, may perhaps in some degree assist in enlightening us upon these important subjects. We have learnt from Mr. Glaisher's observations that the decrease of temperature with elevation does not follow the law previously assumed of 1° in 300 feet, and that in fact it follows no

definite law at all. Mr. Glaisher appears also to have ascertained the interesting fact that rain is only precipitated when clouds exist in a double layer. Raindrops, he has found, diminish in size with elevation, merging into wet mist and ultimately into dry fog. Mr. Glaisher met with snow for a mile in thickness below rain, which is at variance with our preconceived ideas. He has also rendered good service by testing the efficiency of various instruments at heights which cannot be visited without personal danger.

The facility now given to the transmission of intelligence and the interchange of thought is one of the most remarkable features of the present age. Cheap and rapid postage to all parts of the world—paper and printing reduced to the lowest possible cost—electric telegraphs between nation and nation, town and town, and now even (thanks to the beautiful inventions of Professor Wheatstone) between house and house—all contribute to aid that commerce of ideas by which wealth and knowledge are augmented.

But while so much facility is given to mental communications by new measures and new inventions, the fundamental art of expressing thought by written symbols remains as imperfect now as it has been for centuries past. It seems strange that while we actually possess a system of short-hand by which words can be recorded as rapidly as they can be spoken, we should persist in writing a slow and laborious long-hand. It is intelligible that grown up persons who have acquired the present conventional art of writing should be reluctant to incur the labour of mastering a better system; but there can be no reason why the rising generation should not be instructed in a method of writing more in accordance with the activity of mind which now prevails. Even without going so far as to adopt for ordinary use a complete system of stenography, which it is not easy to acquire, we might greatly abridge the time and labour of writing by the recognition of a few simple signs to express the syllables which are of most frequent occurrence in our language. Our words are in a great measure made up of such syllables as com, con, tion, ing, able, ain, ent, est, ance, &c. These we are now obliged to write out over and over again, as if time and labour expended in what may be termed visual speech were of no importance. Neither has our written character the advantage of distinctness to recommend it: it is only necessary to write such a word as "minimum" or "ammunition" to become aware of the want of sufficient difference between the letters we employ. I refrain from enlarging on this subject, because I conceive that it belongs to social more than to physical science, although the boundary which separates the two is sufficiently indistinct to permit of my alluding to it, in the hope of procuring for it the attention which its importance deserves.

Another subject of a social character which demands our consideration is the much debated question of weights and measures. Whatever difference of opinion there may be as to the comparative merits of decimal and duodecimal division, there can at all events be none as to the importance of assimilating the systems of measurement in

different countries. Science suffers by the want of uniformity, because valuable observations made in one country are in a great measure lost to another from the labour required to convert a series of quantities into new denominations. International commerce is also impeded by the same cause, which is productive of constant inconvenience and frequent mistake. It is much to be regretted that two standards of measure so nearly alike as the English yard and the French metre should not be made absolutely identical. The metric system has already been adopted by other nations besides France, and is the only one which has any chance of becoming universal. We in England, therefore, have no alternative but to conform with France if we desire general uniformity. The change might easily be introduced in scientific literature, and in that case it would probably extend itself by degrees amongst the commercial classes without much legislative pressure.

Besides the advantage which would thus be gained in regard to uniformity, I am convinced that the adoption of the decimal division of the French scale would be attended with great convenience, both in science and commerce. I can speak from personal experience of the superiority of decimal measurement in all cases where accuracy is required in mechanical construction. In the Elswick works, as well as in some other large establishments of the same description, the inch is adopted as the unit, and all fractional parts are expressed in decimals. No difficulty has been experienced in habituating the workmen to the use of this method, and it has greatly contributed to precision of workmanship. The inch, however, is too small a unit, and it would be advantageous to substitute the metre if general concurrence could be obtained.

As to our thermometric scale, it was originally founded in error; it is also most inconvenient in division, and ought at once to be abandoned in favour of the centigrade scale. The recognition of the metric system and of the centigrade scale by the numerous men of science composing the British Association would be a most important step towards effecting that universal adoption of the French standards in this country which sooner or later will inevitably take place; and the Association in its collective capacity might take the lead in this good work by excluding in future all other standards from their published proceedings.

The recent discovery of the source of the Nile by Captains Speke and Grant has solved a problem in geography which has been a subject of speculation from the earliest ages. It is an honour to England that this interesting discovery has been made by two of her sons, and the British Association, which is accustomed to value every addition to knowledge for its own sake, whether or not it be attended with any immediate utility, will at once appreciate the importance of the discovery and the courage and devotion by which it has been accomplished. The Royal Geographical Society, under the able presidency of Sir Roderick Murchison, was chiefly instrumental in procuring the organization of the expedition which has resulted in the great achieve-

ment, and the success of the society's labours in connection with this and other cases of African exploration shows how much good may be effected by associations for the promotion of scientific objects.

The science of organic life has of late years been making great and rapid strides, and it is gratifying to observe that researches both in zoology and botany are characterised in the present day by great accuracy and elaboration. Investigations patiently conducted upon true inductive principles cannot fail eventually to elicit the hidden laws which govern the animated world. Neither is there any lack of bold speculation contemporaneously with this painstaking spirit of inquiry. The remarkable work of Mr. Darwin promulgating the doctrine of natural selection has produced a profound sensation. The novelty of this ingenious theory, the eminence of its author, and his masterly treatment of the subject, have perhaps combined to excite more enthusiasm in its favour than is consistent with that dispassionate spirit which it is so necessary to preserve in the pursuit of truth.

Mr. Darwin's views have not passed unchallenged, and the arguments both for and against have been urged with great vigour by the supporters and opponents of the theory. Where good reasons can be shown on both sides of a question, the truth is generally to be found between the two extremes. In the present instance we may without difficulty suppose it to have been part of the great scheme of creation that natural selection should be permitted to determine variations amounting even to specific differences where those differences were matters of degree; but when natural selection is adduced as a cause adequate to explain the production of a new organ not provided for in original creation, the hypothesis must appear, to common apprehensions, to be pushed beyond the limits of reasonable conjecture. The Darwinian theory, when fully enunciated, founds the pedigree of living nature upon the most elementary form of vitalized matter. One step further would carry us back, without greater violence to probability, to inorganic rudiments, and then we should be called upon to recognise in ourselves, and in the exquisite elaborations of the animal and vegetable kingdoms, the ultimate results of mere material forces left free to follow their own unguided tendencies. Surely our minds would in that case be more oppressed with a sense of the miraculous than they now are in attributing the wondrous things around us to the creative hand of a great presiding intelligence.

The evidences bearing upon the antiquity of man have been recently produced in a collected and most logically treated form by Sir Charles Lyell. It seems no longer possible to doubt that the human race has existed on the earth in a barbarian state for a period far exceeding the limit of historical record; but notwithstanding this great antiquity the proofs still remain undoubted that man is the latest as well as the noblest work of God.

I will not run the risk of wearying this assembly by extending my remarks to other branches of science. In conclusion, I will express a hope that when the time again comes round to receive the British Association in this town, its members will find the interval to have

been as fruitful as the corresponding period on which we now look back. The tendency of progress is to quicken progress, because every acquisition in science is so much vantage ground for fresh attainment. We may expect, therefore, to increase our speed as we struggle forward; but however high we climb in the pursuit of knowledge we shall still see heights above us, and the more we extend our view the more conscious we shall be of the immensity which lies beyond.

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* 1862.

Royal Observatory, Greenwich, London, S.E.,
1863, *September* 10*th.*

My Dear Sir,—I enclose a statement of the Magnetic Variation and Dip for each of the twelve months of the year 1862.

I am, &c.,

G. B. AIRY.

Captain Becher, R.N., &c.

1862.	*Variation, W.*	*Dip.*
	° ′ ″	° ′
January	20 58 37	68 12
February	20 58 21	68 10
March	20 57 32	68 14
April	20 50 43	68 7
May	20 49 5	68 7
June	20 52 31	68 5
July	20 49 39	68 12
August	20 51 46	68 10
September	20 50 33	68 10
October	20 50 6	68 13
November	20 50 9	68 11
December	20 49 35	68 16

The mean variation has been found by the application of corrections (deduced from the reduction of the magnetic observations for the period 1848–57) to the means of readings taken at 9h. a.m., 1h., 3h., and 9h. p.m. daily.

G. B. AIRY,
Astronomer Royal.

1863, *September* 10*th.*

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*Perilous Situation of the "Great Eastern"—Defective Construction of the "Warrior"—Festival at Liverpool to the Seamen of the Channel Fleet.*

So the *Great Eastern* has had another warning, observed the Chairman, as he took his seat.

Yes, and one that will not be forgotten ashore as well as afloat, added Albert.

Certainly not by those who were in her when it was received, for they thought their last hour was come, continued the Chairman.

But here it is, added the Secretary, let me read it.

The *Greenock Advertiser* publishes the following as an extract from the private letter of a passenger by the *Great Eastern* in her last outward voyage:—"I left Liverpool on the 12th of August per *Great Eastern* for New York, which place I reached on the 25th, after a very stormy and dangerous passage. We had strong head winds all the way, and the ship having but little cargo rolled about fearfully. On the tenth day out, when near this side of the ocean, we encountered a most fearful hurricane, such as the captain and oldest sailors in the ship had never seen the equal of. It came on about six in the evening, and lasted till about midnight. During part of the time we all completely despaired of ever seeing the next day; and if the storm had continued two or three hours longer we should have been dashed to pieces. The great ship was tossed about on the waves like a cork. She was entirely beyond control, and lay in the trough of the sea during the entire storm. It was what is called a cyclone—a description of storm very rarely seen anywhere except in the Chinese seas. Everything moveable about the ship was dashed to pieces, and many of the passengers lost all their luggage, and some of them severely hurt themselves. The third officer had his leg and arm broken; three or four of the boats were broken to pieces; one of the boilers burst, filling the ship with hot steam; the galley got on fire with the cook-stoves upsetting,—and altogether it was a fearful time, enough to frighten any one from ever going to sea again. We have all reason to feel thankful, however, it was no worse, as very little more would have ended the affair most deplorably. We had twenty-three men lashed to the wheel all night trying to right the ship to the waves, with as little effect as a child would have."

Now, said Albert, if that is not a lesson there never was one,—and it abounds in more warning than ever the *Monitor* has given us yet. There is a lesson to be learnt there in shipbuilding and all the qualities that a ship requires. The huge ship took command of herself. Now I have always agreed in the observation that the *Great Eastern* is a very fine ship,—but something like what was said of the Emperor of Russia's. "a very fine ship for very fine weather," and while the captain of the *Great Eastern* has command of her, she is all very well; but

let the *Great Eastern* get command of herself, and what is she then, a huge log at the mercy of the waves in the trough of the sea, ready to be swamped by inches, as everything gets knocked to pieces on board of her,—and not twenty-three men at the wheel can get her out of it, for they are like so many children, rudder and all, in comparison with the huge monster of a hull that she has. There she is, with the sea playing with her like a cork, just as a cat would with a mouse, and the *Great Eastern* will get swallowed up by the sea as the cat does the mouse, only one goes piecemeal while the other goes all at once and disappears.

But, continued Albert, there is more than this in the lesson which has so considerately been taught us by the *Great Eastern*, if we will but attend to it; and it is to be hoped that our shipbuilders will do so. They are told that the ship must have speed, then they say she must have length, and length they accordingly take even for our men-of-war.

But where is the speed of the *Great Eastern?* observed Rodmond. She was to go twenty knots an hour all the way to the Hooghly!

She has done nothing like it, continued Albert, and her screw and paddle united could not do it. That was a mistake,—for the one nullified the other, with all her length of 600 feet. And there is the boasted *Warrior*, of 400 feet, what would she do with her fine lines in the trough of the sea? Some better chance of getting out of it than the *Great Eastern;* but she, too, is unmanageable enough in it, and her rudder was about as much use to her as the *Great Eastern's*, and once in the trough of the sea in a hurricane she would soon work herself to pieces.

Those iron plates of hers, said Rodmond, there would be a slip here and there.

Her armour would drop off her piecemeal, said Albert; the sea would tear her about worse than the *Great Eastern*, owing to those loosening folds of iron which it would strip from her. But that is nothing, said Albert. That is merely casting a skin, which perhaps would cost her a smart here and there, and let some water in below as well as above in the fury of the sea in a hurricane, when she is unmanageable, as must be expected. But what is worse than this is another part of the subject with which the shipbuilder has to deal. Just look at her ports,—little narrow embrasures; and just suppose it were required from the stress of weather in a hurricane, with the ship half full of water, lying in the trough of the sea, heavy as she is, just suppose it were required, to save the ship from foundering, that she should throw any of her guns overboard,—how is she to get them out of those ports?

Where! exclaimed the Chairman; guns out of her ports?—just the muzzle to fire; but—aye.

Yes, but how much more, asked Albert, small ports keep out shot, but let the *Warrior* or any of her class take care that they do not keep in her guns as well, when, for the safety of the ship, aye, to prevent her foundering by stress of the sea in some long continuance of

bad weather, may be on a lee shore, too, that she may want to throw her guns overboard and can't do so. 'Twill lose the ship and no mistake.

I don't suppose, said the Chairman, that such a case ever entered the head of the man who invented those ports,—all very well for keeping out shot.

Therefore, said Albert, the *Great Eastern* has read us a lesson, and report says, that she is now to be sold by auction, perhaps to betake herself to some southern clime, where seas are less boisterous and the water smoother than the Atlantic. No, sir; depend on it there has been a great mistake made; our ships are overdone in length. Where is the snug, compact, easy ship in a seaway we used to hear of formerly? They say they have not yet the gun for the navy,—in my opinion we have not yet got the ship for the gun; they must both match the other, but the ship it will be more difficult to get than the gun, for I don't believe the ship is built yet that combines all the qualities required for the man-of-war.

There's no doubt, added the Chairman, that the man who built the *Warrior*, with her soldiers' ports, was not sailor enough to know that it was necessary sometimes on an unfortunate occasion to throw the guns overboard to save the ship! and this it would puzzle them to do.

Aye, 'tis not always Rule Britannia,—have our neighbours, the French, made the same mistake with their iron clads, or is Mr. Reed sailor enough to avoid it?

Nous verrons, said Rodmond. Meanwhile, what have our tars been about at Liverpool? Jack's head will be turned altogether if half what they say is true.

Liverpool, said the Chairman, has immortalised itself. Depend as long as a Liverpool ship swims the seas she will be a pet of the man-of-war's man.

I think, said Albert, we ought to preserve a record of the event, for an event it is in the annals not of Liverpool only, but of the whole world. There is not such a record to be found anywhere.

[It was agreed to record the Liverpool festival of the 22nd of September to the seamen of the Channel squadron,—and we therefore make all the room for it we can as it appeared in the *Liverpool Mercury*.]

At the other ports visited by the Channel fleet during their present cruise there has been no lack of welcome, but it has been left to Liverpool to distinguish itself by the hospitable entertainment of Jack, who, we may rest assured, will be by no means insensible of such generous treatment. No sooner was the suggestion made than Mr. S. R. Graves, the Commodore of the Royal Mersey Yacht Club, and a number of other gentlemen, formed themselves into a committee to provide on a most liberal scale an entertainment for the men of the fleet. The necessary funds, we need scarcely say, were soon subscribed, and a contract was entered into to provide a good substantial dinner for a thousand men of the fleet.

The men selected reached the Prince's Landing Stage about twelve o'clock at noon. They arrived in ships' companies in charge of petty officers, the whole being under the command of Commander Soady, of the *Royal Oak*. Forming in procession, and led by the bands of the *Edgar* and *Royal Oak*, the men then marched through the principal streets of the town to St. George's Hall. There was a profuse display of flags from the various houses on the route, and the streets, notwithstanding the unfavourable state of the weather, were densely thronged with people.

There were 800 blue jackets and 200 marines, being picked men from all the vessels of the fleet—men who had conducted themselves with the greatest credit on shore, and who had not infringed their leave of absence. Each company was headed by the flag of the ship to which they belonged. The men of the flagship *Edgar* bore a flag with the George's Cross; the *Black Prince*, the Prince of Wales' feather; the *Emerald*, a green flag with an Irish harp; the *Warrior*, a Union Jack and a dark blue flag with the word "Warrior" in gilt letters; the *Royal Oak*, a flag having an acorn surrounded by a garter, on which was the inscription "Deeds, not words," and surmounted with a crown, an anchor being also placed in each corner of the flag, whilst on the reverse there was a Union Jack. The men of the *Royal Oak* all wore sprigs of oak in their button holes and caps, and the ship's company was headed by a Union Jack; the flag of the *Liverpool* had a representation of the Liver, and the men also carried a Union Jack; the *Defence*, a Union Jack and the Defence flag with an Admiralty crown and a suit of armour.

The interior of St. George's Hall was tastefully decorated for the occasion. Flags were suspended from the ceiling, long bannerets waved from the orchestra, the niches were filled with graceful ferns and flowering plants, the pillars which support the organ gallery were festooned with flowers, and on the front of this gallery was the motto, "The brave British Tars of Old England." There were twelve tables placed across the hall, and the table for the chairman, committee, and a few invited guests extended the whole length of the hall on the west side. Over the chairman's seat there was a very picturesque device of flags, and on the table were placed several elegant vases filled with flowers, alternated with pots of gladiolus, rich in colour and bloom.

On the entrance of the men, the band of the 11th L.A.V. (Colonel M'Iver's corps), which was stationed on the steps at the end of the hall leading to the Crown Court, struck up "Rule Britannia," and immediately after old Sol, peeping out from behind the clouds which had nearly all the morning obscured him, sent his enlivening beams aslant the hall and lighted up the countenances of all present. The galleries were well filled, principally with ladies, who were most enthusiastic in their reception of the gallant tars of the fleet.

The crew of the *Edgar* entered first, and took up their position at the tables nearest the orchestra; then came the *Emerald's* crew, then the *Royal Oak's* crew, next the *Defence's* crew, then two tables were

filled with marines and naval artillerymen; then the crews of the *Resistance*, *Liverpool*, *Warrior*, and lastly that of the *Black Prince*. It was impossible to forget, as crew after crew passed, that amongst them were many of the men who, when our army landed on the Crimean shore, stood in the surf almost wholly naked and helped the soldiers down from the boats to the shingly shore, telling them, as every one remembers, to "Cheer up, and not be afeard of the water." Here were the men who, when handing the firelocks to the soldiers as they left the boats, clapped them on the back as if they loved them, and told them to give a good account of themselves whenever they met the "Rooshians." Here were the men, with medals on their breasts, who went on shore to work the batteries, and were told when going that they were either to find promotion or a grave; and cold indeed must the heart of that man be that could look on those resolute and dauntless warriors and not feel that the homage paid to them was but a very humble tribute to their worth. That simplicity of manner which is in itself grace was very conspicuous as the men took their places at the tables; and their loose costume, coupled with the seemingly careless roll, yet without any spark of indifference to a sense of their position, was calculated to awaken all the warmth that Englishmen are accustomed to feel when thinking or reading of the brave defenders of their sea-girt isle. Many of the men were magnificent specimens of the British sailor. All the strength, all the pluck, all the generosity, all the tenderness, all the nobility which have ever distinguished men either at sea or ashore, in peace or in war, were here to be seen. St. George's Hall has been the scene of many grand and imposing sights, but it may be said with great truth that no more heart-stirring, no more exhilarating, and certainly no more enthusiastic assembly was ever within its walls.

Through the kindness and consideration of Colonel M'Iver, who had placed a trusty band of his stewards at the disposal of the committee, the dinner was not long in being set before the guests; indeed, the main part of the truly English fare had been placed on the tables before the men entered the hall. There was not that which is the bore of many public and private dinners—that terrible half-hour of unmitigated misery which precedes the announcement of dinner, and during which men have to try to stare each other out of countenance, or quietly resign themselves to be almost frozen to death by the rigidity which reigns. Here all know each other. All is heartiness and smiles. The way in which men changed places or skipped over chairs to reach a brother messmate was a treat to see, and the pleasure which beamed on the countenances of sailors and marines bespoke the heartfelt joy. At some dinner parties the ice takes a long time to thaw; here no ice was seen, and if it had been there the sunny smiles would soon have melted it.

But all are seated. The band is still, and the chairman (Mr. S. R. Graves) rises to announce that the duty devolved upon him to ask God's blessing on their feast. This was Jack's signal for action, and he was soon broadside on to the roast and boiled beef of old England.

The resolution he exhibited and the vigorous fire he maintained proved that he would give no quarter. Each man was supplied with a bottle of Allsopp's ale and a half-pint of rum punch; a couple of apples were added by way of desert. The dinner consisted of roast and boiled beef, boiled ham, together with vegetables of various sorts, followed by plum pudding and Crimean sauce, all of which seemed to be heartily relished by the seamen.

At length, one by one, the men began to fall back. Bursts of inextinguishable laughter broke out here and there; the joy was totally undisguised, and it was soon apparent that not only was there much wit amongst the men, but that they were not very shy in using it. When the Chairman saw that the tables—or, as the sailors would have it, the decks—were being cleared, he rose, and in a few simple words returned thanks.

The Chairman then rose and said—Non-commissioned officers, petty officers, seamen, and marines of the Channel squadron, the devotion of the seamen and marines of England to their sovereign has been often tested and never found wanting. Many as the Queen's titles are there is not one she values more than being considered the friend of the soldiers and seamen of England. I give you "The Queen," with all the honours.

Then rang out a burst of tumultuous cheering such as was positively thrilling in its effect. The very quiet nature of the applause which audiences are accustomed to give, or rather in which it is deemed fashionable to indulge, in Liverpool, stood in strong contrast to what was here given. Upraised arms, some waving hats, and all bespeaking earnestness, whilst the full power of lungs was turned on to tell of their devotion to their Queen. There was something truly stirring in the ring of the men's voices. It was not shouting for shouting's sake—cheering as a matter of course; there were a life, intense devotion, and earnest determination in it.

The cheering could not be stilled without an effort on the part of the Chairman, who at length announced that the orchestra (consisting of a large number of the practical members of the Philharmonic Society) would sing "God Save the Queen." This was done in excellent style, the vast audience all standing, and the sailors joining in the chorus most enthusiastically.

The Chairman then said—There is a ship in our port which bears the good old name of *Liverpool*, and I think in this town that her crew should take precedence and sing the first song to-night. I will now call upon the crew of that ship to sing.

Saunders, one of the marines of the *Liverpool*, rose to respond to this, and standing on a chair sang a song, the burden of which was "The Death of Nelson," but the chorus of which was "Brave British Boys." When the vocalist came to describe what they did with their foes during the fight,—

> "Some we sent into the air,
> And some we sent below,"

this disposal of the foes seemed highly satisfactory to the audience, and at the conclusion of the song the singer was clapped on the back by some of his companions, whilst others manifested their approval by waving a bottle over his head. John Laurie, captain of the maintop of the *Liverpool*, next sang "The red, white, and blue," the chorus of which gave ample opportunity for the exercise of the vocal powers of all his messmates, and must have proved a great treat to the gallery and audience. The full roll of the voices in "Three cheers for the red, white, and blue," was something to which even St. George's Hall is unaccustomed.

The choir next sung a madrigal, which so charmed the tars that nothing would satisfy them but an encore with which the orchestra kindly complied.

The Chairman then said,—The good qualities of the members of our royal family are well known, and must endear them to you. You had the honour of guarding to our shores the illustrious Princess who is now the bride of our Prince of Wales; and among the seamen of England will be found our sailor Prince, looking, as I have sometimes seen him, the very type of a British sailor. I propose "The Prince and Princess of Wales, and the rest of the Royal Family."

The choir then gave "God bless the Prince of Wales."

The Chairman called upon one of the crew of the *Edgar* for a song. This had the effect of rousing the crew of the *Edgar* to a great pitch of excitement. The man chosen to represent the vocal ability of the flagship was a seaman gunner, John Frederick Barton, a weather-beaten son of Neptune, who stood on a table against one of the pillars of the organ gallery, and after hitching up his trousers and stroking down his hair, sang with considerable taste and feeling, "Why did you leave?" An encore was tumultuously demanded, when he substituted "The Slave Child," which met with quite as hearty a reception. The appeal to the sailors on behalf of the poor slave, and the feeling displayed in the tones of the singer's voice, told of the earnestness with which the simple ballads are received by the sailors, and realises what has been said about the influence of song on the life of Jack.

The Chairman then rose to propose the toast of the evening,—"The Non-commissioned Officers, Petty Officers, Seamen and Marines of the Channel Squadron." He said,—The important services rendered by the navy of England from its earliest existence justly entitles those who now maintain the honour and renown of its glorious deeds to the warmest recognition which a grateful country can bestow. It was but last night we had the privilege of expressing our acknowledgments to the officers of that service in the persons of Admiral Dacres and his gallant comrades in arms; and to-day we have, on behalf of the whole town, the no less pleasure of thanking the seamen and marines of the whole navy through their messmates of the Channel fleet now present in this, the people's hall. It is not in any boasting or defiant spirit that the town has offered this great demonstration to

the seamen of the fleet. It is true we glory in our iron clads, and believe that each one equipped is an additional security that peace will be maintained; but it is simply because we have been taught from childhood to regard the "blue jackets" of England, and believe that in defence of their country "whatever men will dare they will do," we have invited them to meet us in this noble hall to-day. The alliance between the navy and the mercantile marine is happily daily becoming closer and closer, and I hope the day is not far distant when the whole of our marine, officers and men, will form one vast reserve, and that when the next maritime war takes place they will be found fighting side by side with you. It is the proud—nay, the glorious—boast of our navy that there is no instance on record in which a British Admiral has been known to strike his flag; and from what we know of the material of which the navy is now composed we may feel sure that every man in the fleet is animated by the same feeling which has induced your admirals to go down with their flags flying rather than strike. The ringing cheers which you gave to-day when standing round the monument erected to the immortal Nelson tell us that his memory is fresh upon your hearts, and that you have not forgotten those words which were signalled to your forefathers, and which will ever remain the watchword of our country—"England expects that every man will do his duty." I will now call on the ladies and gentlemen of the town who have honoured with their presence this grand gathering to unite with me in doing honour to "The non-commissioned officers, petty officers, seamen, and marines of the Channel squadron."

Notwithstanding the hint of the Chairman, and his request that the committee and guests would join him in drinking the toast of the guests, every man Jack and every marine Joe rose to respond, and cheered for themselves as enthusiastically as they had done for any of the other toasts. There was no controlling the heartiness of the men, and the Chairman and committee, together with the whole audience, joined in the burst of laughter which the men's enthusiasm had awakened.

William Norcross, gunner's mate, responded on behalf of the seamen. He said—Now, gentlemen and ladies of Liverpool, in response to our honourable Chairman, and the toast that he last gave, I wish to make a noble acknowledgment for the fleet in general, and as regards my own ship more particularly. As a representative of that ship, to show our gratitude to the whole of the gentlemen of this place, we can scarcely find words to convey our sense; and furthermore it will always remain in the remembrance of the seamen the general hospitality shown towards the men when on shore on leave. And at any future period I have not the least doubt they will be the men for the ships, for although iron there are hearts of oak remaining in them still. Furthermore, if ever the time arrives that we are called upon to do our duty in the nation's cause, as the motto goes, "we will fight and conquer again and again." As a conclusion, I beg as a toast to propose "The health of the Commodore and of the Mersey Yacht Club in general."—(Cheers and cries of "Bravo.")

Serjeant Diamond, in responding on behalf of the marines, said,—Ladies and gentlemen, I rise to give thanks for the kind way in which the health has been drunk of the corps to which we have the honour to belong. I must tell you that although I am accustomed to speak to privates, I find a great difference in addressing the public. I hope I am not expected to make a long speech, but I should not be doing my duty if I were to sit down without expressing our heartfelt thanks for the unbounded liberality and for the kindness we have received on this and former occasions. The town of Liverpool is the only place we have lately visited that has even thought of entertaining the inferior officers and men of the fleet, and I know that every one of us will carry to our graves the memory of your kindness, and ever wish every prosperity to the world-famed town of Liverpool.—(Hear and cheers.)

The Chairman next called for a song from the blue jackets of the *Warrior*, and this brought up John Morgan, who sang the song, "He that will not merry be shall never taste our joys." This formed a rattling chorus, which seemed to be well known to all the ships' crews, and was given in good style.

The stewards were now sent round to supply each man with a packet of tobacco, and this attention and consideration of the committee seemed warmly felt by the men. The tobacco was made up in tin-foil packets, each containing two ounces. The quality of it was soon put to the test, for no sooner were the packets placed before some of the men than they took a quid, "just to taste."

The choir then sang a madrigal, an encore being demanded.

The Chairman reminded them that they had a good deal to do in the one watch, and they must not ask for too many encores.

Mr. Scarisbrick then sang "The Death of Nelson."

The Chairman next called for a song from the crew of the *Royal Oak*.

John Grant, captain of the foretop of the *Royal Oak*, said—Upon my word, I think the blue jackets would much rather hear our females there sing. However, as it is something new to hear a blue jacket sing, I don't mind trying what I can do. You must keep silence, I'se a cold. He then sang "England, the home of the world."

Robert Pullenger, of the *Resistance*, now mounted a chair, and said,—Gentlemen, first of all I rise here to propose a toast. In the first place I wish to express the thanks of the Channel fleet for the kind manner in which they have been received here at this entertainment, likewise for the manner in which the members of the Channel fleet have been received during their stay in Liverpool. As long as I have been in the navy there has never been such a reception in any port that any fleet in the British service has been into. I wish to return thanks, not only on behalf of my own ship's company, but of the whole fleet. At the same time I know that the toast I propose will be drunk with enthusiasm by all that are present as well as by the blue jackets. I wish to drink "The Health of the Mayor and Corporation of Liverpool." The toast was received with three cheers, and one for the Mayoress.

The Mayor heartily acknowledged the toast.

A song was then sung by one of the men of the *Emerald*, who afterwards gave a recitation, concluding with the hope that "in the port above they would all be moored together." Both song and recitation were loudly cheered.

The Chairman—Now, men of the *Resistance*, let us see if you can do as well as the men of the *Emerald*.

Joseph Gremlin, of the *Resistance*, sang "Hurrah for the Deep."

The Chairman—Now I want to do something for the red coats. The blue jackets have had it all their own way. I shall now call upon Mr. Cowper to give us a recitation.

Mr. J. C. Cowper, the tragedian, recited Tennyson's ode on "The Charge of the Light Brigade."

John Grant, captain of the foretop of the *Royal Oak*, next rose, and said—Mr. Chairman and all our kind entertainers, I was going to say something when I got up, but actually that there gentleman (Mr. Cowper) has taken all the stiffening out of my shirt collar. However, I am not much of a chap to spin a long bender, and I hope that you will excuse me if I lose the steerage way of my tongue. If I break down I hope you will lend a helping hand to assist a stranded vessel off the shoals. They say that we live in the iron age. No doubt of it. Many of us at present live in iron-clad ships. Now, we are not the only ones that are iron-clad, for I believe the fair sex can boast of that. I read in the paper, when we arrived in this place, that the fleet raised a great deal of excitement on shore, and that only on one occasion was there greater excitement, and that was on the arrival of our Most Gracious Majesty the Queen. Now, there is not the slightest doubt about it. It might have raised a great excitement on shore, but it raised a greater one amongst the fleet. Only fancy the blue jackets here surrounded by females. Why, it is enough to make the blue jackets' hearts jump like a dolphin and all our heads go round like capstans, making us all feel as if we were going before a gale of pleasure into a haven of joy instead of sailing up the Mersey. The public at large has shown how much the Channel fleet and those who man it are held in their estimation. They are held high, I can see—very high. Let me see how high. As high as St. George's Hall here? Ay, as high as "the main truck is above the cockpit holystone." My cable is very nearly run out to the clinch, so I will not detain you longer. If all the seamen and marines of the fleet will fill their glasses—if they have got nothing before them, what they have got in their glasses will do—I know there is not a day will pass over the heads of the men but when he hears the solemn one bell strike will toss up his tot and say, "Here is success to Liverpool." Now, lads, I hope you will put out the royal yard, not forgetting the "stunsail booms," and drink, "Success to every female in Liverpool." I know my fellow-shipmates, the seamen and marines, will join with me in returning heartfelt thanks, and give three cheers for the Lady Mayoress and all the females in Liverpool. (The cheers were given with great heartiness.)

On rising to propose this toast the speaker was received with loud

and continued cheers. He spoke with great freedom, and his familiar language went home to the hearts of the men, whilst his "sea lingo," good taste, and gallant feeling, gained for him the esteem of the visitors. He was a broad-chested, open-featured, dark-eyed tar, with curly locks, and seemed to be the pride of his messmates, as well he might be.

The Chairman—The last speaker has suggested the idea of going on shore and wanting somebody to help him. I can only say if ever I go on shore I hope I shall have as good a speaker at my side to help me afloat again. I can assure you that if you have been pleased with this entertainment, you have not had one-half the pleasure which we have had in giving it to you. I need not tell you, men of the Channel fleet, that you are welcome in the town of Liverpool. The cheering which greeted you to-day as you marched up through the town to this hall sufficiently testified what the feeling is of every man, woman, and child in the whole community; and there is not one to-day who witnessed your procession who did not wish in their hearts that the Channel fleet would visit Liverpool again. Now, I must tell you that even our pleasure this evening is not altogether pleasure unmixed with regret, and that regret is that we have not a building in this town that would hold every seaman in the Channel fleet in the port of Liverpool; but I hope when you return to your ships to night that you will tell your comrades that it was not our fault, or the fault of the town, that you had not every one of your comrades alongside you to-night. Again I have to express one regret, and that is that we have not a building large enough to hold the whole town to come and see you. Now, my friends, let me simply assure you that we are delighted to see you here to-night, that we are proud of you, and we hope that in the future we shall see more of you than we have in the past.

The Chairman next said that one volunteer was better than a dozen pressed men, and he had great pleasure in informing them that Mr. Stoyle had volunteered to sing "Hearts of Oak." The announcement was received with shouts of applause, and Mr. Stoyle sang the song with good effect, the sailors joining in the chorus, giving plenty of tune and taking plenty of time. An encore was demanded vociferously, and Mr. Stoyle added further to the enjoyment of all present by singing with a great deal of humour "Simon the Cellarer."

Alfred Calloway, one of the seamen of the *Black Prince*, sang "The White Squall;" and John Fraser, boatswain's-mate of the *Defence*, also sang a naval song.

The Chairman said—I know not how it is that "Sweethearts and Wives" should become so essentially a seaman's toast. It may be that absence makes the heart grow fonder, and therefore you always keep that toast. I don't suppose you will be very angry with me for proposing this toast because it is not Saturday night. You generally close the week with it on board, and we will close this evening's proceedings by proposing the toast of "Sweethearts and Wives."

The choir sang "Rule Britannia," and three hearty cheers having

been given for the Queen, and three for the Chairman, the proceedings terminated.

Towards the close of the proceedings Mr. R. Hutchison presented each sailor who had sung during the evening with an ornamental miniature flag as a memento of the festival—presents which were apparently greatly valued by the men.

Nautical Notices.

Particulars of Lights Recently Established.

(Continued from page 443.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
33. Coasts of Anatolia and Roumelia	Black Sea	.....	..	..	..	(*a.*)
34. Archipelago	Mediterranean	.....	..	..	..	(*b.*)
35. Archipelago and Coast of Syria	Ditto	.....	..	..	..	(*c.*)
36. Kurrachee Harbour	.....	.....	..	..	..	Depth of channel. (*d.*)
36. Bassas Reef	Little ½ mile from it	Inside of it	Ffl.	33	11	Est. June, 1863. Interval 1½ minutes. (*e.*)
37. Kronstadt	South bastion	59° 58·2′ N., 29° 48·5′ E.	F.	38	..	Est. 13th July, 1863. A bell for fog. (*f.*)
37. Coast of Holland	North Sea	.....	..	..	..	(*g.*)
38. Marseilles	Chateau d'If	43° 16·8′ N., 5° 19·9′ E.	F.	69	9	Est. 1st July, 1863.
38. St. Nazaire	Isle Grand Roveau	43° 4·8′ N., 5° 46 2′ E.	F.	151	14	Est. 1st July, 1863.
38. Hyeres Road	Pt. Blanche	43° 5·3′ N., 6° 22′ E.	F.	20	..	Est. 1st July, 1863.
39. Chesapeake Bay	Smith Island	.....	..	..	..	(*h.*)
39. Portsmouth Harbour	New Hampshire	Whales Back	..	..	..	(*i.*)
40 Amastra Port	End of Peninsula	41° 45·3′ N., 32° 20·5′ E.	F.	312	10	Est. 15th Aug., 1863.
41. Shingles Buoy	.....	.....	..	..	..	(*j*)

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

(a.) 33.—*Lights on the Coasts of Anatolia and Roumelia.*—The Turkish Government has given notice that on or about the month of September, 1863, the following lights will be exhibited on the south and western coasts of the Black Sea:—

Bender Erekli.—A *fixed white* light of the fifth order from the light tower on the hill half a mile North of Cape Baba. The light will be elevated 656 feet above the mean level of the sea, and visible in clear weather at 12 miles. Lat. 41° 18′ 3″ N., long. 31° 26′ 34″ E. from Greenwich.

Cape Ineboli.—Two *fixed red* vertical lights on a summit on the East side of the cape, to guide to the anchorage off the town. The high light will be elevated 85 feet, and visible at 4 miles. Lat. 41° 58′ 30″ N., long. 33° 45′ 10′ E.

Cape Injeh.—A *white* light which *revolves* once *every minute*, at 66 yards within the extremity of the cape. The light will be of the fourth order, elevated 92 feet, and visible at 13 miles. Lat. 42° 6′ N., long. 34° 58½′ E.

Bozlepeh Point.—A *fixed red* light of the fifth order, half way up the point, and W.¼S. of the rock off it. The light will be elevated 344 feet, and visible at 8 miles. Lat. 42° 1′ 18″ N., long. 35° 14′ 15″ E.

Samsoun Bay.—A *fixed white* light of the fifth order on Kalion Point, on the West side of the bay, at 133 yards N.b.W.¼W. from the outer battery. The light will be elevated 56 feet, and visible at 10 miles. Lat. 41° 18′ 15″ N., long. 36° 21′ 15″ E.

Kerasounda Point.—Two *fixed white* vertical lights on the N.E. part of the point, and at the extreme end of the town. When bearing S.S.W.¼W., they lead clear of the Palamida Reef. The high light will be elevated 194 feet, and visible at 6 miles. Lat. 40° 56′ 20″ N., long. 38° 24′ 55″ E.

Trebizond.—A *fixed white* light of the fifth order between two embrasures of the battery on Kalmek Point. The light will be elevated 105 feet, and visible at 10 miles. Lat. 41° 1′ N., long. 39° 45′ 48″ E.

Batoum Bay.—Two *fixed white* vertical lights on the low point of Batoum, on the West side of the bay. The high light will be elevated 49 feet, and visible at 6 miles. Lat. 41° 39½′ N., long. 41° 37′ 21″ E.

Burghaz Bay.—Two *fixed white* vertical lights on Anastasia Islet, on the South side of the bay. The high light will be elevated 131 feet, and visible at 6 miles. Lat. 42° 27′ 52″ N., long. 27° 35′ 53″ E.

Varna Bay.—A *fixed white* light of the fifth order on the summit of Cape Galata, the South point of entrance to the bay. The light will be elevated 164 feet, and visible at 10 miles. Lat. 43° 10′ N., long. 27° 58′ 35″ E.

A *fixed red* harbour light on the wall of the town of Varna. The light will be elevated 49 feet, and visible at 4 miles. The position given is lat. 43° 11′ 40″ N., long. 27° 58′ 20″ E.

All bearings are magnetic. Variation 3° 30′ W. in 1863.

(b.) 34.—*Lights in the Archipelago.*—The Turkish Government has given notice that on or about the month of September, 1863, the following lights will be exhibited on the coasts of the islands of the Archipelago:—

Sivriji Point.—A *fixed white* light on the summit of Sivriji Point, the East point of entrance of Sivriji Bay. The light will be elevated 82 feet above the mean level of the sea, and visible in clear weather at 6 miles. Lat. 39° 27′ 40″ N., long. 26° 15′ 10″ E.

Eleos Island.—A *fixed white* light of the third order on the summit of the island. The light will be elevated 197 feet, and visible at 12 miles. Lat. 39° 19′ 30″ N., long. 26° 33′ 15″ E.

Port Mityleni.—A *fixed red* light above the fort on Mityleni Point. The light will be elevated 164 feet, and visible at 6 miles.

The two *fixed* lights hitherto exhibited, one on each side of entrance of Port Mityleni, will be changed from white to *red*. The lights will be elevated 23 feet, and visible at 4 miles. Lat. 39° 6′ N., long. 26° 34′ 40″ E.

Gulf of Smyrna.—A *fixed* light of the second order on the summit of Cape Merminji, at 875 yards within its extreme point. The light will show *white* seaward when bearing between S.S.E.¼E. and E.¼S., and *red* between E.¼S. and N.b.W.¼W. The light will be elevated 230 feet, and visible at 20 miles. The position given is lat. 38° 37′ N., long. 26° 46′ 20″ E.

A *fixed green* light will be placed in the same tower below the above light. It will illumine an arc of 33° 45′ of the horizon, or the space occupied by the Merminji Rocks.

Smyrna Harbour.—Two *fixed green* vertical lights from a light-vessel (painted red) moored in 10 fathoms at extreme of Pelican Spit. The high light will be elevated 52 feet above the sea, and visible at 4 miles.

Two *fixed green* vertical lights from a light-vessel (painted red) moored in 4 fathoms at extreme of Sanjak Spit. The high light is elevated 52 feet, and visible at 4 miles.

Two *fixed red* vertical lights at extreme of low point, extending 109 yards fron Sanjak Castle. The high light will be elevated 49 feet, and visible at 4 miles. The light at present shown from the fort will then be taken away.

All bearings are magnetic. Variation 8° W. at Cape Merminji in 1863.

(c.) 35.—*Lights in Archipelago and on Coast of Syria.*—The Turkish Government has given notice that on or about the month of September, the following lights will be exhibited on the coasts of the islands of the Archipelago:—

Khios Strait.—A *white* light of the fourth order, which *revolves* once *every minute*, from the summit of the East point of Pasha Island, Spalmatori Group. The light will be elevated 246 feet, and visible at 15 miles. Lat. 38° 30′ 20″ N., long. 26° 18′ 20″ E.

Two *fixed red* vertical lights on the mole on the North side of entrance of Port Kastro. The high light will be elevated 52 feet, and visible at 4 miles. Lat. 38° 22′ 40″ N., long. 26° 9′ 15″ E.

A *fixed white* light of the fourth order on the summit of Paspargo Island. The light will be elevated 118 feet, and visible at 12 miles. Lat. 38° 17′ 55″ N., long. 26° 12′ 50″ E.

Gulf of Scala Nuova.—A *fixed white* light on East point of entrance of Port Vathi. The light will be elevated 98 feet, and visible at 4 miles. The position given is lat 37° 46′ 20″ N., long. 26° 59′ 15″ E.

A *fixed white* light on West point of entrance of Scala Nuova Road. The light will be elevated 98 feet, and visible at 4 miles. The position given is lat. 37° 51½′ N., long. 27° 16′ 35″ E.

Rhodes Island.—A *white* light of the third order, which *revolves* once *every minute*, from the tower of St. Elmo, Port of Rhodes. The light will be elevated 118 feet, and visible at 15 miles. This tower having been thrown down by an earthquake, the above light will be temporarily replaced by a *fixed white* light visible at 6 miles. Lat. 36° 27′ N., long. 28° 16′ 10″ E.

A *fixed red* light on the extreme low point of Cape Kumburnu, the North extreme of Rhodes. The light will be elevated 52 feet, and visible at 4 miles. Lat. 36° 27′ 15″ N., long. 28° 15′ 45″ E.

Beirút.—During the year 1864, two lights will also be established on the coast of Syria,—one a *revolving white* light of the fourth order, elevated 98 feet and visible 12 miles, on the extreme of Cape Beirút; and the other a *fixed red* light, elevated 72 feet and visible 4 miles, at Port Beirút, on a point E.S.E. of the town.

(d.) 36.—*Kurrachee Harbour.*—Information has been received at the Admiralty, and is hereby made known for the benefit of seamen, that although the works in progress for the improvement of Kurrachee Harbour are producing good effects likely to lead ultimately to an easier access to that harbour from sea, and have deepened the bar by 4 to 6 feet, yet that until those works are finally completed, which may not be for another year or even more, it is not unlikely that a less depth by one foot will be found in either of the channels at the entrance of the harbour.

(e.) 36.—*Light-Vessel at the Little Bassas Reef.*—The vessel is moored inside the Little Bassas Reef, the centre rocks of the reef bearing S.b.W.¼ W., distant about one-third of a mile.

(f.) 37.—*Kronstadt.*—The light is visible over the horizon of the Great and Little Roads, or between the bearings from N.N.W.¼ W., round by West and South, to N.E.b.E.¼ E. from the lighthouse. Near the lighthouse is a bell, which in foggy weather is rung at short intervals four times in the hour.

(g.) 37.—*North Sea, Coast of Holland.*—The Minister of Marine at the Hague has given notice that, with a view of avoiding the shoals called the Eijerlandsche Gronden, a new *revolving* light will be shown in the winter of 1864–65 on the downs North of the Island of Texel.

Also, that the following lights will be changed:—The revolving light in Ter Schelling lighthouse to be a *fixed* light. That in the lighthouse on Vlieland Island will remain as a light of the entrance, *red* towards the West horizon, from the first buoy of the entrance of the Storte-melk; it will be obscured from this point and will reappear of a *white* colour, facing and to the East of the channel called Noord-Ostgat.

(h.) 39.—*Lighthouse on Smith Island.*—The United States Lighthouse Board has given notice that the lighthouse on Smith Island, near Cape Charles, the North point of the entrance of Chesapeake Bay, has been so much injured by lawless and malicious persons as to prevent the exhibition of the light. It is also feared that other lights in that vicinity may not for the present be relied on. Due notice will be given of the restoration of these lights.

(i.) 39.—*Fog Signal at Whales Back Lighthouse.*—A fog bell, acted on by machinery, has been established at Whales Back lighthouse station, at the entrance of Portsmouth Harbour, New Hampshire; and would be kept in operation from and after the 1st day of August, 1863. The bell tower is a frame structure, 25 feet high, whitewashed, standing upon the lighthouse pier, and attached to the southern side of the light tower.

The signal is a steel bell, which is struck *four* times in a minute, at regular intervals, during fogs, snow storms, and thick weather, and should be heard a distance of one-quarter to four miles, according to circumstances of surf, weather, wind, &c. The bell is at an elevation of 55 feet above mean low water.

(j.) 41.—*S.W. Buoy of the Shingles.*—In consequence of the staff and ball on the S.W. buoy of the Shingles in the Needles Channel having been frequently carried away, and the state of the weather often not admitting of their being replaced for long intervals of time, notice is hereby given, that the *staff* and *ball* on the buoy will in future be discontinued.

NEW ZEALAND: NORTH ISLAND, WEST COAST.—*Directions for Crossing the Manukau Bar.—By Commander R. C. Mayne, H.M.S. "Eclipse."*

Bring the Ninepin Rock on with the Inner South Point on bearing E.N.E. (magnetic) and steer straight for it, crossing the bar on that line.

As soon as the bar is crossed, the water deepens to 7 or 8 fathoms, and the course should be gradually altered to E.b.N. easterly, till the Ninepin is on with the Signal Station, when haul up so as to pass clear of Paratutai.

If Parera Island is visible it will bear North when inside the bar.

Though the above direction is correct for the present time, (May, 1863,) the signals from the station must always be attended to, as the banks are said to shift continually.

Until it is buoyed the South Channel should never be taken by a stranger.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

NOVEMBER, 1863.

JAPAN AND THE JAPANESE.—*Yokohama to Yeddo.*

The villages of Nagasaki, Yokohama, and Hakodadi, from the 1st of July, 1858, have been open to foreign commerce. Yeddo, the capital of the Taicoon and, from 1859, the residence of the French, English, American, and Dutch ministers, was to be opened from the 1st of January, 1862; but at the appointed time the Japanese government objected that the population evinced too much hostility to western nations for the certainty of pacific relations to be preserved, and it was agreed that the capital should still remain closed against our commerce for an indeterminate period, and only the consuls continued to reside there; all other persons, whether functionary, merchant, or traveller, not going without a special authority delivered by the representative of the nation to which he might belong.

In my first visit, in 1859, I left Yokohama with no other guide than my *betto* (a kind of groom). At Kavasaki, a large village situated midway between Yokohama and Yeddo, I had met the secretary (Mr. Heusken) of the American legation, the best cicerone and the most amiable travelling companion that one could wish for. After our *bettos* had become acquainted, Mr. Heusken persuaded me to abandon the high road and to go to Yeddo by paths through the country. Everything there was peaceful and happy; the numerous villages, the extensive fields of rich cultivation, and the labourers spread over the country. Occasionally we found small hills of a moderate slope, from which we could glance over a delicious panorama. In the horizon the blue sea limited the view, dotted as it was with innumerable

fishing vessels, with their large square sails glistening in the sun. At our feet lay the green verdure extending to the beach and forming a magnificent garden. Clusters of old trees sheltered the old temples, with their lofty roofs and fantastic forms, and small farms, the white walls of which, of paper and wood, lighted up here and there the sombre green. A refreshing breeze wafted the odour of flowers, or a still calm reigned around: everything encouraged repose. The happiness of man is surely found most in the bosom of nature. We arrived at Yeddo without being inquired of by any one as to where we were going or whence we came.

In 1862 everything was entirely changed. Mr. Heusken, regretted by every one who knew him, had been assassinated, and many foreigners had suffered the same fate. The representatives of foreign powers, justly alarmed for the safety of their countrymen, had adopted bodily, which made a walk to Yeddo something like the military reconnoitring of an enemy. Nevertheless, being desirous of completing the pursuits which I had commenced on my first visit to Yeddo, I accepted the proposal of General Pryne, the United States minister, who had invited me to pass some days with him at his residence of Dsen-fou-dsi, where he exercised large hospitality. One of my Shanghai friends desiring to accompany me to the capital, I was indebted to M. de Wit, the Dutch consul-general, for the special permission which I required, and we left Yokohama on the 5th August, 1682, for the Yeddo route.

With the intention of avoiding the intense heat of the journey, we started very early, and to shorten the distance for the horses, we proceeded by boat to Kanagawa, two miles and a half from Yokohama, the place of landing, where we found our bettos, who had gone there with the horses. Our escort was ready, composed of nine yakounines or officers. The bettos, that they might be ready for the long and rapid journey before them, were without their supernumerary garments, and had nothing but a narrow scarf round the loins. The yakounines, small men, thin and athletic, have rather a martial appearance: they wear large hats, round and flat, excellent protection from rain and sun; their long robes, much before them, admit their strong legs being seen, with large silk pantaloons of brilliant colours. They wear straw sandals, a short cloak hanging gracefully from the shoulders, at their girdle they carry two formidable sabres, without which a Japanese noble is never seen outside of his house: their horses are small and by no means handsome, are yet harnessed with taste, and even to a certain degree magnificent.

The chief of the escort came to see us and saluted us in that exquisite polished style which characterises the Japanese, and after being satisfied that we really were the persons that he was to take charge of according to his orders from Yeddo, he announced his readiness to set out. We accordingly mounted, our bettos set out before us, and in a few minutes more we crossed Kanagawa. This place still serves as the residence of the four consuls. For about two years they have all retired to Yokohama, excepting the American consul, with

whom a missionary and a doctor at present form the only foreign population of Kanagawa.

Every one was yet in bed, the streets so full of life on other occasions, were yet deserted. Some wolf dogs, half wild, which are met in large numbers in Japan, showed themselves at the corners of the streets, scampering off barking as soon as they found out we were strangers.

At the extremity of Kanagawa, near the Dutch consul's former residence, we came abreast of a police station of several men crouched over a brazier, drinking tea and smoking. The chief of the escort showed our passports from the governor of Yokohama, and we continued our journey towards Kavasaki, a large village about seven miles and a half from Yokohama. The road after following the coast for a long time turned to the left to cross an extensive plain formed by the deposit, covered with rice fields, and flocked by herons, cranes, and other aquatic birds,—and this plain was bordered by hills about 400 feet high, the sea on the other side, of which it appeared to be the former limit.

The road from Kanagawa to Yeddo goes partly along the Tokaido, the western road which crosses the whole country of Japan from Nagasaki to the southern extreme, and as far as Hakodadi to the North, and which connects the great cities of Kiou-siou, Sikoki, and Nippon. It is an exceedingly well made road, and most picturesque In the vicinity of Yeddo, and in general near the large towns, it is very cheerful, and bordered on both sides with numerous villages, which are not far from each other, and which are connected with each other by thatched cottages, by isolated farms, and by tea-houses. These last, however, must not be confounded with the tea-houses on the grand route, or tscha-jas, with the djoro-jas above mentioned. The tscha-jas are respectable establishments where the traveller will find rest and refreshment. The whole road thus resembles a long street. The travellers one generally meets with are afoot, mostly carried in their large *norimons*, or in narrow and inconvenient chaises *(kangas)*, but the nobility only travel in *norimons*. The form and the style of these litters vary according to the rank of the persons in them. The norimon is formed of an oblong box, carried on a bamboo, surmounted by a light wooden roof, and looks like a house in miniature. These two are black and white, those used by women of distinction and priests are finished with a red or green lacquering. The carriage is not known, sometimes some heavy charrettes will be seen drawn by oxen, and in these also the members of the Mikado's family travel sometimes. As to horses, they perform the work of beasts of burden; but are never tied to a vehicle. The gentlemen are very scarce on the road; for being officers of a certain rank, they do not mount a horse; Japanese etiquette requires when going from one town to another that they travel in norimons and to be accompanied by a numerous escort.

Half way between Kanagawa and Kanasaki is a tea house, which is known by the name of halfway tea-house, kept by a good old lady

and her daughter, a pretty young creature, who was called by the French residents of Yokohama the handsome Spaniard. It was near to this house that the unfortunate Richardson was assassinated. He was dying, but managed to get to the house, where he was well known, and asked for something to drink. The kind courageous girl troubled herself nothing about the assassins being present, but no doubt well remembering the friendly salute which Richardson had given her on passing in the freshness of youth not many minutes before, she brought him a cup of water, which he drank with the feverish anxiety of a man who had received his death wound. A little afterwards he expired. The girl went and found a mat and covered his body with it. At the same moment some soldiers, forming the escort of the Prince of Satzuma, passed by, they kicked away the inanimate body of Mr. Richardson, and commenced mutilating it, and then threw it as a loathsome object into a neighbouring field. The girl followed it, and covered the mutilated remains a second time, and it was in this condition that M. du Chesne de Bellecourt, the French minister, Messrs. Vyse and de Graeff van Polsbruck, the English and Dutch consuls, found it.

In the garden at the back of the halfway house there is an eminence from which is a view of the gulf of Yeddo. Before us lay this magnificent sheet of water, and to our right was the port of Yokohama. About twenty European ships were lying at their anchors; a steamboat plying rapidly dashed into the midst of them; it was the Yangtse, Mr. Dent's famous boat, which every European resident in China and Japan knows and loves, because full often has she brought them news from the West two days sooner than any other vessel from Hongkong or Shanghai.

It appears that the best steamers are built for the Chinese and Japanese seas that England and America can produce, and the great mercantile houses of Hongkong and Shanghai rival each other in having the fastest boat. Many of these vessels cost enormous sums; there is not one but what is laden with some hundred tons of merchandise, and has cost her proprietors above £80,000; but the service between Hongkong and Shanghai is done with wonderful regularity, and this, too, in spite of the severe hurricanes which visit that navigation.

From the halfway house a well made road soon led us to Kavasaki. The road which crossed the rice-fields is crossed towards the end by a small river, over which is thrown a wooden bridge. The few peasants that we met at this early hour did not take much notice of us, but the presence of our escort inspired them with some respect: they all hastened to remove their hats as soon as they saw us, and did not attempt to replace them until we were well past them. A single peasant, either intentionally or not, forgot, and looked at us as we passed his head enveloped in a large handkerchief. One of our officers approached him quickly and gave him a violent blow *de cravache* on the head and spoke to him angrily. The poor man immediately threw himself on his knees, bare headed in a moment, imploring pardon. Certainly in

no country in the world as in Japan is so strict an attention paid to civil manners of etiquette and polite attention. This explains in some measure the good will of the Japanese character, and above all the good manners which their political system enjoins, and which is one purely feudal and belonging to empire. Respect due to nobility is the religion of Japan. But it is both intolerant and fanatic, and has its martyrs and victims. Japanese history supplies abundance of examples which prove that every noble *(samourai)* must be ready to sacrifice his life to take that of him who offends his sovereign. Here is a case. A functionary of high rank having been insulted by one of his colleagues, retired from court, and after making his will committed suicide in the midst of his family. A certain number of his friends, become celebrated in Japanese history, undertook to avenge him. They went by night to the palace of the person who had caused the death of their chief, massacred a large number of his servants, and obtained possession of the person of his enemy, and without hesitation struck off his head. Then they placed the bloody trophy on the tomb of him whom they had sworn to revenge. On the following morning they assembled round the same tomb, and after making a long oration to the manes of their chief, and pronounced a short prayer, each of them drew his sabre, ripped open his bowels, and died on the spot. This story, called the history of the thirty-five *lonines*, is popular in Japan. Every child knows it by heart and has learnt to admire it. True or not it proves that they are a people who can glory in the sentiment of personal honour to the highest degree. Thus an insult is a most grave affair in Japan. Great care is taken not to give unnecessary offence, and in all the relations of life a studied and even exaggerated politeness is observed. Hence it naturally follows that an act of incivility being most rare, is at the same time more serious in Japan than elsewhere, a want of courtesy is equivalent to an insult, and a man who is badly brought up in respect of manners is looked on as a dangerous person if not a criminal.

Kavasaki is a large town, probably about six miles round. The houses are handsome, mostly new, a fire having recently destroyed a great part of the old buildings. We passed the post and the town-hall, the residence of an officer with the rank of vice-governor, and performing the office of mayor. A little beyond it we met one of the couriers who do the duty of the post in Japan. Winter as it then was these men are seen when they are on duty almost naked: they have nothing on but a narrow girdle of white cotton round the loins and straw sandals on their feet. The shoes of the Japanese are very extraordinary things: a pair of common sandals, such as is used in travelling, do not even cost a halfpenny. They are soon worn out and as soon replaced. A great number of them may be seen for sale by the roadside, and beggars even do not take the trouble to pick them up. The courier carries a bamboo pole on his left shoulder, to one end of it is attached a box sealed up containing the letters and a paper lantern hangs to the other, on which are painted the arms of the prince in whose service he is employed. In his right hand he

carries a bell, and in balancing his arms as he goes along he rings it at short but regular intervals. It answers the purpose of a horn. On being heard at a station which is the end of a course, the next courier for service prepares to start immediately. He receives the packet of letters that is brought and is off with a bound. The Japanese post, served in this manner, runs a distance of 125 miles in the twenty-four hours. The ordinary post, however, does not travel so fast, for to have a letter from Nagasaki to Yokohama, eight days are required, although the distance is only 700 miles. The Japanese couriers are strong and well built, they have pliant joints, shoulders back, they skim the ground with their feet and blow hard in breathing.

At the skirts of Kavasuai, by the banks of a small river, the Lokoungo, which falls into the gulf of Yeddo, there is a tavern *(tscha-ja)* which, like the halfway house, is well known to the visitors of Yokohama. The Lokoungo forms the boundary of the free territory. Kavasaki is the last village on the coast of Yeddo which foreigners are allowed to visit, and as in the environs there is a very curious temple, and the *tscha-ja* is well kept, those who reside at Yokohama come here frequently, and sometimes in a numerous and merry company. They are received of course with open arms, for they pay without consideration or knowing anything when the landlord presents his bill: but now we were no longer among the welcome. The mayor of Kavasaki, acting no doubt according to instructions which he had received from high quarters, did not choose to allow the *tsdjins* (men of the West) to be on such familiar terms with the people of the village. He has forbidden their spending money there, and the *tscha-ja* is not only placed under a strict surveillance, but is subject to an extraordinary tax, so heavy that the proprietors, desirous enough otherwise of seeing foreigners, rather suffer than profit by their presence. So the old lady who keeps the tavern at Kavasaki, is obliged, against her wish, to suspend all those attractions which make her house desirable. The active young attendants who busied themselves in 1859 in ministering to the stranger's comforts, are now replaced by old hags, who regard us with a suspicious look, and trouble themselves very little about attending to us.

Near Kavasaki stands the large temple of Daisi-Gnavara-Hegensi, reckoned among the most beautiful in Japan. It is an ancient building, covered with a large roof, ornamented with handsome and curious sculpture, standing in the middle of an extensive paved court, and surrounded by a thick grove of trees. Like most Buddhist temples, the interior much resembles Catholic edifices. The chief altar has next to it a sanctuary, approached by much circuitous walking, and has right and left of it other altars with gilded wooden images, many among them with an aureole *(gloria)* which connects their heads and the clouds which receive their feet, and are, in fact, copies of our virgins and saints. The *ex-voto* cover the walls. Near the entrance door stands a man who sells images, medals, chaplets, and printed prayers: he involuntarily reminded us of our gift of

the holy water. The floor was covered by mats of remarkable cleanliness, and here and there were seen the monks which belong to the monastery of the temple, their heads shaved and their clothes similar to those of Catholic priests. Gene- rally speaking it is difficult not to admit when one sees a Japanese temple that there are numerous points of resemblance between the religion of the East and the West. The tenets of the Japanese are surprising: if their devotion is sincere, one must acknowledge that they are not much restrained by very severe external forms. Those who came into Daisi with us both laughed and talked loud, called to us from one end of the temple to the other to direct our attention to any particular object, and made noisy comments when we made remarks or asked questions. At length, tired of following us, they crouched round a brazier and began drinking tea and smoking. I then approached a monk who since we had entered was officiating, and who had scarcely turned his head to look at us. Kneeling before a large low table, covered with fruit and grain, he was murmuring his prayers, and feeding the fire, in an antique bronze vase, with small pieces of wood and drops of odoriferous oil; from time to time, also, he took leaves or grain, which he threw into the flames. He was a young man, of good figure and intelligent features, as are often seen in Japan. He was dressed in a long white robe and wore the capuchon, so that he was a monk of the Carthusian order. On leaving the temple we were accosted by a fat bonze, who appeared to be the superior of the community, and who with a good grace invited us into the refectory to take some refreshment.

At the door of the temple of Daisi some leprous mendicants, lame and of a most pitiable appearance, surrounded us, imploring our charity. Generally there is but little of the kind in Japan: their mode of living costs so little that even beggars themselves are scarcely reduced to distress: moreover the Japanese, it appears to me, without having much compassion about them, are tolerably generous with their alms. Beggars are seldom met in the streets or high roads; but almost always seen about the doors of the temples. They call attention by uttering a plaintive cry, reciting certain forms of prayer, or by making a noise with a wooden hammer against a varnished bowl, which is placed before them. They belong to a particular class, and are looked on to a certain extent as impure. Filth and deformities render them so repulsive that they excite more disgust than pity. Many leprous subjects may be seen among them as well as blind; and a great many of them are deformed hideously by elephantiasis.

Before coming to the little river Lokoungo above mentioned, it was necessary to pass a door guarded by a police station. Here they examined our passports, and then took us with our horses in the ferry-boat to the other side of the river—the Yeddo territory. The approaches to the capital have some peculiar character in all parts of the world. The roads became animated with more life and gaiety, the houses were larger and richer in appearance, and ornamented with taste and luxury. Even the animals seemed to be better orna-

mented in the vicinity of the great centre of civilization. The same traits of character distinguish Yeddo. The road from Kavasaki, and which is about eight miles long, is even tended with greater care than that of Kanagava. Handsome houses, connected together by large gardens, formed a line scarcely interrupted by villages and small towns.

At Omiri we stopped, according to European custom, at the principal tscha-ja of the place. This is a charming tea-house. Nice modest young damsels, who were well brought up, were in attendance there with refreshments for the travellers; they had seen me in 1860 in company with poor Heusken, who had frequently visited them, and they spoke to me of his death with deep regret.

In the vicinity of Omiri we met the cortege of a *daimio* or feudal prince. At this appearance our Japanese guards appeared somewhat disconcerted, and would have taken us into a cross road in order to let the cortege pass. But as the road was very wide and we could continue our journey without inconvenience to any one, we refused to comply with this proposal. It is known that Mr. Richardson was massacred on the occasion of meeting a *daimio;* but it should not be forgotten that this rencontre took place on a narrow confined road, and that Mr. Richardson and his companions, involuntarily no doubt, occasioned some trouble to the order of the cortege.

We saw the imposing escort of the powerful Prince of Fossokowa pass along from the capital of his province. Two men walked first, without covering on the head, notwithstanding the heat of the sun. They called out at short intervals on the road the word *stanicco*, which announced to any one on the road the approach of one of his masters. To this announcement a respectful silence is paid all round: work is ceased, many houses are shut up, and the owners hasten to retire to them; beasts of burden are ranged along the sides of the road or even on the heights in the fields, the travellers go down on their knees and wait, with the forehead bent to the ground, till the *norrimon* of the prince has passed. Behind the heralds follow some forty soldiers, some armed with muskets, others with lances, and all with two sabres in their girdle. The iron of the lances and the barrels of the muskets were covered in solid leather cases, on which were painted the arms of the Prince of Fossokowa

It is in virtue of a wise law that the arms are thus covered. The Japanese being of all people the most polished in manners, the custom of using arms is the most refined, for they have been compelled to adopt severe measures for the purpose of preventing as much as possible the ill effects of this dangerous custom. Unless it is in a case of legitimate defence, no one is permitted in the street to draw his sabre without incurring the most serious penalties: any one who does so risks being condemned to death, after having been declared to be deprived of his rank. In Satzouma, a province to the South, in which the people have the character of being fiery and quarrelsome, the law is severer still. Should a man draw his sabre in public, whatever may be the motive, against any one, he is not permitted to

return it to its sheath before concluding a combat by the death of one of the two: according to the law, he is obliged to fight until either he or his adversary is killed. Does he prove to be the conqueror in the deadly strife, he is not safe, if he should have been the aggressor, from the ruthless law which condemns him to the cruel alternative of ripping open his bowels or to submit to the capital punishment. If, on the contrary, he has spilt blood in legitimate defence of his life, he is neither punished nor blamed, and his personal consideration gains thereby; but if he has deserted the scene of strife without leaving there the lifeless body of his aggressor, he is not considered worthy of surviving the shame, and he has forthwith to choose either a voluntary death or the scaffold. It is in virtue of these rigorous injunctions that the arms of any one are never exposed, that the metal of the lance and the pike and even of the musket is carefully concealed in their cases. They are never taken out except in case of a military expedition into an enemy's country, or when a criminal is escorted to the place of execution. Thus Sir Rutherford Alcock, the English minister, who was accustomed to be accompanied to Yeddo by English lancers, was requested by the Japanese government to cover the metal of the lances of his escort, to avoid producing among the people the conclusion that he entertained hostile intentions towards them. The Japanese laws in regard to bearing arms it must be acknowledged have had beneficial effects, for it is remarkable that in a country where such a number of armed persons are met with as in Japan, serious collisions are very rare. But let us return to the cortege of the Prince of Fossokawa.

Next to the advanced guard were eight soldiers, carrying long halberds and insignia, the form and character of which indicated the high rank of their master. Among these marks of distinction there was a very singular one of a hat with plumes of feathers, which serves to distinguish especially the dignity of the *daimio*. After this came, like a rolling house, the clumsy *norimon*, which rested on the shoulders of twelve men, who walked with equal pace, the head and legs uncovered, as Japanese etiquette requires. Scarcely had we come in sight when an officer, who was not in the ranks, ran to the bearers of the norimon, probably to announce to the prince that strangers were approaching. The curtains were then speedily drawn so close that it was impossible to see the person of the great man who was passing so close to us. To the right of the norimon was an officer who carried a sabre, the honoured and precious weapon of the prince, wrapped up in velvet. Behind the norimon four grooms led two magnificent saddle horses magnificently harnessed, and then followed in good order the rest of the military escort, composed of about 400 men, all well armed and well accoutred. The principal officers were also carried in norimons, but not so large as their master's.

The imposing procession advanced like a regiment on march in two files, and occupied of course a considerable space of the *tokaido*. It was closed by a multitude of domestics (200 or 300 at least), each of

whom carried, at the ends of a long pole resting on the shoulder, two bamboo boxes, containing the apparel and other travelling habiliments of their respective masters. The whole cortege defiled in solemn silence before us. Here and there the soldiers and even an officer cast a glance at us of no kindly feeling; but we were not subjected to any kind of hostile demonstration. Our *yakounines*, who had taken off their hats, and who scarcely dared to lift up their eyes, were much embarrassed, and did not regain their wonted hilarity until they saw the road entirely clear of them, and they seemed glad enough to get safe and sound clear of the risk to which they had been exposed in our service.

Beyond Ovari the road becomes more and more cheerful. After crossing several wooden bridges and passing through some pretty villages, of which each dwelling-house was either a shop, a restaurant, or an inn, we turned to our right and again approached the sea, which we had lost sight of from Kavasaki, and on a sudden found Yeddo before us, the second, but still the most opulent, city of Japan. The principal and most ancient city of Japan is well known as Kioto, where the Mikado resides, the legitimate sovereign. It is in the interior of the country, at thirty miles from Osakka, the great emporium of Japanese commerce, and figures in our maps and charts by the name of Miako, which means capital.

The situation of Yeddo is most happily chosen. More extensive than the largest metropolis of Europe, it reposes under a beautiful sky and on a gently undulating ground on the shores of a magnificent gulf, the graceful curve of which it follows. Gardens and parks occupy so much of it as to give it the appearance of being one immense park. Large massive trees are seen in various parts, either in groups or rows, their thick foliage screening the modest looking dwellings, and only the numerous temples appear, the palaces of the princes' families, which for two centuries have been obliged to reside at Yeddo, in the vicinity and under the surveillance of the Taikoon. Vessels of all kinds are seen in the gulf, such as steamers from the West, obtained at a great expense for the court of Yeddo, sailing ships, similarly constructed as European, junks covered with copper, with their heavy masts and square sails, fishing-boats with their sterns shaped like the bow with a duck's beak, and a host of little vessels of all kinds. In the middle of the gulf, at two miles and a half from the shore, five forts have been recently constructed, the granite walls of which form a picturesque contrast with the fresh verdure which lines the ramparts, and the sombre blue of the water which surrounds them. To the West, in the distance the high mountains of Hankoni interrupt the chain, and beneath them stands detached in solitary and incomparable magnificence the peak of Fusiyama.

Crossing a small square, wherein the grass grows in the centre of it, is a Buddha statue in stone. A dozen of half savage dogs scampered off barking at our approach. This is the place of public executions, situated as a kind of menace at the very entrance of Yeddo.

Soon afterwards we entered a village of poor pretensions, and the people of which seemed mostly to live on fish; but at the extremity of the village commenced a long street formed by large handsome houses, and this is Sinagawa, the suburb of Yeddo famous for its tea-houses of the worst character about the capital. All the fallen youth of the place find there a rendezvous, and a heavy catalogue of crimes and plottings are continually going forward.

Here our escort drew closer round us, and the officer requested us to quicken the pace of our horses. Two men came galloping along crying out lustily, *Hai, hai, abonai,* take care, take care, attention, and this was repeated by our companions. The street was full of people, with no pleasant looks, each armed with two formidable sabres, and, according to an old established custom, wore round their heads a handkerchief, which left nothing to be seen of the face but a pair of black eyes, which looked fiercely from below the forehead as though from a mask. They all readily made way for us, less perhaps on our own account than that of our horses, of which they seemed rather afraid; but some among them launched ill words and threats at us. Our pace became accelerated at every step; the horses, which were somewhat fatigued, seemed to be aware that they had got near the end of their journey: excited by the voices of their riders and the people, they had become spirited, and it was at full gallop that we cleared the wooden door which marked the limit between Sinagawa and Yeddo.

The chief of our escort, with his forehead wet with perspiration, came to us to congratulate us on our arrival, and was evidently much pleased at having completed his dangerous mission, which had been a certain responsibility to him. We passed the hill of Gotten-yama, where they are building new residences for the English, French, American, and Dutch legations: we left to our right the great temple of Toden-si, the residence of the British minister, then turned to our left, and after crossing a more tranquil quarter, nearly deserted, we entered Dsen-fou-si, the seat of the American legation.

The British legation was entirely burnt as soon as it was finished. Gotten-yama is already a favourite place for a walk, and it is said that the concession of this hill to the foreigners, has been very ill received at Yeddo, and especially in the Sinagawa suburb. It is therefore possible that the concession was made to raise a cause of discontent, and that another part was mentioned as the site of the legations. It is quite certain that all the European residents at Yeddo will in future be isolated and surrounded at a place where it will be easy to preserve a strict surveillance over them.

Dsen-fou-si has shared the fate of the English legation of Gotten-yama. This ancient and venerated temple has become a prey to the flames; but it has been attributed to an accident, while the destruction of the British legation is well known to have been the result of design.

(To be concluded in our next.)

THE WESTERN DIVISION OF THE MEDITERRANEAN.—*Navigation of the Gulf of Lyons.*

(Continued from page 520.)

The Gulf of Lyons being celebrated for its difficult navigation, in consequence of the severe gales to which it is liable, and the currents which necessarily accompany them we have considered it desirable to provide the seaman with all the experience we can collect on this important subject, and having met with a small brochure on the navigation of that gulf, wherein the winds, weather, and currents are closely described, and the mode of navigating it under all circumstances, we have considered it worth preserving entire. Captain A Gouin (*Capitaine au long cours*), an officer of the French Royal Navy, has published this little work, which he calls an essay on the navigation of the Gulf of Lyons, with an account of its prevailing winds and currents. He says:—

The Gulf of Lyons is a dangerous navigation, for besides being the scene of many accidents, a year never passes without some wrecks taking place there. During the year 1854 the wrecks were so numerous that they almost assumed the character of a public calamity.

It was under these painful circumstances that I determined on producing a pilot for this gulf; but an active employment in regard to merchant shipping, left me but little time to do so, and I have not been able to obtain all the materials sufficient to produce a complete work. I can only therefore offer an essay on the navigation of the Gulf; but I am persuaded it will be useful to those seamen who are not acquainted with it, and this decided me on publishing it. Commanders of vessels who know it, and especially those from its neighbourhood, need have no apprehensions about it; but I would trust they will receive these remarks favourably, and will point out anything in them which they may consider as questionable, for which they will receive my sincere thanks. With this introduction the captain commences, and divides his subject into fourteen heads, beginning with:—

I. *Currents.*—The currents of the Gulf of Lyons are in general very uncertain; but it is probable that in so confined a sea as it is, they will mostly follow the direction of the wind; especially if it be strong. But the following is from my own observation on several occasions, and were this not sufficient, it is founded on an unimpeachable authority on such matters. The fishermen of the gulf have certified the facts, and they have navigated the gulf in all weathers.

In fine weather, the prevailing winds being N.W. or N.E., blowing with the land winds, the current assumes a mean direction of S.S.E., as may be readily supposed. The whole of the middle coast of the gulf being low land, interspersed with lagoons and marshes, the dryness of the ground lowers their level and they again collect their water from the sea. But this is a phenomenon which only occurs in dry fine weather, whatever may be the season.

In gales from seaward, and even from N.E. to S.W. by the eastward, the current takes a mean direction of S.E., and attains a rate of a mile and a half an hour. Therefore, in crossing the gulf in these gales from sea, allowance should be made for the set of the current, which is dangerous, as it drifts vessels directly towards the shore.

II. *Winds.*—The winds of the gulf are very variable at all times, and indeed without exception remarkably so. Westerly and easterly winds have been known to continue for whole months, that is, winds from those quarters, northward and southward of them as cardinal points. The westerly winds certainly prevail more than easterly, and the N.W. (so well known by the name of the Mistral) during winter and spring; and those from the eastward in autumn, although S.W. winds are also common in this season.

In the fine weather of summer winds from seaward are common, and in the fine weather of winter it blows frequently from the northward. In winter the S.W. wind proper sometimes blows, and, lastly, in this season a wind which clings between North and N.N.E. blows hard, but yet seldom: it is very deceptive, and the fishermen call it the *Orsure.*

On the coast of Catalonia the gales from N.E. to S.W., passing by the North, in the gulf commonly change in squalls from N.E.

The gales from S.E. to West, passing round by South, are generally S.W. on the coast of Catalonia.

S.W. gales often drop at the entrance of the gulf, there they change to South; half way into the gulf they become S.E., and on the coast of Provence they are East.

The gales of the Orsure, the most trying on account of their violence, are accompanied by the very worst weather, generally with a sudden change of wind: but happily this wind does not often blow.

The sudden changes from East to West are less rare, especially in the middle of the gulf, for in fine weather the winds change gradually and not to a directly opposite point. For instance, with fine weather from the S.E., even in winter, on the coast of Catalonia the wind hangs to the South; half way into the gulf it is from East, and on the coast of Provence from N.E.

The Mistral, however, is the wind which persists most in blowing severely.

In the fine season, although gales come from East as well as West, they are not of long duration, and the navigation of the gulf has no very serious difficulties. We may also apply the same remark to winter. As for the gales of wind so common at this season, it is well known that they attain a degree of strength which no human power can withstand. But a vessel may always avoid being caught in a scrape by attending to the two following rules.

First, avoid the gulf in bad weather or with the appearance of bad weather and a low barometer, even when you have a fair wind.

Second, never beat to windward in the gulf, unless absolutely necessary, and therefore get across it as quickly as possible.

III. *Points from which to leave or enter the Gulf.*—We may first

observe, that whatever may be the position of a vessel, there are four points by which the gulf may be left or entered, and which are:—1, the coast of Catalonia; 2, the coast of Provence; 3, Isle Minorca; 4, the South coast of Sardinia. But a word about these points.

The coast of Catalonia provides a refuge from on shore winds; as we have already observed, the gales are generally from N.E. and S.W. S.E. winds always, although they do not often blow, when they do come degenerate into a furious tempest. This is a great evil no doubt, but it is one to which all navigation is liable. We will merely add, that the coast being very clean and S.E. winds blowing very seldom, it is better to meet a gale of wind there than in the gulf of Lyons. In all cases we recommend the bay of Rosas, an excellent anchorage affording shelter from all winds and in a position for profiting by the first fine weather. If Rosas cannot be gained, and the vessel cannot keep the sea, let her then run down as far to the West as Cape St. Sebastian, and there wait for fine weather.

The coast of Provence is remarkable for good anchorages in abundance. The principal of these are Marseilles, Le Bruse, Toulon, the roads of Hyeres, Aguay, and the gulf of Jouan. Therefore on this coast, excepting in an Orsure gale, a vessel will always have a place to run to when she is unable to gain her port. But in all cases, if possible, the roads of Hyeres should be preferred, and if she cannot go there, the gulf of Jouan.

Coming from the eastward, a vessel would make the land of the Hyeres Isles; but wherever she may be from, when she has the coast of Provence at hand, it should not be abandoned in winter.

The island of Minorca is the place of refuge from gales of the Orsure, besides which a vessel may lay by all round it, and there is the anchorage of Port Mahon in case of accidents.

The South coast of Sardinia is the retreat from the Mistral, and ships requiring repair from its effects. But there are instances of ships having run from the Mistral as far as Palermo, in Sicily, and others even to Malta.

In conclusion, then, a ship is not obliged to take the gulf in bad weather or when the weather is threatening with a low barometer; and, in fact, there is no necessity for beating in the gulf excepting in one case, and that is, when she is caught by a gale from seaward in such a position that on the starboard tack she cannot make Marseilles, and on the port tack she cannot weather Cape de Creux. This position, the most critical of any in bad weather, shall be the subject of special consideration.

IV. *Points of Departure.*—Before going further, let us consider the navigator has the book of directions on board for the Western part of the Mediterranean. We do not here give the description of coast, for a captain bound to any particular anchorage refers to his manual. A vessel would also have on board a good chart of the gulf, with a description of the lights and places above mentioned, as well as a good barometer. In fact, the captain would possess the means of laying down the position of the ship at any time. This being premised, as

Marseilles is the principal commercial port, we shall consider it as the place bound to by a vessel coming from the westward. From our reasoning it will then be easy to infer what should be done in any other case. And this done, we shall not occupy ourselves with starting from any particular port of the coast of Provence from which to cross the gulf, and it will be easier also not to take any particular port for arrival. Again, we shall consider ourselves at perfect liberty to choose the time, to consult the pilots, and I shall offer their advice as applying to any particular case rather than anything that I could say. Moreover, when coming from the East, it is not necessary actually to cross the gulf, but always in this case it is so to choose the time. Coming from the South of Sardinia, a vessel has only to profit by fine weather to gain as quickly as possible the coast of Provence, and to proceed as hereafter recommended.

In coming from the West, Cape Creux is generally made, and a departure taken from it: even with the wind from seaward vessels pass in sight always of the coast of Catalonia, but then the departure is taken from Cape San Sebastian. For the rest, if the vessel has an offing with the wind from seaward, she should keep it whatever may be her point of departure: but with any other wind one of the above capes should be used for it. We will now consider the mode of crossing the gulf with different winds.

V. *To cross the Gulf with a Northerly Wind.*—In the fine weather of winter, as we have observed, northerly winds are frequent: and although they may be somewhat unfavourable, they must still be turned to account for navigation; and be dealt with in bad weather.

The signs of fine weather are: the barometer at lowest 29·9 in.; the atmosphere clear and the gulf quiet; the cold according to the season. It should not blow harder than would admit of two reefs in the topsails, and the courses to be carried. It may happen that even in fine weather it may blow hard for a time; but it will be short, and a ship may profit by it. The most favourable time and position will be in the evening off Cape Creux.

In the above case a vessel will cross without hesitation. She will go and make the Hyeres Isles; she will then steer for the coast of Provence, and will manage so as to keep it and the land generally as long as possible with the view of getting to the westward in the night. The northerly wind will moreover assist her by slight changes.

But if signs of fine weather should be uncertain, and others seem to appear, then there should be no hesitation, even if the wind is moderate, of stopping on the coast of Catalonia for it or until the wind changes.

Then with fine weather and a moderate northerly wind the vessel will gain the coast of Provence; with too much wind or doubtful weather she should make the coast of Catalonia; and even so if the weather should be doubtful, because in winter westerly winds prevail, and for this reason a vessel will be better on the coast of Catalonia than on that of Provence. It will be better for her to be at anchor

in the gulf of Rosas than at the Hyeres Isles, a consideration which should always hold in coming to a decision: but at the same time fine weather should never be lost sight of.

Now, should a vessel be surprised in the gulf or driven from the coast of Provence by a northerly gale, she should make for the coast of Catalonia, and if she cannot do that she should get under the lee of Minorca.

We have advanced as a principle that a vessel should never attempt to work to windward in the gulf nor lie to, and this must not be forgotten, especially if the wind heads or freshens. If it heads her, and the coast of Provence cannot be fetched, she should wear off, and beware of getting into the middle of the gulf. In this case, the wind will haul to N.E., and she can do nothing else but return to the coast of Catalonia. Even also if the wind freshens, although it may not be a time to run, she must also return there, and by no means lay to.

When the northerly wind begins to be wavering, the nature of it should be considered more than its direction, whether there is to be a gale of the Orsure or the Mistral; if the former, it will be North or to the right of it; if the latter, to the left of it.

VI. *Crossing the Gulf with a N.W. Wind.*—The signs of fine weather with a N.W. wind, varying westerly, are the same: nevertheless, if the barometer is not below 29·5 in., if the weather is clear and the gulf smooth and a moderate wind, the gulf may also be crossed.

In all cases, even on departing from Cape Creux, a vessel should make as much of a northerly course as possible, even to North true, so as to get into the latitude of Planier as soon as possible. If this latitude is attained in a longitude less than 4° 36′ E., the vessel will steer for Faraman (the light of Tignes); from thence for Cape Couronne; and from this last for Marseilles. If the vessels gains the parallel of Planier to the eastward of 4° 20′ E., she may steer for Cape Couronne and thence for Marseilles.

This route may seem to be opposed to the principle we laid down of crossing the gulf as rapidly as possible. But it is not so. In this route attention must be given to what the wind allows and what it will not,—or indeed what it compels a vessel to do. It is of no use then to think of measuring distance, but to make it good somehow. The sails, moreover, should be kept clean up full, and crossing the gulf as rapidly as possible should imply special attention to such particulars.

When the vessel has attained the parallel of 43°, she has only to stand on, gaining to windward as she can at all times; and in this case she cannot fail to make Hyeres Roads. If she does not reach the parallel of 43°, and in a less longitude than 4° 20′ E., she must return to the coast of Catalonia. In fact, should she not have attained the parallel of 43° and a longitude greater than 4° 20′ E., it will be evident from the position of the ship and the direction of the wind what is the easiest coast to make, and that quickly. We are supposing that

the vessel can still carry her foresail and close reefed topsails; but if she cannot, there is nothing to be done but to get to the southward as soon as possible. But we shall return to this case again.

VII. *Crossing the Gulf with a Westerly Wind.*—With the wind at West free, it is evident that the state of the weather is of more importance than the strength of the wind. Nevertheless, as the vessel must get to the latitude of Isle Planier, in 4° 20′ E. long., some trouble must be taken to do so. Therefore, if the weather looks well, that is, if the wind should not have a hankering for the S.W., although it may blow fresh, she will make for that position. From thence (the latitude of Planier in 4° 20′ E. long.) she will make for Cape Couronne: and on gaining the gulf of Foz, if the wind admit, she may run direct for Marseilles.

Even with the wind at W.S.W., provided the weather is trustworthy, a vessel should adopt the above route, because it must be expected that the wind will become scant as she proceeds, a state of things indeed certain to occur in winter.

VIII. *A Word on the Foregoing Routes.*—The winds from W.S.W. to North are, without doubt, the most favourable for crossing the gulf. At North it may be scant, and it may freshen; but in general the weather is clear, and that is a great thing. In fact, when a vessel is once on her way, there are excellent anchorages on the coast of Provence, unless it becomes stormy, in which case the vessel may bear up. But these safeguards permit a vessel to start, which she might not do with the wind from seaward: and in winter it should be preferred, as we have said, to the West rather than East of her destination. If, therefore, the weather should not be particularly fine, a vessel at this season may leave something to chance to attain this destination.

The wind being from one of the points we have mentioned in the gulf, will undergo frequent changes, all generally tending to the northward. Its mean direction in winter is N.N.W.; in summer, N.W.: and these are the true Mistrals. Sometimes it will become West, especially in summer.

But here is a fact proved by experience: leaving Cape Creux with it bearing N.W. (true), and the wind from the same direction; if the vessel is obliged to take in her courses, she will not reach Marseilles, unless she may have previously attained the latitude of Planier.

This will explain the determination with which we have insisted on the latitude of Planier being gained in crossing with the wind off shore; and it is easy to see that all reasoning is in favour of the route we have recommended. In fact, we have chosen the parallel of 43°, to show what there is to be done; but besides the route attaining this parallel as soon as possible, the same benefit will follow by adopting instead the latitude of Planier.

If the wind admits of a vessel taking the route we have given in No. VI., which unfortunately does not often happen, there will be the advantage of not being far from the shore, and also not very far from it but for a few hours; and the wind will not be so strong as it is inshore, excepting off the mouths of rivers, a matter of little moment.

And again, the sea, although deceitful enough, does not get up as it does outside, and the drift is consequently not so great. Hence it is evident that whatever may be the place of the vessel on the parallel of Planier, she can come to no harm in the case we have here supposed. For if the wind should haul to S.W., she may always run free for Marseilles: and if, as generally happens, the wind becomes scant,—for instance, getting as far as North,—she will have a good chance of reaching Marseilles if it moderate ever so little.

In fact, this route, taking into consideration the possible errors in reckoning in so short a navigation, has no danger even by night: for besides the light of St. Loup (Agde) it is not further (on the parallel of Planier) than ten miles from that of Faraman; and if in this part northerly currents are met, there will be not more than five miles beyond this parallel to be within the range of the light of Aigues Mortes. And should the horizon not be clear, and there is any doubt, the lead is always a good guide, of which frequent use should be made.

From 4° 10′ to 4° 20′, on the parallel of Planier, the depth is 60 fathoms: unfortunately in this space and for sixteen miles to the southward it is everywhere 62 fathoms (the mean), and a difference of a few fathoms is not always sufficient to give a ship her position, especially when the ground is not sufficiently varied to do so. But happily to the North of Planier the depths decrease a good deal: at three miles North of it there are 56 fathoms; at six miles 50 to 40 fathoms (50 fathoms towards 3° 50′ E. and 40 fathoms towards 4° 20′ E.), and in such depths a vessel can hardly be less than nine miles from the land. But then the vessel should get to the eastward, until she has made sure of her position.

From 4° 20′ E. to 4° 45° E., on the parallel of Planier, the depth is 50 fathoms, and here it varies with much regularity, according as a vessel is North or South of this parallel.

From 4° 45′ to the longitude of Planier, on its parallel, the depth is 65 fathoms.

In 25 fathoms on this parallel a vessel will be at least three miles from the shore, excepting off the great mouths of the Rhone itself. But here only a vessel will be in 50 fathoms to be three miles off shore. Although the shore may be approached anywhere to a mile, a vessel should never get into less than 25 fathoms at night, however fine the weather may be.

A vessel in 25 fathoms, wherever she may be, with a course E. ½ S. [E.b.N. ¼ N.], will clear everything as long as she is not near the gulf of Aigues Mortes. From here only a vessel in 25 fathoms should steer E. 15° S. [E. ½ N.], till she makes Faraman, or until she attains a parallel which admits of her having it to port.

In making for the parallel of Planier, or for one to the northward of it, if the vessel is going in the direction of the gulf of Saintes-Maries, which is generally done when the wind does not play tricks and is steady, there need be no fear about entering this gulf, or even when not having seen Faraman. For if she comes suddenly into 40 fathoms, and is steering to the eastward, as we have said, she will pass

outside that gulf; and if she has 25 fathoms, and is steering E. ½ S., as above said, she will clear everything. She will pass at least three miles nearly clear of Faraman.

In fine clear weather, when the wind is found hauling to the northward, those who would prefer to hug the shore and follow the large mouths of the Rhone, coming from the westward, when they make Faraman will clear it without keeping to the southward of East, and approaching it will be North and South of it, and will pass it from two to three miles. From here they should steer E.b.N. [E.N.E.¾N.] But this route will be very close to the mouth of the Rhone, and the lighthouse must be their guide to arrive there if required. However, it should never be brought to the southward of W. ½ N. [W.b.S.¼ S.], and this is so essential that the vessel would certainly get on shore that did so. To make a proper course along shore it is necessary, as we have said, that the horizon should be quite clear. Then, on having passed Faraman, bringing it North and South, three miles, steering E.b.N., when Faraman bears about W.N.W., the Bouc lights will be seen. These should then be steered for, as they are good marks. They may be closed as soon as convenient, but never bringing them to the right of N.E.b.N., and there will be no occasion for the least anxiety.

If in making this route, and afterwards desiring to approach Cape Couronne, there may be some fear of the dangers near it. But when approaching it, a vessel should bring Faraman W. ½ N., or the two lights of Bouc N.b.W. Either one of these two bearings should be kept on until the vessel has passed East of the meridian of Aragon. Afterwards it may be shut in at pleasure. In fact, if a line were drawn from Faraman to Marseilles, it would lie E. ½ S., and this line would pass along the two edges of the great mouths of the Rhone and the shoals off Cape Couronne, as we have observed; and it would clear everything.

Seamen dread the sands, and they have good reason for doing so on more accounts than one. But here it must not be forgotten that the strand is everywhere clean: it may be approached everywhere to a mile, and when sailing with a settled N.W. wind, there is nothing to fear.

In all cases therefore, from what has been said, a safe route may be chosen: for instance, suppose a ship in the latitude of Planier, the longitude being between 4° 5′ E. and 4° 35′ E., which allows a sufficient margin for error of reckoning, and that she is going further to the northward as a precaution against northerly winds here, she would get as soon as possible into 40 fathoms, and then steer due East until she makes Faraman, which she would pass about six miles distant, or about the time of daylight, or, in fact, about the time she would have gained 4° 50′ E. From thence she would make for Cape Couronne.

All that we have said here in reference to depths, &c., is taken from the most correct charts, and may be proved, as we have done, by sounding, and in giving the information I am satisfied it is a series of routes which every one may adopt; and, in fact, I have said so, without losing sight of my subject, and because I am convinced that it is

the misfortune of men who have all the ability to have besides an extreme repugnance to this kind of work.

We may also add that in such a navigation, however troublesome it may be to carry all the sail which the wind allows, whenever there is wind for double reefs a reef should be also taken in the courses, at least in the mainsail, for once having entered the gulf the grand question of reaching Marseilles or not will depend on this sail, which every one knows is the soul of the ship whenever she is obliged for a short time to have the wind abeam. Every one knows it is easier to manage a ship with this sail than without it, even when reefed; and if the ship has to wait to get it reefed, from there being too much wind, besides the delay of doing so, it might be necessary to take in the second reef at the same time, and then the wind will not remain long enough at West, and the ship will not get into Marseilles: instead of the second reef in the courses, if the wind becomes too strong the topsails may have to be close reefed; with either the one or the other, the ship will always have enough sail to navigate with, and if the wind slackens, the jib will make up for the canvas lost by reefing the courses. I know very well that the lower sails can be carried without being reefed when there is too much wind for the jib; but all this must be left to the judgment of the captain, who knows the powers and capacities of his own ship.

These observations shall be concluded with a narrative not perhaps out of place here. Among the many passages which it has been my lot to have made in ships is the following:—On the 8th of January I came along the coast of Catalonia with a tolerably fresh westerly wind. I made it a point to observe the weather on the way. Soon after noon I was in the gulf, the wind being W.N.W., blowing fresh; the barometer had fallen to 29·35 in., for several days it had been at 29·5 in. The large white clouds which came off the land as soon as they came to the gulf were scattered in a thousand fragments, and very soon were not to be seen. I expected it would blow hard, but hoped not to have a downright storm, and the wind being more favourable I determined on crossing. To do this, although I was near the shore, I tacked to get easting, and on standing off the coast, took a reef in the courses; I had already two reefs in the topsails and could take in the close reef without stopping. Everything being done, we got the starboard tacks down again, and at five in the evening Cape Creux bore W. 43° S. [W. 62° S.], seven miles. I stood due North, the wind did not head us in the least, but rather kept freshening. At eight I was obliged to close reef the topsails and was then in 42° 40′ and 3° 40′ E. I hesitated a moment, but the position which I had attained and the direction of the wind decided me. From eight in the evening I was able to face the wind, although it blew very hard for the sail which I carried; but the wind had changed little by little a whole point, and at midnight was N.W. I was then in 42° 59′ and 3° 51′ E. From this time to daylight the squalls were not so heavy; but the wind kept on shifting, and towards morning was very nearly North, although by seven in the morning I was in 4° 31′ E., in the latitude of Planier, the

reckoning corrected by the lead. Although I had not had the advantage of seeing the light of Saint Loup, I had yet passed within its range. The weather was clear, but the horizon too misty for seeing the light far, and from where I was the shore was not visible. It was not till a quarter after eight that I saw Faraman bearing about N.b.E. [N. ¼ W.], five miles. Half an hour after sunrise the wind kept on drawing northerly, but returned to N.W. I lost sight of the beach at less than two miles from me; at nine was obliged to take in the mainsail, and in entering the gulf of Foz was obliged to take in the topsails; but on the 9th at two in the afternoon I arrived at Marseilles in the midst of a veritable gale of wind.

(To be continued.)

ROUTE THROUGH TORRES STRAIT BY BLIGH ENTRANCE: *The Booby Island Post-Office.*

Sir,—Since I sent you an account of a passage through Torres Strait in 1860 I have made two other passages by the same route, by Bligh Entrance,—one during the last week in September, the other in the middle of May. I send you some notes made during each of those passages.

In September I found it tedious work, the winds light and variable, with strong currents. I got the ship on shore once, lost a stream anchor and cable, and broke a bower anchor while trying to purchase it. We were twenty-seven days from Port Phillip to Booby Island, and ten days from thence to sea, clear of Rotti. We left Port Phillip on the 1st September, and had northerly winds until the 10th; then westerly winds till the 12th, when we were in 28° S. During the next five days the wind was steady at N.N.W., blowing a fresh six knot breeze, giving us a dead beat, until the 17th, when we fell in with the Trade wind in 21½° S., 158½° E. I found that the ship did not work within 13½ points of the compass, the deviation on opposite points being 13° by azimuths carefully taken.

The S.E. Trade carried us pleasantly up to the Eastern Fields, but failed us there on the 22nd. We had light variable winds from S.W. to N.E. on the 23rd and 24th, with which we fetched up near Bramble Cay! About 11h. a.m. on the 24th, lat. 8° 57′ S., long. 144° 7′ E., we saw a line of discoloured water, with a strong, noisy ripple, stretching along E.N.E. and W.S.W. Found thirty-two fathoms with the lead and sailed into it. I suppose it was the edge of the tide.

It was calm from noon until 4h. p.m., when a gentle breeze came up from S.b.W. Made all sail, intending to go into the channel and bring up in seventeen fathoms. At 5h. 30m p.m. made Bramble Cay from the poop. At 7h. Bramble Cay S.W.½S. about six or seven miles, the ship going about 3½ knots and heading between W.S.W.

and West, the wind varying about two or three points. About 8h. p.m. it became very unsettled, with much lightning; heavy black clouds rising to the S.W. and appearance very threatening, the wind also freshening fast.

At 8h. 30m. tacked ship and stood out to sea again, under easy but commanding sail, steering E.N.E., the course opposite to that by which we came in. Midnight, had twenty-seven fathoms, mud; the night very dark, with much lightning. I then estimated Bramble Cay to bear S.W. eight miles distant. The wind by this time had again fallen light!

The deep sea lead was hove every half hour through the night, and the end of the log line made fast to the lead line at the thirty fathoms, so as to ascertain the course and distance sailed by the ground log. I made ample allowance for the tide and, to the best of my judgment, for everything else, so as to keep a correct dead reckoning through the night. Yet, notwithstanding this, at 1h. 30m. a.m. of the 25th, we made, during a flash of lightning, the rocks on Bramble Cay to the *N.E. of us*, when I supposed them to be eight miles to the *S.W. of us*. The ship was then in thirty-two fathoms water, rocky bottom.

I was afraid to let go the anchor,—first, because I was not sure that it would hold on the rocks; secondly, because I felt sure that I should have to slip from it if it did; and thirdly, because, from the glimpse of the land I had had through the lightning, I fancied there was room to wear the ship clear of them. The helm was put up and the yards squared to wear ship. She went off before the light air, and then would neither go one way nor the other. She did not appear to be getting nearer to the rocks, so I waited a little time, when she went round and we trimmed on the port tack. While hauling on board the main tack I heard the sound of water rippling on a reef. I ordered the helm hard down and threw all aback. Just as her way was stopped she came to the ground, at 2h. 45m a.m.

Knowing that it was just low water, I strained every nerve to have an anchor laid out smartly, that we might cant the ship's bow to seaward on the flood. The jibs were hauled down, yard and stay tackles sent up, and the longboat and gig hoisted out. I sent the chief mate away in the gig to sound for the best water; laid the head yards a box, and with the rest of the crew put the stream cable (a Manilla rope) and stream anchor into the longboat. The current was running very strong to the N.E.! The gig towed the long boat away to the E.S.E., and the anchor was let go in five fathoms about 5h. 10m. a.m. The stream cable was brought to forward and a strain hove on it. This strain and the head yards (with the sails set) lying a-box canted the ship's bow to seaward. We now set every stitch of canvas we could and commenced to heave ballast overboard, which we did with a will. About 6h. 30m. a.m. she just sailed off the reef the same as she went on.

When the stream cable became taut, after she had passed the anchor, it turned the ship's bow towards the reef again, so that I was obliged to have it cut adrift. The boats were both in and stowed by

7h. 30m. a.m. The crew behaved admirably. Putting the anchor n to the boat (she was not large enough to hang it to the stern) and getting it out again (it was 10½ cwt.) was, I think, one of the most ticklish things I have ever done; the night was very dark. The tide was running nearly three knots to the N.E. when we put the boats into the water, and at 6h. 30m. a.m., when we came off the reef, it was running strong to the N.E., although we could see that the water had risen considerably. When we floated the water just covered the sand between the rocks and the vegetated sandbank on Bramble Cay. The ship laid aground with the patch of black rocks on with the centre of the green bank, and the anchor was in five fathoms, a cable's length from her.

Having hoisted in the boats we ran to the northward and hauled into the great N.E. channel. At noon it fell calm; anchored in seventeen fathoms about six or eight miles West of Bramble Cay, in lat. 9° 6′ S., the bottom stiff mud. While at anchor here the tide set N.E.½E. 1·8 knots, by log, from noon nntil 6h. 30m. p.m.; then the ship swung to East and E.N.E. until 9h. p.m.; at 9h. p.m. she swung to N.E. There was very little tide when her head was from East to N.E. At midnight she swung to West; at 12h. 30m. to S.W.½W.; and the tide again ran strong to N.E. until 6h. 30m. a.m., when the ship swung athwart and we hove up the anchor and proceeded. I think that the tides in the vicinity of Bramble Cay are not well known. It may be found that freshes from the rivers in New Guinea neutralize or even counteract the regular tide, as far as surface current is concerned.

There is a great difference in the appearance of Bramble Cay at high and low water. When seen at high water it appears as a small, vegetated sand cay, with a fringe of white sand round it, shoal water running out some distance from it, and a reef stretching out to the S.E., on which stands a patch of black rocks one-third as large as the cay. At low water it appears as a sandbank very much larger, with a small green patch on the N.W. end of it and a large patch of black rocks near the S.E end. My ship was aground in twelve feet water, about 200 feet from the dry sand. I mention this on account of some remarks I made in a previous letter on the same subject, and also because, unfortunately, I have had a better opportunity of looking at the configuration of this place than most other persons have.

26th.—We started at 6h. 30m. a.m. with faint variable airs, and at sunset prepared to anchor between Dalrymple and Marsden Islands. When the starboard anchor was let go a kink in the chain jammed in the hawse-pipe, and we were not able to heave it back with the windlass; we then let go the port anchor, but its cable got jammed under the windlass, between it and the deck. We were thus in a pleasant situation,—in a narrow channel, with a fresh breeze and a strong tide, a dark night, both cables jammed, and neither anchor on the bottom; besides this the sudden check given to the port cable had thrown the anchor across the starboard chain. I had the port cable stoppered before the windlass, and ordered the carpenter to cut a hole in the

deck under the windlass, so as to clear the cable and set the windlass free. We then rove a three-fold purchase, clapped a heavy luff tackle on to it, put the purchase on the starboard cable, and by main strength hove the kink in from the hawse-pipe; stoppered and cleared the cable, and brought up in seventeen fathoms.

We had a heavy heave with our two anchors on the 27th, but were down to Cocoanut Island at 2h. 30m. p.m. I again steered down close to the wind, passing East of the Three Sisters and their outlying dangers, making about S.b.W., by compass, until Saddle Island came on with Sue Islet; then steered S.S.W.½W. for the dry sandbank South of Poll Island, and just cleared the eastern end of the reefs off all Three Sisters. I passed in mid-channel between Poll and the dry sandbank and expected to fetch an anchorage under Double Island; but the wind fell light, and I was obliged to anchor between the island and Harvey Rocks. Through the night it came on to blow fresh and kicked up a jumbling sea.

27th.—A fresh breeze. Having hove short we were not able to purchase our anchor. While considering whether to slip from it or not it broke out; hove it up and found one fluke broken off. Made sail for Prince of Wales Channel. Having rounded Hammond Rock, I hauled in to make the paddle-wheel of the *Phœnix*, but did not see anything of it,—so that mark for the N.E. end of Ipili Reef is gone. My chief-mate, who was aloft while going through this channel, was deceived by the rippling of the tide off Hammond Rock and was shouting out about shoal water. When I hauled in to bring Double Island on with Hammond Island he became alarmed at the ripple near Ipili Reef, and if I had paid any attention to his "Hard up," &c., we should have gone over to the other side, and it is extremely probable should have placed a beacon on the sunk reef that for a few years would have marked its position as well as the *Phœnix* did the Ipili Reef. As my own mate was deceived going through, I can easily fancy that other strangers may be. At 1h. p.m. we were clear of Good Island, and at 2h. 15m. hove to and sent the boat on shore to the Post-Office at Booby Island.

H.M.S. *Pioneer*, had been there three weeks before, with His Excellency Sir G. F. Bowen on board, and had left an iron case for a post-office, and some letters to be carried on by the first ship that passed. I had the pleasure of taking said letters on, and handing them over to the post-office boat at Kedgeree. I at the same time took the liberty of writing to H.E. Sir G. F. Bowen, pointing out the advantage that would arise to the safe navigation of the Prince of Wales Channel if two buoys were laid down in it—one on the end of Wednesday Spit, and the other on the N.E. end of Ipili Reef. The buoy on Wednesday Spit would be useful for ships arriving at nightfall off Ince Point, to lead them to a safe anchorage. If there had been one there I should not have anchored near Harvey Rocks, but gone on, feeling certain of finding the buoy on a clear night.

My brother, Thomas Kennedy, was off Booby Island the day before the *Pioneer*. His boat landed and placed a notice in the book

I left there in May, 1860,—my entry being the first and my brother's mate's entry being the last. I did not land myself or I should have taken the notice-book and forwarded it on to you. The boat did not return to the ship until 5h. 30m. p.m., by which time we were about nine miles to the westward. I watched the boat on the beach with much anxiety, until at last I saw her afloat and wore the ship round ready to hoist her up. After wearing ship we could not discover any boat, and for some time I was afraid she had capsized. At last we saw her from the royal-yard. When she came alongside the mate told me that he did not think he had been so long away from the ship.

When I arrived at Calcutta I received a letter from my brother. He also hove the ship to and sent his chief-mate on shore, with my brother's only son forming one of the boat's crew. The mate said he was accustomed to boat sailing, and induced my brother to allow him to take the lug sail in the boat. After leaving the island the mate set the boat's sail, and a few minutes afterwards allowed it to fill, and of course the boat was over in an instant. The ship was in the act of wearing when the boat capsized, and consequently was far to leeward when she came to the wind. My brother had lost a quarter-boat, davits and all, on the passage out; so he had to get up yard and stay-tackles and hoist out a boat from the skids before he could send assistance. But, thank God, all who were in the boat were saved. If I ever communicate with Booby Island again I shall always anchor.

I crossed the equator in 88° E. on the 26th of October, and made the Andamans on the 2nd of November. I did not arrive at the Sand Heads until the 29th November. I worked up the bay, between 88° 30′ E. and 92° E., with light winds from N.N.E. to N.E., and did not furl a royal but once after crossing the equator. I was informed by one in Calcutta, supposed to be an authority, that I did not keep sufficiently to the eastward, and therefore made such a long passage. When I showed him my track chart he did not show me where I could have found room for the ship to float further to the eastward.

I had to put the ship in dock in Calcutta, and to put a new keel into her. I there gained a little experience that at some future time I will impart to you, in hope that it may benefit some unfortunate stranger as little acquainted with the place as I was then.

I left the Sand Heads on the 25th January, 1863, bound to Melbourne. Had fine weather down the bay, but very heavy westerly and S.W. gales within 2° of the equator in South latitude. I never had so much rain before as between the equator and 17° S. In the neighbourhood of the Keeling Islands the weather was very dirty, blowing hard, with very confused sea and low barometer. This was within a few days of the time that the hurricane was at the Mauritius. I arrived at Melbourne on the 1st of April, and sailed for Calcutta again on 28th, in company with the French ship *Vellore*, Captain S. Didier, *viâ* Torres Straits.

We had favourable weather as far as Kenn Reef; but there had a strong southerly gale with thick weather on the 11th and 12th of May. We did not have any current previous to this time, but during this

breeze we experienced fifty miles of current to W.b.N.½N. in thirty-six hours. This may show the necessity of caution in the Coral Sea. We made Bramble Cay on the 16th, and anchored between Marsden and Dalrymple Islands.

When we sailed next day we followed the same track I had pursued twice before. I prefer going to the eastward of the Sisters because there are good anchorages at short stages. I was leading the *Vellore* this day, and paid particular attention between Cocoanut Island and Poll Islet. I made S.b.W. good from Cocoanut Island until Saddle Island came on with the middle of Sue Island. We were then just clear of the dry sandbank running out from Bet; and the grassy sandbank S.S.W.½W. until Saddle Island was well open South of Poll Island put us in a fairway between Poll and the dry sandbank. I had the lead hove very carefully and quickly while running between Poll and the dry sandbank, as Acker Shoal is marked between those two places. I passed about three-fourths of the distance from Poll, keeping near the sandbank, and carried nine fathoms most of the time. I had one cast of seven fathoms, three casts seven and a half, and about a dozen eight fathoms; the rest of the time we had a half eight and nine fathoms. I anchored at sunset under Double Island.

Next morning we ran through Prince of Wales Channel and at 11h. a.m. anchored near Booby Island. I went on shore in company with Captain Didier, and in the "post-office" found a notice from Captain Robinson, of H.M.S. *Pioneer*; also letters left by the same ship. She had passed only seven days before, *en route* for England, *viâ* the Cape of Good Hope. It is rather singular that I should twice have called at Booby Island a few days after the *Pioneer* had left, and both times find letters left there by her to be forwarded, which I carry on,—and thus had the honour twice to forward letters to His Excellency the Governor of Queensland from his most outlying post-office.

Finding the notice-book I left in 1860, I brought it away with me, and forward it on to you. There are two notices in it which I think ought to be preserved in the *Nautical Magazine*,—one from Captain Denham, R.N., of the *Herald*, when he was finally leaving the scene of his arduous labours; the other from Captain Norman, of the colonial war steamer *Victoria*, when returning from the Gulf of Carpentaria after having landed and started Landsborough's exploring expedition in search of Burke and Wills. Both those notices are in pencil.

The cave was in a state of great confusion, many of the casks and cases being rotten and falling to pieces. It was late in the day or I would have cleared it up. I copied from the notice-book the remarks made by ships passing this year, and Captain Didier took them on to Batavia in the *Vellore;* in case they miscarry I sendyou a copy of them:—

23*rd April*, 1863.—Arrived at Booby Island, ship *Devonshire*, from New Zealand bound to Calcutta. All well. Left a supply of stores. Signed by chief-mate.

24*th April*.—Barque *Wressle Castle*, of Goole, and ship *Agra*, of

London, from Sydney for Point de Galle. Came by Bligh Entrance, twenty-three days' passage. Had heavy N.E. gales for four days off the coast of New Guinea. Passed six ships at anchor off Cocoanut Island.

10*th May*.—H.M.S. *Pioneer, en route* to England, *viâ* the Cape of Good Hope.

Shortly after we were under way we saw a brig beating to the eastward, evidently bound through the straits to the eastward. I have not changed the opinion I formed in 1860 with regard to ships making the passage from Singapore and the Bay of Bengal by Torres Straits and Bligh Entrance during the westerly monsoon; on the contrary, I am confirmed in it. There is but one thing to stop it, viz., the extra premium for insurance, but in a few years that must be given up.

I heard some captains of foreign merchant ships talking about the Dutch forming a settlement near Cape Possession, in New Guinea, and also claiming the Darnley and neighbouring islands. I suppose that the whole of those islands belong to Queensland—at least, I hope so; for I suspect that a fort on Dove Islet and another on Cocoanut Island would not be very agreeable to us if they were garrisoned by Dutch troops, or even with the troops of our "august ally."

Any stranger going East of the Three Sisters will find that Saddle Island just touching Sue Isle will lead close to the S.E. end of the sand running S.E. from Bet Island. In 1860 I spoke so confidently of the safety of the N.E. channel in my letter to you, that I considered it better to inform you that I had made an unfortunate passage afterwards. My opinion of the safety of the channel is not changed.

I am, &c.,

JAMES B. KENNEDY, R.N.R.

To the Editor of the Nautical Magazine.

P.S. I was nineteen days from Melbourne to Booby Island, and was twenty hours under sail from Bramble Cay to Booby Island.

Extracts from the Booby Island Notice-Book.

H.M.S. *Herald* touched here on the 3rd of October, 1860. Left plenty of provisions in store for the *careful* use of the distressed. *Herald* had a very prosperous course of work, completing the chart of the Coral Sea since she left Sydney on the 17th August. Had the satisfaction of defining the Bowen Reef; touched at Raine Island, where she also left plenty of provisions. Made the middle passage from Raine Island to Mount Adolphus Island.

Found Flinders Reefs to extend fifteen miles northward of those laid down. Called it "Herald's Surprise."

If this is noticed by a ship going to Australia, Van Diemen Land, or New Zealand, please to take and post the accompanying letter to Postmaster-General of Sydney.

H. M. DENHAM, *Captain.*

H.M.C.S. *Victoria* arrived here, *en route* for Victoria from the Albert River, February 15th, 1862. Rockhampton and Queensland Expedition started on tracks of Burke found on banks of Flinders River. All were well.

W. NORMAN.

THE WRECK REGISTER AND CHART FOR 1862.

That fearful blot in our maritime character, the wrecks of our mercantile marine, is again placed in dark dismal characters before the world,—displaying by their unmistakeable number the dangerous coast which they had to navigate. In the first number of this journal we commenced this painful subject, and diligently continued our record of wrecks every month, now more than thirty-two years ago, until we saw it adopted by the *Shipping Gazette*, and afterwards by the Life Boat Institution. We were then in our noviciate, little dreaming that the number would go on increasing instead of diminishing, as a reference to our first volume, in 1832, will show. The late Admiral Washington was a warm friend of the wreck register, and rendered much service to the subject in keeping it before the world. But his services, valuable as they were, had been preceded by those of the *Nautical*, for full oft long before he began, had our indignation and regret that such things were, been expressed in no measured terms in these pages. We did not know, as we learnt then, that such sacrifices were a component and apparently an essential part of our system,—a certain consequence of that necessary ordeal through which that part of our maritime affairs has to pass. And here is another year's result to be added to the many that have gone before it,—and we must suppose still, as we have too often, that

"What England will not cure
England must endure."

The *Lifeboat* journal says:—

In accordance with our annual custom for many years past, we again present our readers with a synopsis of the returns just made by the Board of Trade to Parliament, of the wrecks and casualties which have taken place on the coasts, and in the seas, of the British Isles during the past year.

It may here be observed that the materials from which these valuable documents are compiled are derived from reports furnished by the officers of the coast-guard and receivers of wreck, resident on the shores of the United Kingdom.*

* It is only due to the memory of the late Admiral Washington, F.R.S., Hydrographer to the Admiralty, to state that he originated about ten years ago the compilation and publication of an annual Wreck Register of the British Isles, accompanied by a Wreck Chart. His services to the lifeboat cause,

When we remember that the number of vessels which entered inwards and cleared outwards from different British ports in the course of the past year was 268,462, and that these ships had on board, probably, 1,610,000 men, it becomes almost a matter of certainty that a large number of casualties should take place amongst them every year.

The coasts of the British Isles extend upwards of 5,000 miles, and on looking at the Wreck Charts which accompany the Register, it is observed that there are few parts of that continuous shore which are not studded with the usual wreck marks; and thus it is that on nearly every page of the Register this startling fact constantly presents itself —that during the year no less than 1,827 wrecks and casualties took place on our coasts, with the loss of 690 lives!

Compared with previous years the Register informs us that the wreck experience of the past year is very unfavourable. But the number of lives lost is fortunately considerably under the average, owing chiefly to the valuable and prompt services of lifeboats and other means employed on occasions of wreck on our coasts.

The wrecks and casualties in the year show a large increase on the average of those during the preceding eleven years. The number of wrecks in the last eleven years was 13,657, while the total voyages made to and from British ports in that period was 2,745,910,—so that one ship was wrecked out of every 201. During the past year, as previously stated, the number of voyages of vessels to and from ports in the United Kingdom was 268,462, and out of this large number 1,827 casualties occurred,—or one in every 147.

In the past eleven years, from the above wrecks 8,775 persons were lost, or nearly 800 each year. Last year, it appears from the returns, that the lives of 4,629 persons were imperrilled on the coasts of the British Isles, of which number 690, or 14·59 per cent. were lost. The wrecks and disasters for the year 1862 may be thus classed:—

	Vessels.
Totally wrecked	455
Seriously damaged	695
Totally lost in collision	66
Damaged seriously by collision	272
Injured by collision	339
Total	1827

This number of disasters for last year is at the rate of five per day. The number in each month of the year is thus given:—

January	221
February	117
March	163
April	87
May	77

in conjunction with the Duke of Northumberland, President of the National Lifeboat Institution, were also of the greatest advantage to the cause of humanity. His labours in that respect will long be remembered in the homes of our sailors and fishermen.

	Vessels.
June	75
July	94
August	66
September	75
October	346
November	179
December	327
Total	1827

It will thus be seen that the months of January, February, March, October, November, and December, have been the most destructive to ships.

The startling facts which the Wreck Register discloses each successive year, have succeeded in drawing general public attention to this important subject, and frequently it is referred to in Parliament. On a recent occasion, when Lord Ravensworth alluded, in the House of Lords, to the necessity of constructing harbours of refuge on the N.E. coast, he caused to be suspended in their lordships' library a large Wreck Chart lent by the National Lifeboat Institution.

The fearful scenes represented on that chart naturally excited their lordships' attention. Indeed the dreadful havoc which storms commit every year in the seas and on the shores of the British Isles can only be fully realized by the aid of such a chart. It will be observed from the accompanying Wreck Chart that the position of each casualty is distinctly marked.

It is, however, satisfactory to find that the publication of the Annual Wreck Register of the Board of Trade, and other means of publicity, have materially contributed to the establishment on our coasts of a system of lifeboats and life-preserving apparatus which reflects the greatest credit on the philanthropy of the age in which we live, and on the energy with which these means have been placed on our shores, by the joint action of the National Lifeboat Institution and the Board of Trade.

Amidst the desolating scenes which the Wreck Register and Chart reveal, it is consolatory to know that by means of lifeboats, the life-preserving apparatus, ships' own boats, and other means, 20,158 lives have been saved from a watery grave during the past seven years, as the annexed list shows:—

	Lives saved.
1856	2,243
1857	1,668
1858	1,555
1859	2,332
1860	3,697
1861	4,624
1862	4,039
Total	20,158

The following is a summary of the means used in saving the 4,039

lives from wrecks on the coasts of the United Kingdom during the past year:—

By lifeboats	327*
By rocket and mortar apparatus	310
By ships' own boats, shore boats, steamers, &c.	3389
By individual exertion	13
Total	4039

As usual, ships, ships' boats, and smacks, have saved more lives in that period than the lifeboats and the rocket and mortar apparatus. This apparent discrepancy is susceptible of easy explanation. When a disaster takes place in British waters, it frequently happens that either a ship or smack is fortunately at hand to render assistance to the crews of the distressed vessels. Such help is seldom attended with any very great danger (although sometimes it is so), and the men are often brought ashore before any tidings at all have reached a lifeboat station. But the great value of the services rendered by lifeboats can only be appreciated by considering that they are mostly performed on occasions when no other craft could be launched from the shore with safety.

Schooners and brigs were, as usual, the most numerous description of vessels that were lost during the past year on our coasts. These are usually employed in our coastiug and coal trade, and the destruction of hundreds of them, even in moderate gales, is now reduced to a matter of certainty.

In December last seven vessels foundered off the East coast of England—with the loss of all hands—while engaged in coasting voyages. One of them was a collier sloop seventy-one years of age! Another collier brig also foundered in October last, and seven out of nine of her crew were drowned. She was ninety-nine years old!

The following is an analysis of the tonnage of the ships lost last year:—

	Vessels.
Vessels under 50 Tons	341
51 and under 100 „	441
101 „ 300 „	784
301 „ 600 „	186
601 „ 900 „	44
901 „ 1200 „	20
1201 and upwards	11
Total	1827

The cargoes of these vessels are thus made up:—

Coals	593
Ballast, not colliers	165
Colliers in ballast	128
Metallic ores	113

* This number does not include shipwrecked crews, who, with their vessels, were safely brought into port by lifeboats.

	Vessels.
Grain, oatmeal, flour, and provisions	109
Stone, slate, &c.	100
General cargo	93
Timber or bark	89
Fishing smacks	84
Various, or unknown	353
Total	1827

The most destructive gales of wind were those that blew from S.W., S.S.W., W.S.W., and N.W.

We find that the ages of some of the vessels that were hurried out of existence were as follows:—

	Vessels.
Under 3 years	122
3 and not exceeding 7 years	271
8 „ „ 10 „	131
11 „ „ 14 „	155
15 „ „ 20 „	216
21 „ „ 30 „	266
31 „ „ 40 „	125
41 „ „ 50 „	59
51 „ „ 60 „	25
61 „ „ 90 „	14
91 „ „ 100 „	1
Unknown	442
Total	1827

We also remark that, in perfectly calm weather, 23 vessels were wrecked; in light airs, 28; in light breezes, 56; in gentle breezes, 43; in moderate breezes, 110; in fresh breezes, 187; in strong breezes, 195; in moderate gales, 75; in fresh gales, 170; in strong gales, 199; in whole gales, 218: in storms, 63; in hurricanes, 69; and in unknown and variable weather, 52.

We moreover observe that 321 vessels were wrecked that were under the command of masters holding certificates of competency; while 720 were wrecked that were commanded by others who were not required by law to hold such certificates; and 266 that were commanded by foreigners not having British certificates.

We observe that of the total wrecks during the past year on our shores, irrespective of collisions, 60 vessels foundered; 41 vessels were driven or run on a lee shore; 66 parted their cables or dragged their anchors and went on shore; 40 were wrecked from damage to hull, or the loss of masts, yard, or sails; 3 were actually capsized; 72 were wrecked from inattention, carelessness, or neglect; 25 from defects in ships or equipments; 7 from a combination of causes, while 18 arose from accident.

Of the total wrecks that took place from collisions, 18 were from bad look out; 22 because the rule of the road at sea was not observed; 1 from want of sea-room; 4 in thick and foggy weather; and 4 from neglecting to show lights: but it is worth observing that only one

collision with total loss occurred from the error of the pilot who was on board; 4 occurred from negligence and want of caution.

It is also a lamentable fact, in regard to collisions, that 141 took place in fine and clear weather; the whole number of collisions during the year being 338,—102 in the day time, and 236 in the night. Last year 11 collisions occurred between steamers, and 190 between sailing vessels, while both were under way; 32 collisions also took place between sailing vessels one being at anchor and the other under way at the time; but no collisions occurred between steamers under these circumstances; 46 collisions likewise took place between steamers and sailing vessels, both being under way; and 6 only when sailing vessels at anchor were run into by steamers; 53 collisions also occurred by vessels breaking from their anchors or moorings. We earnestly trust that the admirable regulations which the Board of Trade have just published to prevent collisions at sea will materially tend to lessen the number of these fearful disasters.

The sandbanks which have proved most disastrous to vessels during 1862 are the

	Vessels wrecked.
Long Sand	17
Newcome Sand	11
Kentish Knock Sand	10
Gunfleet Sand	10
Scroby Sand	8
Hasbro' Sand	8
Goodwin Sand	6
Barrow Sand	6
Blakeney Sand	6
Corton Sand	6
Shipwash Sand	5
Sizewell Bank	5

The most disastrous wrecks, with the greatest loss of life, occu between that part of the coast extending from Skerries and Lambay to Fair Head and Mull of Kantyre. During the past thirteen years 1,641 lives were lost in that district. The next is from the North Foreland to St. Katherine's Point, which during the same period claims 1,136 lives.

The estimated loss of property involved in the destruction of a portion only of the vessels wrecked in the last six years, amounted to four and a half millions of pounds sterling, although the total amount, being unreported, cannot be ascertained; but who can appreciate the value of the precious lives lost in those terrible disasters, except those at our seaports and fishing villages who are now widows and orphans or friendless, who have bewailed with unutterable anguish the loss of a husband, father, or near relation.

On the other hand it is most gratifying to find that in these six years 4,169 lives were rescued from the jaws of death by lifeboats and life-saving apparatus *alone*. It may be proper to observe that these

means of saving life are rarely used except under the most perilous circumstances.

One can hardly conceive a more pitiable sight than a noble ship stranded on a sandbank during a gale of wind, with her crew in the rigging, or firing minute-guns as signals of distress, so that they may obtain help from the shore. On observing these signals the crew of the lifeboat immediately put off. Indeed we know of no spectacle more sublime, or more calculated to send the blood thrilling through the veins with admiration and awe, than the cool determined courage and the lively charity that sends these poor and often half-starved fisher-fellows out in the dark night, in the midst of bitter frost and snow, into a tumultuous sea and surf, hungry for their bodies, in the very teeth of a furious wind, with death threatening them on all sides, and nothing but their coolness and skill to rely upon to preserve their own lives, to say nothing of the lives of others,—leaving wives and families of little ones at home who may never see them in life again. What stout hearts those must be as, yard by yard, they struggle away from the dim shore, lost in an obscurity of scud and surf, and snow, thinking of nothing but their duty,—the errand of mercy and charity before them,—through the raging tempest,—winning their way, though seas that to the landsman are fearful to gaze on, even from the safe standing on the beach, momentarily threaten to overwhelm them! Out further and further yet into the dark void a speck on the waters. Another flash of the minute-gun points out where the vessel is lying aground upon a shoal, the sea making a clean breach over her, and the scud and spray flying sheer over her mastheads, which threaten to go every moment. Stand to it, stout hearts! a few more minutes of the heavy toil and the boat will be well into leeward of the wreck, when the most dangerous part of the whole operations will commence; for there is danger of her being stove in momentarily, either by contact with the wreck itself, or with the floating spars which may be hanging loosely around her. The relief of a wreck is no mere child's play,—it often occupies hours of hard, dangerous, and unremitting toil. It is no mere sudden flash of generosity that is required,—no enthusiasm burnt out as soon as kindled; but that steady undaunted "pluck" which distinguishes frequently the highest as well as the lowest class of Englishmen in times of danger. How important then is the work of the National Lifeboat Institution in providing these messengers of mercy on our coasts, and in encouraging noble deeds of daring in the rescue of our fellow-creatures from an awful death!

It may be interesting here to recapitulate briefly the operations of the National Lifeboat Institution, which has now 125 lifeboats under its management. During the past year, in addition to saving twenty-one vessels from destruction, 358 lives were rescued by the lifeboats of the society. For these services rewards amounting to £915 18s. 1d. were voted. The number of lives saved by the lifeboats of the society, or by special exertions for which it has granted rewards, since its formation, is 13,220. For these services 82 gold medals, 733 silver

medals, and £17,200 in cash, have been granted as rewards. The institution has also expended £75,380 on lifeboats, lifeboat transporting-carriages, and boat-houses. Surely a society which has thus been productive of the greatest services in the cause of humanity will not have to appeal in vain to the public for help to enable it to continue its merciful work on our dangerous sea-board!

THE SEA COASTS BETWEEN ANTWERP AND BOULOGNE.—*Inundations from Storms on the Shores of the Low Countries.—Changes in the Scheldt.*

(Continued from page 492.)

We shall not undertake to describe all the inundations recorded in history. This succession of scenes always alike, always equally fatal, wears out the susceptibility, and therefore can only be spoken of with seriousness. We shall therefore confine ourselves to mentioning them in a summary way, pausing only at those whose effects have been most terrible, and the consequences most disastrous.

It does not appear that many of these inundations happened during the first centuries of the Christian era, at least we do not find many mentioned even until the ninth. In 820 the sea broke through the dykes, or rather the extraordinary tides and excessive rains caused considerable inundations during the months of July, August, September, October, and November. The terrified inhabitants imagined a deluge was impending, and fled to the heights. A few other inundations, amongst which that of 860 was the most fatal, took place during this century.

The Vertinian Annals record that on the 26th of November, 839, a most furious tempest rose on our coasts, inundated all Friseland, and overthrew 2,437 habitations, rising almost to the height of the downs. This last circumstance, if true, would be sufficient to bring the sea into the whole of this sandy plain.

The eleventh century witnessed many of these disasters in Flanders and Zealand, and is especially remarkable for a series of these events, which succeeded each other during the first part of that period. The chronicles show that there were inundations in the years 1003, 1014, 1015, 1016, 1017, and 1020; some in 1041 and 1042, and lastly in 1086 and 1100. In the twelfth century these misfortunes did not diminish, and the inundations became so terrible that the Flemish people quitted the whole coast. Under Robert II., in 1105, 1109, and 1112, these disasters, joined to a pestilence, probably a fever caused by the clay spread by the sea over the land, obliged them to have recourse to Henry I., King of England, who permitted them to live in the county of York, from whence they afterwards were transferred to Wales, near Ross and Pembroke, where their descendents may be yet

found. Other emigrations took place in the same century into different parts of Germany. According to Helmade, a cotemporary author, quoted by De Baste, they were chiefly those unfortunate people exposed to the overflows of the sea whom the German princes easily persuaded to quit their country and repair to Germany.

We notice particularly in this century the inundation of the 16th of February, 1164, called the tide of St. Julienne, because it was on this saint's day: and that of the 1st of November, 1170, called the first tide of All Saints' Day. They were the occasion of thousands of men and animals perishing both in Holland and Friseland. It is said that this last overflowed the lands between the Texel, Medeublik, and Stavoren, which have since remained under water, also that it formed the isles of Texel and Wierengen, which till then had formed part of the continent, and that the Zuiderzee, by an enlargement of the mouths which communicated with the North Sea, became deeper and more extended. But they are wrong with regard to the formation of the Texel, which is mentioned as an island in the records of the ninth century.

From 1172 to 1177 no year passed without inundations. That of 1177 is especially remarkable for having caused the formation of the gulf between Oost-Friseland and the province of Groningen, known by the name of Dollaert.

The ocean after these numerous tempests appears to have had more respect for the coast, which till then it had so cruelly devastated. During nearly thirty years no new misfortunes happened; but this was but a deceitful calm, for after having in the year 1200 given warning of a similar calamity, in 1212 the sea again overflowed its bounds with such impetuosity as to cause the death of a great number of men in North Holland alone.

Numerous tempests followed, and during the thirteenth century we find at least thirty-five, all fatal to Friseland, Holland, Zealand, and other neighbouring countries bordering on the sea. From the nineteenth year of this century the sea ravaged these coasts. The inundation of 1221 cost the lives of 40,000 people; those of 1230 and 1242, 100,000 each; that of 1287, caused the death of 80,000 in Friseland alone. Nearly all the other provinces were equally marked by the death of thousands of people, while the loss of cattle was incalculable. The fourteenth century showed no abatement of these calamities. The little work of M. Muyt, which we have followed as our authority, tells us that during this century of twenty-three irruptions of the sea, which, however, did not cause such loss of life, as in the preceding century, but which nevertheless ruined many villages, overthrowing churches, towers, and dwelling houses, and invaded the whole territory, covering it with sea water. This took place principally in 1336, 1361, 1372, 1373, 1374, 1375, 1376, and 1377.

The flood of 1395 considerably enlarged the openings between the Plie and the Texel. The openings afterwards enlarged to such an extent, during the last year of this century, that from that time larger vessels have been able to reach Amsterdam and Enkhuizen, which till

then could not be done. It is to those innumerable calamities, resulting from the effects of this enlargement, that Amsterdam owes the flourishing condition to which she attained during the following centuries. In the fifteenth century, on the 19th of November, 1421, that terrible overflow of the Meuse took place, which inundated seventy-two villages or hamlets, some of which were entirely destroyed, formed the Brisbosch, cost the lives of thousands, and reduced the most wealthy to want. Twenty-three other overflows of the sea or rivers mark this century. As in the preceding one this misfortune was repeated during several following years, namely, from 1415 to 1430.

A very remarkable effect of the flood of 1421, if true, was the removal of the town of Dordrecht and the ground on which it was built to some distance from its former site. This singular effect occurred several times at other places, and also during the inundation of the 30th of April, 1451; a pasture near the town of Sneek, in Friseland, on which some sheep and swine were grazing, was overrun by the current, which was stopped by the remains of a dyke, which it partially destroyed. We cannot explain these transportations otherwise than that the ground must have slipped into the turf found in these regions. The same happened in 1806, when a portion of the fortifications being raised at Ostend gave way, falling on the bed of turf beneath. We thus reckon thirty-two inundations during the sixteenth century.

A fresh series of inundations now commenced, which began at the close of the preceding century, and having marked the years 1495, 1497, and 1499, continued during the first years of this century, recommencing in 1503, 1508, 1509, 1514, 1516, and 1517. During the flood of 1509 large portions of land, covered with houses, cattle, and people, were transported in Friseland from one place to another. A pasture, on which ten or twelve cows were grazing, was carried away from one side of the Dollaert to the other, in the province of Groningen, and attached itself to Reiderland, after traversing the entire gulf without losing any of its inhabitants.

The years 1530, 1533, and 1534 were remarkable as those in which the inhabitants of these coasts were overwhelmed with considerable calamities. These misfortunes, after twenty-eight years of repose—with the exception of 1551 and 1559,—appear to have reappeared with similar vehemence in 1562, 1565, and 1566, if we may put faith in the coins struck in Zealand at those epochs.

The most frightful of these calamities was that of the 1st November, 1570, when the whole of the coasts from Calais to Norway were ravaged by an awful storm. About 3,000 people lost their lives in Zealand, 20,000 in Friseland, and nearly 9,000 in the province of Groningen. Besides this, entire villages perished with their inhabitants, and we may reckon more than 100,000 victims to this flood. The sea was so high that it rose above all the dykes and downs. At Antwerp a laden vessel, 150 feet in length, floated on the quay. Ghent was partially inundated by the Scheldt, and all the maritime towns and villages suffered considerably. During this tempest por-

tions of land scattered with houses and cattle were floating about, chiefly in marshy places.

During the seventeenth century twenty-six inundations took place, fifteen during the first part and eleven in the second. They presented the same desolate scenes—broken dykes, trees, houses and towers overthrown, many people and domestic animals drowned, and incalculable loss in agriculture and commerce. The 5th December, 1665, has been especially noted. Some days previous and during the tempest the N.W. wind was so violent that the water continued to rise for two or three hours subsequent to the usual period of the tide, to such an extent that no similar case had been known to happen before.

The eighteenth century only registers ten overflows of the sea, but in revenge the rivers of Holland overflowed five times, from heavy rains and thaws, from the sixtieth to the ninetieth year of this century. Of the ten overflows of the sea seven took place during the first part of the century and only three in the second; by which we see that these misfortunes gradually diminish. The most remarkable took place on the 25th December, 1717. The water being driven during several days from the ocean into the North Sea by a violent S.W. wind, caused the inhabitants to fear an overflow, on account of the great height to which it had risen. This soon took place. The wind having changed, and blowing furiously from N.W., more than 12,000 persons were drowned on the coasts of Holland and elsewhere; while nearly 83,000 head of cattle perished.

The floods of 1774 and 1775 were equally formidable. The former as much from the height to which the waters rose as because it took place in the month of May, the history of the different inundations of the sea only giving this example and that of the 1st June, 1003, of floods at this season of the year. The second extended its ravages into Brabant, Zealand, and other maritime provinces, or those on the Zuiderzee. The waters of the sea rose in many places higher than those of 1717. The following year did not pass without the same misfortunes.

The nineteenth century only shows two great overflows of the sea, that in January, 1808, and that of the 3rd and 4th February, 1825. The first was chiefly felt on the coasts of Flanders and Zealand, where it did great damage to agriculture. The second exhausted its fury from the Strait of Dover to Norway and Sweden. These disastrous effects are spoken of generally.

If we are right with regard to the formation of the islands of Zealand,—if the Scheldt really flowed into the Meuse in the time of Cæsar,—these islands must then form part of our subject, and we must consider the changes they have undergone since their formation. The sea formerly must have covered all these lands and formed numerous creeks, which for a greater or less time must have rendered this country entirely uninhabitable. But the clayey substance continually deposited by the sea in parts situated beyond the reach of the currents, where the waters are more or less quiet, will quickly have dried up the more elevated parts of this inundated land.

Soon, some nation, deprived of her possessions by another nation, and forced to seek a home in some desert land, will have possessed herself of new isles, offering to her flocks abundant and choice pastures. But these lands were then too low to be entirely sheltered from the tides: it became necessary to form shelter for themselves as well as for their flocks. To form dykes was impossible to the wretched inhabitants of these miserable parts; such labour could only be executed under a government of certain importance and rich enongh to meet the necessary expense, or to nominate individuals to whom these lands might be conceded for reclaiming. In former ages each would think of his own safety, and each family, according to what had been previously done, as Pliny relates, would have formed a mound of earth above the high tides on which to take refuge in case of danger. Hence those hills found in such numbers in the islands of Zealand, especially in Walcheren, Schouwen, and Tergoes. But even these hills have been visited by the sea, since we do not find at their bases any trace of the digging undertaken for the soil of which they are formed. This may show that such excavations have been gradually filled by the clayey sediment which the sea continues to deposit.

It is not possible to fix the date at which the construction of dykes was begun, Boxhorn thought that the first dykes were made by the Danes or Normans during their invasion of these islands in 836. But Smallegange is decidedly opposed to this opinion, and shows that these islands were then ruled by princes of the country, and consequently already sheltered from the sea. The ancient records of Zealand tell us that from the year 833 the islands of Walcheren, Schouwen, and Borsselen were not only shelterd by dykes but even covered with villages. As to the islands of Duiveland, Noord-Beveland, Wolfertsdyke, Zuid-Beveland, and Tholen, they were not defended against the encroachments of the water till the year 850.

At whatever time the first dykes were constructed they were, apparently, not very strong, for only the most elevated lands were enclosed; besides which the waters surrounding the islands of Zealand were not then so high as at present. This difference of height has been remarked by all authors who have written on Zealand. All attribute it to the enlargement of the mouths of the Scheldt. This enlargement is steady, and the consequence has necessarily been the elevation of the level of the sea; for we can conceive that when these openings were very narrow they could not afford a passage during the tides to a sufficient quantity of water to establish an equal level at all parts of its mouths, and the fall of the whole must have been considerable. But in proportion as, by the effect of the waters, the openings were enlarged, this rush of water must have diminished, and the lands formerly sheltered from these inundations were again exposed to them. Thus it happens that the island of Schouwen was, in the time of Smallegange, three feet below the high tides, even of the lowest tides. This author attributes this to a second cause, namely the sinking of the soil, which by succeeding ages was hardened and compressed. But

we do not imagine this sinking could have been felt, although it may be taken into consideration.

The dykes raised against the waters at the mouths of the Scheldt must have been made with great care, in order to resist the violence of the waves which broke over their shores and the currents which undermined their foundations beneath the surface of the water. It is chiefly when the bottom is turfy that this last danger is to be feared, because it causes, after a greater or less time, and frequently before the threatened danger is perceived, a falling in of the earth, which opens a considerable passage to the water.

In order to avoid as much as possible the recurrence of these disasters, care is taken to make the foundation of the dykes of clay, the firmest which can be found. The dyke is made to slope very much on the water side, in order to weaken the force of the wave. It is covered on this side, to the general height of the tides, with straw formed into ropes, which are laid on the clay by means of a particular instrument. The entire height of these dykes is above that of the highest tides. Their base varies from two or three yards to fourteen feet, and their summit will admit of two carriages passing abreast.

Van Meteren says, in speaking of the *dijkgraves* of Zealand, that the dykes of this part extend over forty miles of 1,400 yards each, and that each yard of dyke must have cost, one with the other, £10 of Brabant money, so that the whole of these dykes must have cost 3,360,000 florins of Brabant, and that only for their construction, independent of their being kept in repair, which it is impossible to calculate exactly, but which we may form some idea of by following Reimer Telle, in his *Description of Zealand*, who says that each yard of land in the island of Schouwen, which contained in his time 21,000, paid four florins yearly, and even more, towards these repairs.

Notwithstanding all the pains taken to preserve Zealand fromt he encroachments of the sea, this has frequently triumphed over all the resistance opposed to it. On one side the downs were constantly destroyed by the tides, and carried away by the drifting sand: on the other, the dykes have often yielded to the tempests, and opened a way for the waters, which rushed furiously over the houses, extending even to a large territory.

The downs of the islands of Walcheren and Schouwen, which were opposed to the ocean, receded in a remarkable way, notwithstanding the precaution taken by planting trees, and closing the openings formed by the wind. In the former of these islands the downs receded so far during the seventeenth century that the ruins of the temple of the goddess Nehaleunia, were discovered in 1647 near Dombourg. The extreme edge of the downs on the side next the sea, were found, in 1695, when Smallegange published his work on this country, two hundred yards out under water at sea; making nearly three yards for every year, a progression still observed in some parts.

After the discovery of the temple of Nehaleunia, a whole street has

been discovered by the downs, crossed by two others. These ruins were also under water in the time of Smallegange, and at that period two large antique stones were discovered on the strand, which have also disappeared.

The ancient town of West Capelle has been abandoned, and the inhabitants must have retired some distance further back, for fishermen have cast their nets on the ruins of this town, formerly famous for its commerce and maritime laws.

However moveable the downs may be, we must nevertheless regard them as the best barrier against the sea, because they appear to yield to its advances, and recede in order to weaken an enemy which could not be resisted in any other way. Nothing then hinders the retreat of these natural dykes, and they are able to retire tranquilly towards their interior border when their outer border is broken into. If this circumstance did not take place, if the downs in receding found a village, the inhabitants of which prevented its entrance, or the bushes were unable to grow, the down would gradually sink, and would soon entirely disappear.

This happened at West Capelle, where the down was intercepted for eight or nine yards, and the inhabitants were forced to replace it by a strong dyke and considerable defences. This dyke was then eleven and a half yards across at its base, and two yards at its summit. It was thirty feet high, and defended by several banks in front. In 1526 it cost a great deal to repair. The sea having damaged it in 1632, it was made nineteen and a half yards wide at the base and twenty-eight feet high. In 1642, after renewed damage, it was partly restored and carried out to the width of thirty-two yards at the base, twenty-five feet high, and one yard at the summit. The other parts have been successively repaired in 1680 and 1685, and in 1687 it was lengthened seventy yards, so it then made 890. It has doubtless been added to several times since, the same causes always operating.

Smallegange, from whom we gather these details, gives a terrible account of the consequences resulting from the rupture of this dyke. He maintains that if this failed the island of Walcheren would be destroyed, and soon those of Zuid-Beveland, Wolfertsdyk, and Noord-Beveland; that the islands of Schouwen and Duiveland would not last long, and the lands of Overflakee would soon follow. Then the dyke of the Meuse yielding in its turn, the whole province of Holland would be under water, unless the strong dams constructed at Amsterdam against the Zuiderzee afforded some assistance. The sea would not stop here, according to Smallegange; but continuing its ravages it would reduce the province of Friseland to similar misery, invading one after the other all the low lands of the Netherlands.

Smallegange, we are assured, only draws this picture in order to interest all the provinces in the maintenance of the dyke of West Capelle, on which the safety of the island of Walcheren partly depends, and which had already cost more than if it had been entirely constructed of brass; so mighty are the efforts requisite to counteract the inroads of the sea. Even those will fail in time; for whatever money

may be spent on the dyke of West Capelle, whatever care may be taken in repairing the encroachments of the sea, still it must some day yield to its power. Would it not be wiser, instead of exhausting resources in feeble efforts, to abandon the village where it is situate, to establish a dyke at a certain distance behind it, and to fill the intermediate portion with sand, so that the solution of cohesion which exists in the borders of the downs would disappear from the formation of fresh hills, which would join the former. Thus this enormous dyke would become superfluous, and would be replaced by a barrier of sand, which would only require annually a few feet of bushes, and some attention.

We will next consider the numerous channels formed by the sea round these isles; and see the vicissitudes to which they have been exposed.

(To be continued.)

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*The Chairman's Address—The Blue Jackets' Response to the Liverpool Festival; Presentation to Mr. Graves—Jack's Mother's Letter to the Admiral—Report of the Royal National Life-Boat Institution—Kidnapping South Sea Islanders.*

Among the subjects of discussion at our last *réunion*, said the Chairman, notwithstanding the dark clouds which lour around our political horizon, the most interesting topic to us was the glorious reception which our noble seamen of the Channel fleet received at Liverpool, and I am glad to see that the proceedings at the dinner, where at such opportunities the true spirit of the individual shows itself, the feelings which mark the true British sailor were displayed to his advantage. It is well known that in our country all great business is done with a dinner. Here, when the animal wants are satisfied, the warm exuberant flow of spirits which follow prepare the individual for that purpose, and he is in a good humour to do it well and thoroughly. But Jack had no such business, for all he had to do was to enjoy himself, and most thoroughly he did so; nor were those wanting among them who knew how to honour the occasion in returning thanks as well as ever was given even at a Lord Mayor's feast. True it was characteristic, being essentially "nautical," like the speakers,—but all the better for that, and still assuredly more appreciated. The idea was a most happy one, originated by a gentleman, not a sailor by profession, but who as an amateur yacht sailor may rank among our first, and the reality brought out everything that the best friend of the seaman and the lover of his country could wish.

We have, however, continued the Chairman, to conclude our history of that event,—to record, as I hope we shall do, the recognition on

the part of the men of the obligations which they felt on that occasion,—not that this was not expressed at the time in plain straightforward words, but we have these feelings embodied in something tangible on the part of the men, which, although bearing only the name of one ship, may be safely looked on as the exponent of the sentiments of all the crews of our iron clad Channel fleet. He, the Chairman, would add no further preface to the following acknowledgment of the Liverpool dinner to the seamen of that fleet, and which he considered the duty of the Club to preserve among their records.

The petty officers and seamen of the *Defence*, grateful for the attention shown to them during their stay at Liverpool by Mr. Graves, improvised a mode of giving expression to their feelings, as creditable to those honest tars as to the high-minded and spirited gentleman who was the object of their grateful compliment. Having learned that the Lord-Lieutenant and a large number of invited guests were to be entertained on board the *Defence*, they prepared the subjoined beautiful address, and deputed a number of their body to proceed to Dublin to purchase a handsome claret jug, to be presented with the address. The deputation selected an exquisitely-chased jug in solid silver, on which they had engraved the following inscription:—"Presented to Mr. S. R. Graves, Commodore of the Royal Mersey Yacht Club, by the petty-officers, N.C., and seamen of H.M.S. *Defence*, as a token of their gratitude and affection for his kindness to them during their stay in the Mersey, 22nd September, 1863."

The address and the plate were ready for presentation on Wednesday, September 30th; but a storm, unfortunately, interposed, and prevented the assembling of the distinguished visitors. Immediately before the sailing of the *Defence*, however, the officers having been informed of the intentions of the men, and feeling how amply deserved was the compliment, assembled on the upper deck to be present at the unprecedented proceedings of a whole ship's crew subscribing to compliment a distinguished civilian. After a few minutes the whole ship's company assembled, and Petty-Officer George Grant, advancing to the front, read the following address:—

To Commodore Graves and the Gentlemen of the Mersey Yacht Club.

We, the petty officers and seamen of H.M.S. *Defence*, do most humbly desire to return our sincere and heartfelt thanks for the kindness shown by you to us during our stay in Liverpool. We assure you that though we have received the greatest kindness during our cruise round England, Ireland, and Scotland, we have never met with anything like the hospitality and good feeling shown by yourself, the gentlemen of the Mersey Yacht Club, and the inhabitants of Liverpool generally, and not only shall we carry the remembrance of the same to our graves, but hand it down to our children of the next generation. Sir, it has proved to us that the English man-of-war's man, though esteemed lightly by many, has at last found in the people of Liverpool friends who never look over the services of those who

uphold their Queen and country; and though many of us have never heard a shot fired in anger, should we ever be called upon to fight in our nation's defence, the kindness of yourselves and the Liverpool people will be an extra incentive for us to show forth to the world that steady resolve and unflinching determination which have always characterised the British seaman. Although we were made aware of the fact that we should visit Liverpool, still we did not expect a heartier reception than has greeted us elsewhere; but finding it to exceed our most sanguine expectations, our hearts were filled with love and gratitude for your exertions and solicitude. Again let us assure you that the happy results attending our visit to yours, the greatest maritime port in the world, will ever be engraved on our minds, and become a period from which to date events in after-life; and we feel assured that the minds that could so consider our welfare and gratification as you have done (setting aside the usual conventional rules), are such as those that will hereafter be present to welcome us to the haven of eternal rest. May we meet you all there. In presenting this address we humbly hope that you will excuse the liberty we have taken, as it would be morally impossible for us to express ourselves adequately in any other form. As a memento of our gratitude and affection for yourself, we beg your acceptance of this small present, hoping you will receive it as a proof of a sailor's appreciation of the unbounded kindness received at your hands. In conclusion, allow us to tell you that your name will ever be fresh in our memories as the sailor's friend; and we most sincerely trust that you may be spared many years to enjoy those blessings which belong to the great and good.

We remain, Sir, your very humble servants,

THE SHIP'S COMPANY OF H.M.S. "DEFENCE."

The address having been read, Petty Officer Drew advanced to Mr. Graves and handed him the claret jug, reading the inscription while in the act of presenting the plate.

Mr. Graves, having received both the address and jug from the gallant tars, made the following reply:—I dare say most of you at times have experienced a difficulty in giving utterance to your feelings when your hearts were overflowing with emotion; and if I, in thanking you for the address you have presented to me and my colleagues of the Royal Mersey Yacht Club, fail to say all I would wish, you will understand the reason. It has been my good fortune to have received many pleasing proofs of public favour, and highly as I value these, I can with truth say I have never received one more pleasing in its associations or more gratifying in its nature than this most beautiful token of your good-will and regard; and what makes it the more acceptable is the knowledge which has been conveyed to me that the idea has sprung up from your own generous impulses, unaided or unprompted by others. If the gathering at St. George's Hall has left on your minds an agreeable recollection, I can assure you it has left a no less pleasing remembrance on ours. It was a meeting without a precedent in the annals of our town, and it is not improbable that this

is equally the first occasion on record in which a British merchant has received so flattering a compliment at the hands of the seamen of the British navy. In originating and presiding over the banquet which has called forth such a touching expression of your feelings, I was but the mouthpiece of a community of which I pride myself in being a member. The press everywhere told us of your good conduct during the cruize round our coasts, and it but needed your arrival in the Mersey to call forth the public recognition of brave deeds and good conduct which you received. It soon became apparent you were worthy of the noble profession to which you belong, that you respected yourselves, and by doing so gained the respect and good wishes of every inhabitant—in fact, your conduct on that occasion has since been the theme of admiration, and I doubt if any recent event has since taken place more calculated to produce kindly feelings between classes which have hitherto rarely met; and, unless I am much mistaken, it will show the men of the navy that the eyes of a generous and grateful public are on them, and that they will be always found ready and willing to "help those who try to help themselves." You have shown your Admiral that the confidence he has reposed in you is not misplaced. He has told me that that meeting was one of the most gratifying incidents in his life, and it was to him a source of real pleasure, when steaming down the Mersey last Friday, to hear the signals repeated from the various ships that not one man of those who dined at St. George's Hall was absent. You have touchingly alluded to a better world, and believing as I do that none who conscientiously do their duty in this will be excluded from that "haven of rest," I have, in now saying farewell, but to express a hope that you will endeavour to do your duty. This gift will remind me of mine, and what I owe to the brave men of the *Defence*.

The paper was read at the Club and freely commented on as a good specimen of the character of the British seaman of the present day.

And, added Albert, their literary composition is as creditable to them as their noble sentiments, to which no doubt their libraries afloat have contributed. But imagine the feelings of the Admiral, he continued, at receiving the following epistle from a veritable daughter of the soil in the far North, where it would seem that literature did not flourish as it does in our Channel Fleet:—

"August 2.—Honor'd Sir,—As i am told by my nebours that the royal navy under your command has arrived at Edinboro on its way to inverness i have taken the liberty of writing a few words to ask if my Son's Ship is among them the immortalite captan george hancock. My Sandy joined Captain hancockes ship as an ordinary seaman from a merchant ship in the west Indies and he says he is very glad that he entered the royal Navy. He said in his last letter that his Ship was a very large one and woold likely be ordered home soon to be shown of in Scotland I hope it is true he does not often write but sends me a little money when he does write and tells me to be easy in my mind about flogging men to death in the navie that it is all a parcel of' non-

sense and humbug and that those who get a coming down as he calls it never get half what they deserve. if Sandy's ship is among yours i will certainly walk from this to see him if he cannot come to see me although i am getting old and very frale now. An answer will oblige your obedient humble servant, ———."

The Secretary observed that at their last meeting they had omitted to read the report of the National Lifeboat Institution. He held in his hand the records of two meetings of that society—held on the 3rd September and 1st October,—which he would now, with the permission of the Chairman, bring before the Club:—

On the 3rd September a reward of £4 10s. was voted to the crew of the Aberdovey lifeboat, for rescuing six of the crew of the barque *William Bromham*, of Gloucester, stranded on Aberdovey Bar on the 15th August.

A reward of £7 was also granted to the crew of the Newhaven lifeboat *(Thomas Chapman)* for saving the crew of five men of the schooner *Cestrian*, of Chester, which grounded on the bar off Newhaven Harbour, in a gale, on the 31st August. The lifeboat and her crew were reported to have behaved admirably on the occasion.

A reward of £7 was voted to the crew of the Budehaven lifeboat for rendering important services to the ship *Conflict*, of Plymouth, in distress, during a gale of wind, off Trevose Head, Cornwall, on the 30th August.

A reward of £4 was likewise voted to the crew of the society's lifeboat stationed at the Lizard, for going off, in reply to signals of distress, to the rescue of the crew of a sloop, observed in a dismasted state under the Black Head, off Cadjwith, in a strong easterly gale. The lifeboat was launched without delay, and proceeded to the vessel against a head wind and strong tide. In the meantime the sloop had been boarded by the crew of two pilot boats, who afterwards stood out to sea with the vessel in tow, and subsequently reached Falmouth Harbour in safety.

A reward of £7 10s. was also voted to the crew of the Walmer lifeboat, for going off to the ship *Canvas Back*, of London, stranded on the Goodwin Sands, on the 18th August. The lifeboat remained alongside some time, when, the weather having moderated, the vessel was got off by a steam-tug and some Deal boatmen.

A reward of £5 was also granted to seven men for putting off in a coast-guard boat, and saving, at some risk of life, six soldiers from the Hurst Castle garrison boat, which was swamped off the Isle of Wight on the 18th ult., in a heavy sea. Two men had perished before the arrival of the coast-guard boat.

A reward of £1 was likewise given to a lad, fourteen years of age, named Dennis Clifford, of Cahirciveen, county Kerry, in admiration of his gallant conduct in plunging into the sea and saving, at the risk of his life, a man who, while bathing near that place, had got his hands entangled in some seaweed, and, after struggling to get free, had sunk quite exhausted. The lad, who had been attracted to the spot

by the screams of two women who had observed the drowning man, at once dived in, and succeeded in bringing the body, apparently lifeless, to the shore. After some time, however, he happily recovered. There were no means of assistance at hand, and a moment's longer immersion must have proved fatal to the poor man, whose hands, when he was brought on shore, were still found to be entangled in the seaweed.

It was reported that the institution had recently received a legacy of £200 from the late William Currie, Esq., banker, of Cornhill; and one of £189 from the late Mr. John Jolly, farmer, of Enstone, Oxford; and that £50 had also been received by the society from the relatives of the late Mrs. Thornton.

The institution has just sent two large lifeboats to Hastings and to Blakeney, on the Norfolk coast, in lieu of the former boats at those places, which were deemed too small for the localities.

Mr. Morrall, a member of the Society of Friends, and residing at Matlock, in Derbyshire, is making strenuous exertions to raise the cost of lifeboats from persons having the same surname.

Captain Ward, R.N., inspector of lifeboats to the society, was directed to proceed on a tour of inspection of its lifeboats on the N.E. coast of England.

A report was read from Captain David Robertson, R.N., the assistant inspector of lifeboats to the institution, on his recent visit to its lifeboats on the coast of Lancashire, the isle of Man, and Scotland. He found them all in an efficient state.

The operations of the institution extend over the whole coasts of the British Isles, and by its system of rewards it encourages every means, either by lifeboats or otherwise, to save life from shipwreck. Thus about £1,300 a year are granted by it as rewards for saving life from wrecks, besides a considerable number of silver medals, votes on vellum, &c.

At a meeting held on Thursday, October 1st, a payment of £7 10s. 6d. was ordered to be made to defray the expences of the Southport lifeboat, belonging to the society, in rescuing the master's wife and child and twelve of the crew of the barque *St. Lawrence*, of Liverpool, which, during a gale of wind and heavy surf, had stranded on the Salthouse sandbank, on the Lancashire coast, on the 20th of September. The captain and three of the crew refused to leave the vessel, and the Lytham lifeboat, which also belongs to the institution, afterwards put off with the view of saving them; but they remained firm in their determination not to quit the ship, and the lifeboat returned to the shore. In the course of the night they left the ship in their own boat and had a narrow escape of their lives. The institution also voted £8 to pay the expences of the lifeboat. The Lytham lifeboat went off again, and ultimately succeeded in bringing the vessel into port, much to the satisfaction of the owner, who witnessed the persevering and gallant exertions of the lifeboat's crew, to whom he made a very handsome present. Both lifeboats behaved admirably on these occasions. The cost of the Southport lifeboat was the gift

to the society of James Knowles, Esq., of Eagley Bank; and that of the Lytham lifeboat, of Thomas Clayton, Esq., of Wakefield.

Rewards amounting to £21 were also granted to the crews of the Walmer and Holyhead lifeboats of the institution for putting off in reply to signals of distress from vessels, but where their services were not ultimately required.

A reward of £2 was also granted to two fishermen, for putting off and saving the lives of four men, who, whilst recently making for the shore off Yarmouth, Isle of Wight, were capsized from their boat during blowing weather.

A reward was also voted to a boat's crew of four men for putting off and rescuing three out of six persons, who had been capsized from their boat off Killoven, in Carlington Lough. Two ladies and one gentleman had unfortunately perished on the occasion before assistance could reach them from the shore.

A reward was likewise voted to a boat's crew for going off and saving the lives of two sailors belonging to a Norwegian vessel lying in the Downs. The men, who had been on shore, were returning to their ship in a small boat, when they were overtaken by a sudden squall, which capsized her. Some Deal boatmen observing the accident, immediately launched their boat and succeeded in saving the drowning men.

Various other rewards were also voted to the crews of shore boats for saving life from various wrecks.

A resolution was passed expressive of the institution's deep sympathy with the widow of the late Admiral Washington, F.R.S., Hydrographer of the Admiralty. The gallant admiral had, during a long series of years, rendered important services to the lifeboat cause, and materially assisted, in conjunction with the Duke of Northumberland, in resuscitating the National Life-Boat Institution in 1851.

It was stated that the institution had lifeboats ready to be sent to Eastbourne, Swansea, Arklow, and Teignmouth (Devon). It was also reported that the late Milborne Williams, Esq., of Whitchurch, Somerset, had left the institution a legacy of £50. The Rev. R. S. Sutton, rector of Rype, near Hurst Green, had sent the society £3 8s. 6d. as a thank-offering from his congregation for the abundant harvest of the present year. Michael Steel, Esq., of Begbroke House, had forwarded to the institution a liberal donation of £100.

Payments amounting to £700 having been made to various lifeboat establishments, the proceedings terminated.

It would appear, observed Albert, that that hydra-headed monster, slavery, which the Southern Seceders of the American States call their "corner stone" of liberty!—one would suppose out of sheer irony,—has sprung up in the Pacific Ocean, under the instigation of some Peruvian merchants, whose slave-hunters are committing disgusting cruelties on the defenceless inhabitants of the Polynesian islands. By the report of Dr. Livingstone, this trade is still devastating Eastern Africa; but in the Pacific it appears to have been ap-

proved by the Peruvian government under the cloak of *voluntary paid servants;* but which by these papers is really nothing more than a system of kidnapping into slavery,—where cruelties terminating in death are practised. He would first call the attention of the Club to an extract from a Sydney paper on the most recent event of this nature at which our countrymen at that place are exclaiming most indignantly. And the other accounts are from Tahiti, where he was happy to say the French are doing all they can to put it down.

Surely no man in whose soul a human emotion survives will read without tears the subjoined article narrating atrocities recently committed among the islands of the South Pacific. Indignation and horror are not the words to express the depth of that passion which such scenes must stir up in every heart. The vocabulary of crime contains no epithet fit to designate these ruthless murderers, who desolate and destroy with a calm satanic deliberation. What a lesson on the character of slavery. Behind these men, the opprobrium of civilization, there are others equally guilty,—capitalists, shipowners, merchants. These poor people, who perish by every form of perfidy and violence, are said to pray for their enemies. Our invocation is that justice may overtake them with swift destruction; for if we would not deprive them of the last hope of the wicked in Divine mercy, we certainly should rejoice to find it their only resource. Can nothing be done? Are there no means to check these atrocities? Can this community, so rich in every blessing, find no channel by which they can afford relief or protection,—by which they can send to condign punishment these enemies of the human race?

While lying at anchor at Apia, Navigator Islands, Captain Lyons, of the *Ocean*, brig, obtained the following particulars from parties just arrived in a small schooner:—On the 23rd of May, the schooner *Emily* arrived at Apia from Sunday Island, situated lat. 29° 12′ S., long. 178° 13′ W., and furnished the following particulars of the doings of one of the several slavers that are striking terror into the natives of the several groups visited by them. The schooner *Emily* sailed from Bay of Islands 3rd of February for Sunday Island, and on arriving there found a large barque at anchor.

On the captain of the schooner landing, he saw a number of natives that he knew to come from Duke of York and Duke of Clarence Islands, and, as he could speak their language, they told him how that the barque had visited their islands, and that the captain and crew, well armed, landed in their boats, drove all the people down to the beach at the point of the bayonet, took every man, old and young, that had any strength, and took them on board the ship, leaving none on the two islands but a few old white headed men, and some women and children. The islands are almost depopulated. There were a number of natives from Savage Island on board, as well as from Manikie, Danger, Easter, and other islands. There were about twenty-five women and forty children taken off Easter Island.

When the slaver made Danger Island, the missionary ashore sent a

canoe off to know what vessel it was, and to obtain information. On the canoe coming alongside, both it and the man were hoisted on board; the latter was put below the hatches, and the former broken up for firewood. The object of the slaver visiting Sunday Island was to try and restore the health of his cargo, which must have been very numerous, as 300 or more of men, women, and children that were in a dying state, owing to their crowded condition, were landed in a most deplorable plight. They were so emaciated and feeble that they could not stand, some not able to crawl.

The first launch load that was landed consisted of fifty-three men; only three could stand of the number, three were found dead on the launch reaching the beach, and the residue were hauled out of the boat in the roughest manner to be conceived, and thrown on the beach, some beyond the surf and others in it. Several were drowned where they were thrown, and eighty died immediately after being landed. Some, not having strength to crawl beyond the reach of the tide, were drowned. As soon as some of the others gained a little strength, and were able to move about, they eat almost anything that came in their reach, and the consequence was that diarrhœa, flux, and cramp seized them and carried them off in numbers. The dead bodies were buried on the beach, in the sand, and when the tide rose and the surf set in, all the bodies were disinterred and strewed all over the beach, and allowed to remain as the tide left them.

On the 19th of April, a considerable number of the people had partially recovered, and were able to walk about. Many of them intended to start for the high land, just before the sailing of the barque, and hide themselves, which they can do, as the island is favourable for that purpose.

The slaver is a beautiful looking vessel of about 400 tons measurement, and is remarkably fast in her sailing qualities. She has various names, flies a variety of flags, and is well armed. The captain and the greater part of the officers are Spaniards. Her crew is well appointed; besides petty officers, there are twenty men of various nations before the mast.

When lying at anchor at Sunday Island, and when a portion of the ship's crew were on shore on duty, there was a well organised system of signalling carried on all the time by those on shore and the ship. They were continually on the alert. If a sail hove in sight, which was occasionally, as whale ships have been accustomed for years to get supplies there, they immediately got under way. Every time the captain landed he was armed with a gun, revolvers, and bowie-knife. Everything that was on the island, such as cattle, pigs, fowls, potatoes, and all kinds of vegetables, and anything that was useful to him, were appropriated to his own use. He was to sail direct for Callao on the 1st of May. This vessel is one of seven of a similar nature that are known to have been among the islands.

The same barque visited the East end of Upolo, one of the Navigator Islands, and took a native out of a trading boat that was returning to Apia, as well as what money there was, and some oil, and

afterwards sent the boat adrift with one European in it, when the land was just visible from the ship, without food or water. The boat reached the land after being at sea two days. The population of Sunday Island before the arrival of the slaver consisted of four families, numbering twenty-two in all. Their occupation was cultivating a variety of vegetables, and rearing stock to supply the whaling ships that periodically visited the island. In fourteen days after the natives were landed out of the slaver, the residents, who were Europeans, were attacked by the same disease as the natives were, and in a few days eight out of the twenty-two died.

On the arrival of the schooner, all of them but one man were ill, and he had to attend to all, as well as bury the dead. As soon as the residue could bear removal, they were taken on board the schooner, and on its arrival at Apia they had all recovered. Some families had lost a father, some a mother, and one both father and mother. There was a poor little girl of fourteen months old, and her brother of eleven years old, who were left destitute and orphans. The little girl found a kind protector at Apia, and the little boy is on board the *Ocean* brig. Sunday Island is uninhabited now.

The following is from the Tahiti papers:—

The arrival of the *Adelante*, from the Penhryn Islands, at Peru, is notified. She reached America with 202 slaves,—77 men, 73 women, 15 boys, and 33 little children. Another vessel, the *Carolina*, from the island of Proa, came about the same time as the *Adelante*. She reached Peru with 122 Polynesians. The *Hermosa Dolores* came in with 160 Polynesians from Easter Island,—138 men and 22 women. The slaves—colonists as they are rather audaciously termed—that were brought to Peru by the *Hermosa Dolores* had been collected for transmission to Peru in the *Guillermo*, the *Micaela Miranda*, the *Rosa Patricia*, the *Jose Castro*, the *Rosa y Carmen*, and the *Cora*, all of which appear to have been lying at Easter Island before the departure of the *Hermosa Dolores*. We have here most probably the majority of the names of the infamous slave fleet of Peru.

In a letter, dated the 9th of February, from an English gentlemen to a resident at Tahiti, he states that "at least fifteen hundred Polynesians have been sold at Lima."

The *Cora*, one of the slave fleet, appears to have been abandoned and sold by auction at Tahiti.

The following passage is found in the *Comercio*, of Lima, published on the 28th of March last. It shows that those who have embarked in the violent deportation of the Polynesians are losers by their traffic in flesh and blood:—The Polynesians who have been brought to this country have proved completely useless for the purposes of agriculture, and find few purchasers among the planters They are not accustomed to labour, and obstinately resist everything like work; thus, through pure slothfulness, they become victims to the climate, and a dead loss to their importers. Since government did not take timely measures to prevent this disgraceful commerce, it is consoling to see so abominable a speculation turn out more loss than profit.

Mr. Arthur M. Wholey addressed an elaborate document to the Peruvian government, justifying himself in the matter of the condemned ship *Mercedes de Wholey*. The document is dated from Callao on the 10th of March, and published in the *Messager de Tahiti* on the 23rd of May, 1863. The *Messager* remarks that it contains gross mistatements.

The Peruvian government has arrested Don Jose Rodriguez and Don Juan Campbell for their acts in relation to the slave traffic in Polynesia.

Papers are published in the *Messager de Tahiti* of the 27th of June relative to the Peruvian slave ships, the *Guayas* and the *Misti*. Eight men belonging to the crew of the *Empress* (a ship of the same class) have been also arrested. It is stated that thirty-six men, brought to Peru in the *Empress*, were sold at Huacho, a small port ninety miles North of Callao.

The following is from the *Sydney Morning Herald*:—

It will be remembered that two or three months back we gave an account of the piratical proceedings of certain Chilian and Peruvian vessels amongst the islands of the Pacific. As they happened to trench upon some of the French possessions in these seas, information was very soon given to the French authorities at Papieti, and the French government steamer *La Touche Treville* was sent round the islands of the Tahitian group to make a reconnaissance. By her endeavours, and through the information obtained by her, two or three vessels were taken, together with several of the leaders of this unparalleled expedition. The circumstances were very fully narrated by us at the time, having been translated nearly in full from the *Messager de Tahiti*, the government journal at Papieti. Some of these men have been tried, and we now make a brief *resumé* of the more important features of that trial.

The trial respecting the affair of the Peruvian brig *Mercedes A. de Wholey* commenced in the court-house of Papieti on the 9th of March last. The President of the Court was M. Trastour, Sub-Commissary of the Navy Department; Captain Naudoit, and M. Armaud, judges; and Messieurs Brander, Adams, Manson, and Drellet, residents in Papieti, judge assessors. M. Lavigerie, a surgeon in the navy, acted as public prosecutor; and Messrs. Ormond and Buchin as interpreters to the different languages used in the trial—English, Tahitian, and Spanish. Amongst the officials accommodated with reserved seats was Mr. Miller, her Britannic Majesty's Consul.

The accused were introduced and placed opposite to the judicial bench—Juan Bautista Unibaso and Lee Knapp. The third person who had been arrested as concerned in the same affair—Charles Grandet—died in the hospital at Papieti on the 1st March last.

The following was the formula of the indictment:—"The administration the law prosecutes the men Unibaso, captain of the Peruvian brig *Mercedes A. de Wholey*, and Lee Knapp, the pilot and interpreter of the said ship, accused of having, in concert, committed

the crime of having unlawfully taken away 152 inhabitants of the Paumotus Archipelago, of having broken the local decrees bearing date the 6th of September, 1850, and the 11th of August, 1862."

After some preliminary discussion and objections to the jurisdiction of the court, the usual addresses of counsel, reading of documents, and examination of witnesses continued from day to day until the 27th March, when the evidence for the defence was commenced.

The defence rested mainly on the following licence for the importation of labourers, produced by the prisoners, and read in court:—

Lima, September 16th, 1862.

Your Excellency,—The undersigned, Andrez Alvarez Calderon, has the honour of notifying to you that the want of hands being more sensibly felt in this country (Peru) every day, I have to beg your Excellency to be pleased to authorise me to bring 800 or 1,000 colonists for the following ends and purposes. It is only necessary to set before your Excellency the palpable fact that from the dearth of auxiliary labour as much for agriculture as for all other work where a considerable number of hands are required, every one knows and feels the want it is desirable to obviate. For that reason I shall restrict myself to the simple object of the formal permission which I now solicit. As contractor for the shipment of guano from the Chincha Islands, I have had reason to feel the want of labourers adverted to—the number of hands employed in procuring national manure is every day decreasing. I have tried to engage workmen in different parts of the republic, but it is only after great efforts and costly sacrifices that I have been enabled to get a sufficient number for the exigencies of the enterprise. Nevertheless, your Excellency, what I have done can only last for a time; from one day to another a necessity for fresh labourers may arise, the arrival of a greater number of ships demands what I require, especially as the present labourers will no longer continue this work; however it may be, the loss that this dearth of labour may entail on my interests and on those of the nation is incalculable. To avoid the realisation of such a deplorable calamity it is on every ground indispensable that I should be supplied with the authority that I solicit, it being understood that the supreme government will take all necessary measures, and that I should also bind myself to take all requisite steps for the respect of international rights, of justice, and of the laws of nature—to take from no country any other than voluntary bound servants *(engagés)*, to pay conscientiously *(religieusement)* the price of their contract, and in general terms to fulfil all the obligations which the law imposes on the introduction of colonists, in accordance with the terms of the law for the introduction of Asiatics. For all these motives I entreat your Excellency to grant me what I have the honour to solicit. It is only as a matter of justice that I hope to receive it from the magnanimity of your Excellency.

ANDRES A. CALDERON.

Lima, September 16th, 1862.

Permission is granted to the memorialist to introduce colonists from the Oceanic Islands, on condition that he shall submit to the provisions of the law of the 14th of May last, No. 281-62.

MORALES.

Lima, 26th September, 1862.

Handed over to Monsieur Arturo Wholey, in order that by means of it he may introduce colonists.

ANDRES A. CALDERON.

The further reading of this paper was postponed until the next meeting of the Club.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 557.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
42. Favignana	Ferro Point	S.W. point	..	..	..	(*a.*)
43. Kobbervig	Karmo Isld., Norway	59° 17·2′ N., 5° 19·8′ E.	F.	31	8	Est. 1st October, 1863. Red light.
44. Table Bay	Breakwater	Outer arm	..	25	..	Est. 1st November, 1863. Green light. For avoiding the breakwater.
45. Sunk Light	Swin, Thames	51° 49·5′ N., 1° 31·1′ E.	..	..	..	Change of position. (*b.*)

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

(a.) 42.—Doubts having arisen with reference to the situation of the light-house on the island of Favignana, off the West coast of Sicily, as given by the Sicilian Government in October, 1860, Staff-Commander Stokes, of H.M. surveying-vessel *Growler*, has recently determined its correct position. The lighthouse stands not on Point Sottile, as stated in the Sicilian notice, but on Point Ferro, the low rocky western extreme of the island, and navigators are hereby informed accordingly.

(b.) 45.—The Corporation of the Trinity House, London, has given notice, that the Sunk Light-vessel at the entrance to the East Swin, has been removed 3¼ miles N.E.¼ E. from her former position. The vessel now lies in 9¼ fathoms water at low springs, with the West Rocks buoy open a little eastward of Harwich Church, bearing N.N.W.¼ W.; the Gunfleet lighthouse W.¼ S., distant 7·3 miles; Naze tower N.W.¾ W., 8·8 miles; the Shipwash light-vessel N.E.¼ N., 12·7 miles; S.W. Shipwash buoy N.E., 4·7 miles; and the Long Sand Head buoy S.S.E.¼ E., 4·8 miles.

North Sea, Coast of Holland.—With reference to the Notice to Mariners, No. 37, dated the 19th day of August, 1863, the Ter Schelling revolving light, therein said as being about to be altered in 1864–5 to a fixed red light, it should have been to a *fixed white* light.

APPROACHES TO PORTLAND HARBOUR,—*Maine, United States,—Atlantic Coast.*

The following rocks, not upon any chart, have been surveyed by Lieutenant-Commander T. S. Phelps, U.S. Navy, Assistant U.S. Coast Survey :—

Witch Rock.—24 feet water: Portland lighthouse, W.b.N. nearly, distant $1\frac{3}{8}$ miles; middle of Ram Island, N.N.W., distant $\frac{1}{16}$ mile.

Willard Rock.—$31\frac{1}{2}$ feet water: Portland lighthouse, N.W.b.N.$\frac{1}{2}$N. nearly, distant $1\frac{3}{4}$ miles; Cape Elizabeth East lighthouse, S.W.b.S.$\frac{1}{4}$S., distant $2\frac{1}{4}$ miles; Trundy Reef buoy, S.W.$\frac{1}{2}$W., distant $\frac{3}{8}$ mile.

West Cod Ledge.—33 feet water: Portland lighthouse, N.W.$\frac{3}{4}$N., distant $4\frac{5}{8}$ miles; Cape Elizabeth East lighthouse, W.$\frac{1}{2}$N., distant $3\frac{1}{8}$ miles.; Alden Rock buoy, S.W.b.W., distant $1\frac{5}{8}$ miles.

Corwin Rock.—$24\frac{1}{2}$ feet water: Portland lighthouse, N.N.W. nearly, distant $4\frac{3}{4}$ miles; Cape Elizabeth East lighthouse, N.W.b.W.$\frac{3}{4}$W., distant $2\frac{3}{8}$ miles; Alden Rock buoy, S.W.b.W. distant $\frac{1}{2}$ mile.

West Hue and Cry Rocks.—27 feet water: Cape Elizabeth East lighthouse, N.N.W., distant $2\frac{3}{4}$ miles; barn on Richmond Island, N.W.b.W.$\frac{1}{2}$W., distant $3\frac{1}{4}$ miles; Alden Rock buoy, N.E.b.N.$\frac{3}{4}$N., distant $1\frac{1}{2}$ miles.

Bulwark Shoal, surveyed by E. Cordell, Acting Assistant, has *fourteen* feet water on it. The depth of six feet heretofore given on the chart is an error.

The bearings are magnetic. The distances are in nautical miles. The depths are at mean low water.

GRAHAM SHOAL,—*South of Sicily.*

The readers of the *Nautical* will very well remember the appearance of a volcanic island on the South coast of Sicily, a view of which we gave in one of our early volumes (1839), and on which island the British flag was planted. This island, however, soon gradually disappeared (like Sabrina of the Azores) and left no further vestige of it than a shoal, the position of which is very well known, and laid down in our charts as Graham Shoal. But the correspondents of our papers, not aware that Graham Shoal was once an island, and that it has been so long on the charts, speak of it as a new discovery, when there is really nothing new about it, and allude to delusive currents and "flexuous" coasts, as if all these things were novelties! But here is some account of it from an officer who visited it, provided for us by our friend "Nauticus," which we give in the words of Captain Lord F. H. Kerr, who visited the shoal in the course of his service.

H.M.S. Blenheim, Pembroke Dock, October 19th.

Sir,—I have lately observed two notices in the *Times* from a Malta correspondent relative to the rediscovery, as he calls it, of Graham Shoal. In the first he expresses wonder that it should have remained so long unknown, and is inclined to throw blame on the authorities for not having been more energetic. In the second he dilates on the

great importance to navigators of the rediscovery of this dangerous rock. With reference to the first, and in justification of one authority, I would inform him that when Admiral Sir William Parker was Commander-in-Chief in the Mediterranean in 1851, he was so dissatisfied with former examinations of this shoal, which represented it to have sunk to a depth of 36 fathoms, that he sent the *Scourge* steam sloop, which I then commanded, for the express purpose of examining the locality, and after several fruitless attempts, owing to boisterous weather, I succeeded in finding the real Graham Shoal, on which I anchored on the night of the 10th of April, 1851, and, having made a careful survey on the following day, found only 16 feet of water on the shallowest part. This discovery was at once reported to Sir W. Parker, my letter and drawings forwarded to the Admiralty, and a chart was issued from the hydrographer's office, which I have now before me, dated 1851, in which the form of the shoal is sketched, with the depth of water noted as 10 feet, one fathom less than reported by me.

The fact was locally made known at Malta immediately, by handbills published (if I remember right) by the Chamber of Commerce; so I think your correspondent has found a "mare's nest." I made another examination in 1852, when the shoal was apparently unchanged. The 36 fathom bank, which had been mistaken for Graham Shoal in previons surveys between 1841 and 1851, will be seen marked on the same chart, and is now called Ramsay Patch. I was not the person who hoisted the flag on the shoal when an island, as surmised in the first notice alluded to in the *Times* of September 28th.

I am, &c.,

FRED. H. KERR, *Captain, R.N.*

HAYMET ROCKS,—*Pacific.*—Reliable information has been received from Commander Mayne, of H.M.S. *Eclipse*, that the cutter *Will Watch*, J. E. Haymet master and owner, from Auckland to Rarotonga, passed between two rocks, striking on the northern one and damaging her false keel. They are considered to be about quarter of a mile apart, with apparently seven or eight feet water on them; in lat. 27° 11′ S., long. 160° 13′ W.

JACK REEF,—*Indian Ocean.*—The *Ceylon Times* of the 18th August, 1863, has given notice that on the morning of the 11th August, 1863, Captain Jack, of the barque *Eddystone*, recently arrived at Colombo from Aden, discovered a dangerous coral reef in lat. 10° 10′ N., long. 63° 40′ E., apparently above water and about two miles in extent. Captain Jack passed close to the reef, sounding in ten, nine, eight, and seven fathoms water. As it lies in the track between Ceylon and the Red Sea, mariners are cautioned, and requested to obtain and forward to this journal any notice of it that may assist in verifying its position.

THE

NAUTICAL MAGAZINE

AND

Naval Chronicle.

DECEMBER, 1863.

Vera Cruz to Mexico.

After a passage of eighteen or twenty days, a ship arriving from Europe in sight of the Mexican coast in the vicinity of Vera Cruz, has before her the magnificent peak of Orizaba, half concealed by clouds, and anchors within a triangle in the roads of Vera Cruz, formed by the town and its fort, the isle of Sacrificios, and Isle Verd. It is the only roadstead on the eastern shore of Mexico, bad as it is, and one from which on the approach of a gale it is most prudent for a ship to leave and get to sea. The roadstead, as is well known, is protected by the castle of Ulloa, standing on a rocky islet tolerably elevated above the sea.

Vera Cruz was built about the end of the sixteenth century, by order of the Count de Monterey, at a short distance from the old town of Villarica, erected in 1519 by Fernando Cortes, on the territory of Totoneques. It is seated on a wide sandy plain, surrounded by a semicircular wall in bad condition, the two ends of which spring from two forts by the sea side. The streets are wide, long, and well paved, and it is well provided with fountains supplied by the River Jamapa. Of the three promenades of the town the favourite one is that of the Mole. The Alemeda is dismal, and that of Malibran does not suit pedestrians, being spoiled by dust and sand.

Vera Cruz, the population of which may be estimated from twelve to fifteen thousand souls, is on the whole rather picturesque. It has some handsome houses, but there are also others very ugly and very much out of place. Besides this, the streets which extend along the

shore on each side of the mole are veritable drains, rendered still more filthy by the nuisance of zopilotis which swarm in them. These are birds belonging to the vulture kind, and are gifted with an appetite so voracious that nothing comes amiss to them: in fact, they are the scavengers of the streets, relieving them perpetually of the vegetable and animal offal which they find there. Their useful services thus form their protection, for they are not allowed to be molested on any account under penalty of a severe fine.

For persons not accustomed to warm climates Vera Cruz is one of the worst places in the world. Yellow fever is common and is commonly called the vomito negro, prevailing at a particular season of the year. The greater the number of persons who first land there at one time, the less is the chance of all escaping the fever, and the younger or more robust they may be, the sooner will it attack them. M. Mathew de Fossey, who has long resided there, speaks thus of it.

"Three principal causes produce yellow fever: these are, very great heat; the vicinity of marsh, and a number of persons who are not acclimatized. But it is necessary that these causes should be united; for if either one is wanting there will be no fever.

"It is in the month of May, when the sun reaches the zenith and heats the atmosphere that the germ of the yellow fever is common, increases in intensity up to September, and disappears in November. This is also the time when the water from the rains inundates the ground, forming lagoons where it cannot escape. The air is also saturated with vapours, drawn out by the vertical sun, that carry with them morbid miasmas and the effluvium of vegetable matter decomposed from the swampy soil.

"If travellers at this period inhale this pestilential atmosphere, they are struck down with it at once. In vain do they, whose commercial interests do not detain them, flee from the port to more salubrious places; for they take with them the germs of the disorder, which speedily shows itself, and overcome by sickness the next day they are no more.

"It is remarkable that travellers attacked by yellow fever in leaving Vera Cruz seldom get beyond Puebla; they die at Jalapa, or Puente National, or even at Santa Fe, not above three leagues from the coast.

"Women and children and elderly persons are more likely to escape than robust young men. The ships in the roadstead do not escape, for there the breeze carries the poisonous miasma, and full often the whole crew of a ship sleeping between decks on a fine night are found attacked in the morning by the malady.

"During the ravages of yellow fever at Vera Cruz, the northerly wind will sometimes bring appeasing intervals to the unfortunate individuals who are decimated every day. As long as this wind lasts, the temperature becomes more moderate, and death spares his victims It is at this period that Vera Cruz presents a singular appearance, arising from the fact that the strength of this wind is so great that the people are compelled to barricade their doors and windows. Pas-

sengers in the streets may be seen striving with all their power against the wind, or, carried away by the gusts, they rush with giant paces over a ground which they could not get across but by inches. A fact worthy of remark is, that the climate of Vera Cruz is favourable for those who escape the fever; indeed it is then considered one of the healthiest places in Mexico."

The country about Vera Cruz has a melancholy desolate aspect, presenting only extensive plains of sand, not unlike the coast of France between Bordeaux and Bayonne. It is only at some leagues from it that an opinion may be formed of the fertility and great resources which it possesses. The road to Mexico goes on rising from level to level as far as the great plain of Anahuac, in the midst of the lakes near which is the great city of Montezuma. Humboldt tells us that "the route from Vera Cruz to Mexico is such that the traveller in two days passes through every change of vegetation." In a very limited space one finds in the shelter of the valleys, the slopes of the hills, and the summits of the mountains, that there are three zones, which the Mexicans designate as the hot, the temperate, and the cold country. On these the soil yields an abundance of produce without parallel throughout the most fertile parts of Europe, or even between the tropics.

The distance from Vera Cruz to Mexico by the usual route of Jalapa and Puebla, is 93½ Mexican leagues, or about 242 miles. This route rejoins the former one by Amozoc, and deviates but little from it, having much the same difficulties. The journey is usually made in caravans drawn by mules. At present the road is in a most deplorable condition, sometimes through boggy ravines, at others winding round the flanks of mountains, covered with a thick scrub, the certain haunts of brigands or guerillas. The vehicles often get swamped in mire for hours together and become broken by the mules, rendering it necessary to repair them, far away from any habitations or resources, and thus losing a whole day.

As far as Jalapa the road presents little that is worthy of notice. The little village of Puente Nacional owes its name to a bridge of a rude construction, the bend of which joins two precipitous rocks, and crosses a ravine, at the bottom of which runs the River Antigua, the River Canoas of the conquerors. It is a position which is capable of a long defence in war with a handful of resolute men. The surface of the river is about 2,100 feet above the level of the sea, and the unhealthy country of the coast is here left, the road continuing to ascend as far as Jalapa. Cerro-Gordo is 2,400 feet, and Jalapa 4,350 feet above the level of the sea.

In the vicinity of Jalapa the country begins to show a rich vegetation. The heat here is less than on the coast, dew becomes more abundant, and the atmosphere moister. The trees are more healthy, lichens and runners appear on the branches, spreading in garlands from tree to tree: the orchids decorate the foliage with their flowers, and thousands of parasites suspend themselves among the trees. The roads are bordered by varieties of flowers, among which are the rose

and the hibiscus, and with the orange flower load the air with their perfume. The flowers of a temperate climate are seen by the side of the tropical. The peach tree mingles it branches with the guava and the apple: the soil, in fact, is most lavish of its gifts.

Jalapa, which has given its name (jalap) to the fine weed celebrated for its medicinal virtues, and which abounds, is built on an elevation; the town is handsome and picturesque from its irregularity. It is situated on the Macuiltapec, and is surrounded by other hills and mountains scattered near it like the seats of an amphitheatre and commanded by the Perote (14,000 feet) and the peak of Orizaba (17,400 feet), which well deserves the name of Citlaltepetl, given to it by the Mexicans. The women of Jalapa are renowned for their beauty; there are some who are fresh coloured with handsome eyes and pretty hands, and above all with very small feet. But they have a tendency to attain this quality by wearing shoes too small for them. The principal buildings of the town are the convent of St. Francis, the church of St. Jose, the barracks of St. Ignace, and the chapel of Calvary. Its population is about 10,000 or 12,000, and its commerce consists of the natural productions of the neighbourhood, maize, vegetables, fruit, sugar, and honey, and its manufactories of pottery and tanneries.

On leaving Jalapa the mountains become long and frequent, and it is very difficult to cross them in heavy carriages. But the cold region is soon attained, when a complete change immediately appears in everything, even among the people. Vegetation loses its vigour and variety, and assumes the sombre aspect of our northern clime. To the joyous bignonier succeeds the hardy oak, the palm, that friend of man, and the pine. The beautiful masses of roses, previously so common in the midst of verdure, are no where seen. At no great distance they are worn by the Indians to ornament their long dark tresses. A population of an order somewhat careless of their appearance are now before us, on roads which cross a barren country. The women, ill dressed in a kind of black stuff, with ill arranged hair, remarkable for its unpleasant odour as well as its occupants! are seen standing at the doors of their ill built huts. These miserable dwellings are dismal and silent: the Indian here has lost his hilarity and is evidently unhappy and a prey to those bad passions which brood in the heart where the body is in constant suffering.

It is here, says M. Mathew de Fossey, to whom we are indebted for the details of this journey, that it is necessary to be armed when travelling, to avoid being attacked and robbed. The environs of Perote, La Puebla, Rio Trio, are celebrated for their attacks by robbers. On approaching these places the appearance of a person armed is sufficient to give the alarm, for the highway robber flies from danger, and takes care to attack no one without being sure of his prey.

At a short distance from Jalapa commences the paved road of San Miguel, which crosses mountains and winds through forests. It is a magnificent road, but unfortunately not looked after, and at present in many places requires much repair. This road soon attains the re-

gions of the clouds, 6,500 feet, (near Las Vigas the height is 7,850 feet) and on descending on the eastern side, an immense extent of country is seen spread out at one's feet, undulating like the sea, but rejoicing in verdure and lighted up here and there by partial floods of light. If the atmosphere is clear of misty vapour, the blue waters of the Mexican Gulf will be seen, which indent the low shores of Vera Cruz.

The paved way being passed, the road continues over volcanic ground. The scoria which covers it leaves but little room for vegetation, and trees are but seldom seen. The country there wears an insignificant aspect, parched by the heat of summer, or stunted by the cold gripe of winter.

The little village of Perote, which is now soon gained, stands at the commencement of a long, arid, and barren plain at the foot of a mountain, to which the natives have given the name of Nauchampatepetl, somewhat square in form, and called by the Spaniards Le Coffre. Situated some 7,700 feet above the sea, it is in the midst of cold which contrasts strangely with the heat of the shore.

Between Perote and the Venta of Pinal, 8,300 feet high, the road passes through some swampy plains formed in the rainy reason by waters from the neighbouring heights. From the Venta the volcanoes of Mexico are seen, if the weather be fine, with their snow-clad summits tinted with rosy hue by atmospheric effect.

Amazoc, where the two roads unite, one from Jalapa and the other from Orizaba, is a large town, which derives all its importance from being in the line of road. It is the principal entrepot of the farms in its vicinity. The road now becomes more lively with carriages, mules, and vehicles busy making their journeys, and the traveller finds that he is approaching the large town of La Puebla. To the right he sees standing like a sentinel a hill of steep ascent and difficult of access, on which is perched the convent, half in ruins, of Notre Dame de Guadaloupe.

Puebla de los Angeles, the principal place on the road from Vera Cruz to Mexico, owes its name of the City of Angels to the beauty of its climate. It was founded in 1531, and contains 70,000 inhabitants; being considered the second in importance of the whole of Mexico. It is watered by several streams and a spring to the North of the town that supplies forty public fountains. The streets, which generally lie N.E. and S.E. are very regular and well paved, with side walks, and are altogether very handsomely built. Its principal edifices are, the cathedral, the episcopal palace, that of the governor, the public hospital, the museum, six parish churches, seventy-two chapels, twenty convents, three barracks of infantry, and two of cavalry. It is the centre of commerce, and possesses numerous factories. The outskirts of Puebla are less attractive than the town, nor are the houses so well built.

About two leagues beyond Puebla, on the left of the road, stands the celebrated *teocali* of Cholula, a large brick pyramid on the magnificent temple of Quetzalwal, the ruins of which are marked by cy-

press trees. A humble temple, dedicated to the Virgin, stands there in the place of an altar which was too often stained with human blood. Instead of inhabitants nature has bestowed on the valley beyond Puebla a grand picturesque appearance. To the left the Popocatepelt and the Iztauchault raise their snowy summits among the clouds and spread about them a delicious freshness. The beautiful lake of Chalco, spotted with the vessels of Indian fishermen, extends to the base of the mountains, and on the plain hard by appear some volcanic irregularities, and some islets in the midst of the blue waters, and the whole valley is as completely bordered by mountains as a park is by its fence.

Six large lakes, without counting minor ones, occupy a large portion of the central plain of this valley; considering them from South to North, Lake Chalco is only separated from Jochimilco by a mere ridge of land: the large Lake Tezeuco, near which is seated the capital, with the Lake San Christoval to the North-east of it, and the Lakes Jaliocan and Zumpango. Excepting the Tezeuco, which is salt, the water of these lakes is pure and fresh, and the shores of the former are even whitened with the deposit of the saline particles. These sheets of water are said to have become much less since the conquest, on account of their sources not being sufficient to keep up their levels. Lake Tezeuco is evidently becoming less every year, and would probably be now dry if it were not for those of Jochimilco and Chalco supplying it regularly with 130 cubic feet of water per second through the channel of the Viga, which connects them. All the lakes communicate with each other, and the waters join the River Tula, one of the branches of the Panuco, which falls into the gulf of Mexico, near Tampico, by this name.

Ayotla, the last village at which the traveller stops, is a pretty little place on the shore of the Lake Chalco, surrounded by a magnificent verdure, the only attraction which it has. At two and a half leagues from Mexico commences the grand causeway of the East on the Lake Tezeuco; it is formed of four large causeways, which through the midst of the waters lead to the capital, and it is the only one which yet remains well out of the lake.

There the route is varied by fresh scenery of mountains, which seem to form an elliptical basin, of which the lakes occupy one of the small ends and the city of Mexico the middle. At the end of the causeway the ancient town of Montezuma is seen among streams, the borders of which are defined by willows, the bright colour of its houses conspicuous in the light, and now an infinity of cupolas of churches and convents appear above the terraces, which extend over the city their fantastic colours of blue, red, and yellow. The Moorish form of architecture in these buildings gives them the appearance of mosques; and the towers of the cathedral decked out like two minarets succeed in imparting to Mexico on the first glance an Oriental air.

Mexico is the handsomest town of that country; its streets are directed to the four cardinal points of the horizon, and perfectly straight, admit of the chain of mountains being seen through them

that surrounds the city; they are well paved, having, also, side pavements, and formed by handsome houses, which generally have two stories and are painted with gaudy colours.

The upper part, which forms a terraced roof with a festooned gallery and windows down to the floor. We need not describe the sixty churches or forty convents of Mexico, no more than its numerous civil and military establishments; but shall content ourselves with noticing the great square or Plaza Mayor, a large quadrangle, on the North side of which stands the cathedral and its two towers, while on the eastern side is the palace, the seat of government. Here are also the senate, the chamber of deputies, the supreme court of justice, the residence of the commander-in-chief of the army, the treasury, the mint, the post-office, the botanic gardens, and three barracks. On the West and South, the sides of the square are formed by large handsome houses, with balconies, and a magnificent building called the hotel de ville. The university to the left of the viceroy's palace contains a musuem highly interesting in respect of the antiquities of Mexico; but the handsomest building of the whole city is certainly the geological museum.

The principal promenade of Mexico is the Alemeda, an extensive square, and there are besides, the Pasco Nuevo, the Bucareli, and the Viga. The first of these is a large road, bordered by willows and birch trees, ornamented with circular enlargements containing a basin with fountain; the second extends along the canal which connects the Lakes Chalco and Tezeuco, and is composed of four rows of trees, forming an avenue drive for carriages, with two side walks.

If Mexican authorities are to be accepted, this large city reckons about 200,000 inhabitants, a population oddly mixed. The streets certainly present an animated appearance. Here are constantly seen priests, soldiers, mendicant monks, leprous deformities, women of every class, cavaliers, carriages, carts, animals with burthens incessantly jostlingpast each other. It would seem that the climate of this large city is far from being as healthy as it is fine. The air is infected with exhalations which rise from the gutters of every street, especially in hot weather and at the commencement of rainy weather. These gutters overflow in some parts, and with their stagnant water infect their neighbourhood. The marshy swamps outside the city also send forth their exhalations, and fill the atmosphere with putrid miasma, so that if the streets were not so wide and straight as they are, admitting of a good draft of air constantly through them, the city of Mexico would be actually uninhabitable. The surface of the Lake Tezeuco is on a level with the pavement of Mexico, so that it happens, although very rarely, that the water which falls into the valley in three quarters of the horizon swells its volume sufficiently to inundate the city. In 1763 this actually happened. There is also another cause of inundation, which is, the overflowing of the Lake St. Christoval into that of Tezeuco. This has been obviated by a dyke two leagues in length and the formation of the large canal of Huehuetoca for leading be-

yond the valley of Mexico to the River Cuantitlan the waters which had produced this inundation.

The environs of Mexico have no attractions. The country is either burnt up or else marshy and the vegetation scanty and pitiful. One only sees here and there the manguays, as they are called, a kind of aloe, the leaves of which are some three yards long, from which a fermented liquor is extracted, much liked in Mexico; and the melancholy willow on the borders of the waters. With the exception of Iztacalco and Santa Anna, the small villages which are in the vicinity of Mexico are not worth looking at. But in a distance of one or two leagues from the capital there are others entirely different, where the monied gentry reside in the fine season, and of these are, Tambaya, Miscoac, San Angel, and San Augustin. At half a mile from Tambaya, in the midst of a mass of verdure, is the picturesque Chapultapec, which completes a beautiful house converted into a military school from the terrace of which there is a magnificent view of Mexico and its lakes and valleys. A road about a league long leads North of Mexico to the town of Guadaloupe, celebrated for its miraculous sanctuary of the Virgin, the patroness of the Mexicans.

JAPAN AND THE JAPANESE.—*The City of Yeddo.*

(Continued from page 571.)

The city of Yeddo stands on the shore of the gulf of that name, in 137° 35′ E. and 35° 39′ N.: it is twenty-four miles in circumference and fifty-three square. The city, however, has no wall, and it is not possible to fix its limits exactly, the town and its suburbs being so mingled together: and these with villages around them. A large fine river, the O-kava, crosses it from North to South and divides it into two unequal parts: the smallest, to the East of the river, bears the name of Hondjo; the other, to the West, is the Yeddo.

Hondjo is an island, with the O-kava to the West and another river to the East, which runs parallel to the first to the North by a canal, and to the South by the sea. The border of this part of the town is from eight to nine miles, and seven square miles of surface. Five large canals, two of which run North and South and three from East to West, cutting each other at right angles, divide Hondjo into eight parts, which are nearly all occupied by temples, palaces of Daimios, and the dock-yards of the government. The temple of 500 images (Goiak-Lakan) situated in the N.E. part of Hondjo, deserves particular mention: it is formed of two ancient edifices, which have suffered very much from an earthquake and are going fast to ruin: the numerous idols which ornament it, and have given the name, are now placed in an extensive corridor near their former position. The

southern part of Hondjo, which borders the sea, contains dwelling-houses of the people who are artizans and fishermen; but there are a great many palaces and temples there, the favourite one of which is that of Hadsima, the god of war. The eastern part is scantily occupied: some temples, palaces, and farms stand here and there in the midst of cultivated fields. Hondjo, the aristocratic quarter, has but little animation about it. The two large quays, which are well formed and adjacent to which are several palaces, form one of the most agreeable walks of the city. On the Okava and at Yeddo they present the most varied and picturesque views possible: the river abounds with junks and small vessels, mostly covered with a bamboo and matting, and of which a certain number, occupied by young girls, seem to have a similar destination to the flower-boats of the Canton River. Four wooden bridges, solidly built, connect Hondjo with Yeddo, the longest of which measures 160 Japanese mattes or about 350 yards.

Yeddo is divided into three parts. Siro, the chateau; Soto-Siro, the environs of the chateau, and Midia, the town. A visit to these three parts of the second city of the empire will enable us to penetrate, if not into that almost inaccessible place the interior of the great families of the Japanese empire, at all events into the routine of society yet so little known, and the original character of which is in some measure delineated even in the buildings which we have attempted to describe.

Siro, the residence of the Tycoon, stands in the midst of Yeddo, and its high solid walls render it a kind of citadel, which is five miles in circumference. Besides the palace of the Tycoon, it contains that of the heir presumptive, three gosankios or princes of the blood royal, and some twenty daimios, as well as the houses of the ministers of state, the chief magistrate, and the house of the governor of Yeddo. The palaces of the Tycoon and heir presumptive are separated from the rest by a special piece of ground. Before arriving at this enclosure, which the court functionaries and the attendants of the chateau have the privilege of entering, two large ditches must be crossed, over which there are eighteen bridges at equal distance from each other. The Tycoon's residence has been lately visited by the ministers of England, France, Holland, and America, as well as by many members of each of the legations, and I have from the mouth of visitors, who, far from being struck by the magnificence which some travellers have spoken of, this residence, on the contrary, presents a remarkable contrast in its simplicity with the luxury of oriental courts. The mats with which the apartments are covered it is true are of a remarkably fine texture. The sculpture which ornaments the door posts, the colonnades which support the ceiling, and even the ceiling itself, are most elaborately worked and finished exquisitely. But there is nothing in the rooms besides that attracts the eye: the whole building is severely simple. The palaces of the daimios and other great personages are of the same character. Built of stone or in *pisé* whitened with whitewash, they are but one story high, and resemble extensive outhouses. On the outside they have no other ornament than copper

plates fixed over the doors on massive wooden tablets, and so disposed as to represent the arms of their proprietors or some kind of design. There is nothing known for certain of the interior of these palaces, into which no foreigner has yet penetrated; but it may be taken as tolerably certain that there, as well as in all good society in Japan, simplicity and neatness with order prevail with a perfect propriety.

The chateau is surrounded by well constructed walks, spacious and smooth, by the side of the canals, which are literally covered by aquatic birds. These birds rejoice in perfect security, for it is sacrilege to meddle with them. In the recesses of Siro there are two hills which are always the curiosity of visitors: one is situated near the palace of the three gosankios, and is ascended on horseback; the other by a long series of stone steps, it is said above a hundred. From the summits of these heights there is an extensive view over the town and the gulf. Yeddo is a city of gardens; it looks like a park, where the view is unbounded, which is bordered by the sea, crossed by a large river, and ornamented with numerous villas. In certain parts may be seen uninterrupted series of houses, which form regular streets; but every now and then temples, gardens, and palaces break the uniformity of the lines, and preserve that peculiar character which makes Yeddo a city unequalled in the world, and the first sight of which excites in travellers the most agreeable surprise.

The second quarter of Yeddo, Soto-Siro, surrounds the chateau, and like it is nearly of a circular form. It is ten miles in circumference, and covers a surface of seven square miles. Separated from the chateau by a canal, Hondjo, the Okava, and by a canal which is named Chore, it is connected with the chateau by two bridges, and Hondjo by three large bridges, and with the city by thirty more, the most remarkable of which is the famous Nippon bassi or Nihhon bachi as some pronounce it (the bridge of Japan), which has been adopted as the point of departure in reckoning distances from Yeddo to all parts of the empire, and which is therefore considered the geographical centre of Japan. The palaces of the daimios in Soto-Siro occupy four square miles, the citizens' houses two and a half, and the temples only half a square mile. Among the sacred edifices Monddeki shonld be mentioned, the largest *tera* of Yeddo, and Sanno, one of the principal *mias*. This word, tera, is the name given to Buddhist temples, and the mias is dedicated to the primitive religion of Japan.

The part of Soto-Siro which contains the citizens' houses is one of the most important towns of the whole empire. It is crossed by the great road by which the people of the provinces and the commerce of the country obtain access to Yeddo. This road from Nagasaki to Yeddo bears the name of Tokaido, the road of the West; but when crossing the capital it is called O-kovi, the Great Street, and to the North of Nihhon-bachi it is called Oskio-kaido, the North Road.

of The part of Soto-Siro to which we are referring is called the City Yeddo. It is in the shape of a parallelogram, surrounded by canals. That on the West separates it from the chateau, the three others from

Soto-Siro. It is divided lengthwise by five streets, which are crossed at right angles by twenty-two others, forming seventy-eight regular islots [? blocks], all separated from each other by a wooden gate. These gates, generally open, are always guarded by police officers, and may be shut whenever it is desired to separate one islot from another. In the city and its immediate environs there is neither palace nor temple. It is the only part of Yeddo that has any resemblance to our towns of Europe. The streets are wide, straight, cheerful, and formed by houses, with abundance of merchandise of all kinds. The entire absence of all carriages facilitates communication very much here. While the greater number of Japanese dwellings are built of materials as light as they are inflammable, like wood and paper, in the city of Yeddo are a large number of store-houses, the solid walls of which *en pisé* present an excellent barrier against fire. Had this precaution not been adopted, the riches of merchants would soon be consumed, for fires are specially frequent in Japan. To the North and South of the city extend buildings which, so to speak, serve as the dwelling-places of merchants and artizans.

The town of Midsi is twenty-four miles round and forty-two square miles of area. The part North of the chateau covers an area of sixteen square miles, about a third of which is dedicated to religious houses. The mausoleum of the Tycoon only, in the midst of a handsome park a league in circumference, is surrounded by thirty-eight temples. Those of Quannon, Amida, Confucius, and Kanda, the patron of Yeddo, deserve special mention. The temple of Quannon, generally called Akatsa by Europeans, is one of the handsomest and most respected in Japan. It is visited from all parts as a pilgrimage. It stands near the River Okava, not far from the bridge of Adsouma, and in the centre of a large park, in which there are plenty of tea-houses as well as shops, where rosaries, images, and religious books are sold. This garden is at times converted into a veritable fair: here are animals tame and wild, rare plants, war figures, and many other things adapted to attract the attention of the numerous pilgrims who come here for the sake of their devotions. The sanctuary which contains the sacred idol is at the end of a long avenue, paved with stone flags, and planted with trees, under which are stalls of merchants and mountebanks. This avenue is infested by beggars, who display their hideous miseries and implore charity from the passing crowd. At the entrance of the alley is a door varnished in red, in the midst of which three colossal coloured paper lanterns are suspended. The varnish of the door has lost nothing of its original bright freshness, although it has been exposed for a number of years to all the changes of the weather.

At the extremity of the alley near the temple in a stable, most carefully preserved, is a sacred horse, the coverings of which are without a spot and as white as milk. Every day at the same hour this horse is magnificently harnessed and led with great ceremony before the idol. One of the priests inquires of the goddess Quannon-Sama if she wishes to go out of her abode, and after waiting for an answer,

which never comes, orders the horse to be taken back to his stable. The temple is a large square building, from fifteen to twenty feet above the ground. A flight of steps affords access to the interior, which in the evening is closed by massive doors of wood covered with sheets of copper. To the left of the principal altar, in a small chapel, is a picture which presents a curious sample of Japanese manners. It represents courtizans who are rendered famous by their attractions and charity, and to whom the djoros and other inmates of the tea-houses render the most abject homage. The interior of the sanctuary has not that character of scrupulous propriety which I have observed in many of such edifices. In revenge, it does not fail to be filled with votaries from all parts of the empire; but indiscreet curiosity has rendered the inspection of this temple a very difficult matter. To the right of the principal building is a pagoda, similar to those of the Chinese, but clumsily built, and there are also two colossal statues in stone, representing the image of Buddha.

The temple of Confucius is not open to strangers. In the midst of the park is the university of Yeddo, where the sons of the great families of Japan complete their studies. Here they are taught the elements of geography, general history, and the physical sciences, foreign languages, and with much care natural history, and above all the history of their own country. But the special objects of study are the Japanese and Chinese manuscripts, and high Japanese literature, which borrows its works from the classic literature of China. The difficulties of these last studies are almost insurmountable, and require so much time that the pupils can scarcely manage them with the other branches of their education. There are five ways of writing Japanese: they are called in kai-cko, in gio-cko, in sosko, in hiragana, and in katagana. The two last modes are learnt without much difficulty; but the full acquirement of the other three is considered sufficient to last a man his life. Thus the best scholars on leaving school only know how to read and write Chinese and Japanese, and remain with but few exceptions ignorant of the rest all their lives. Japanese intelligence has been much exaggerated. Well brought up, patient, knowing well how to listen with good grace, which does not compromise them, they have a refined mind, are quick and ready; but they certainly have no penetration or enlarged views, that powerful imagination which characterizes the Western races. It appears that their intellectual state must be attributed to an inferiority of race rather than to an inferiority of civilization. No doubt a daimio is a better informed and a more clear headed man than our justices, say, of a middle age; but it would be absurd to pretend that Japan could produce philosophers and speculating individuals such as this age has produced among us. The inexhaustible sources of philosophy, of poetry, of art, which descend from the heights of old classic authors, which have regenerated the Western world, have never vivified the arid walks of philosophy and literature of Japan.

There are several houses of daimios in the part occupied by the temples of Quannon and Confucius. The palaces of the princes of

Mito and Owari, closely related to the Taicoon, and that of the prince of Kanga, the richest of the eighteen *gokchis* or peers of Japan. The revenue of this prince is estimated at 1,200,000 kokf of rice, equivalent to about £1,000,000. The great theatre is situated in the same quarter, called the Oki Chibaya. This theatre is a very large building, built of very slight construction of wood, and is capable of containing from 6,000 to 8,000 spectators. Yosivara also forms a sort of town apart from Yeddo, and contains the djoro-jas or house of tolerance; and the whole of Yosivara is isolated from Yeddo by walls and canals. It is entered by a single gate, which is guarded day and night by police. The form of it is a regular parallelogram, measuring about a mile in circuit. It has four streets lengthwise and three in a transverse direction, crossing them at right angles, and dividing the houses into nine portions, separated by wooden gates, which are shut at pleasure, but which secures a strict surveillance at all times, of which the bad manners of its people explains the necessity. But this rendezvous of debauchery is only frequented by the lowest classes of the people. Officers do not even venture there but in disguise, and much prefer the suburb of Sinagawa.

The North part of Yeddo is bounded by pleasure gardens like Askayama, and small villages, which resemble in some degrèe the environs of Paris. Every European who resides at Yeddo has visited Od-si, the most remarkable of those villages for the beauty of its situation. It lies at the back of a smiling hill near a small river of limpid water. During the fine season, whole families of the country peasants frequently come here to enjoy the shade of the ancient trees, or in the tea-houses, of which there are many there. They enjoy the simple repast along with bad music, and seem to be happy with their innocent amusements. Very seldom does argument or angry discussion trouble them in their innocent amusements, and a stranger cannot be otherwise than pleased with their amiable manners. A temple erected near Od-si, by Hicas, the founder of the present dynasty of Taicoons, has been consecrated to this prince by the name of Gongen-sama-no-terra. The term Gongen-sama is the name under which almost divine honours are rendered to Hicas. The building is of small importance; but it stands in a beautiful park, which is looked after with the utmost care and attention. The successors of Hicas repair there annually to address their prayers to the manes of their illustrious ancestor.

The Midsi comprehends a quarter still more contracted than that to which we are alluding, situated to the West of the chateau, and does not cover more than a surface of seven square miles: the temples and residences of the nobility occupy three fourths of it. Among these may be noticed the palace of the prince of Kision, the father of the present Taicoon, and that of the family of the Regent Ikammo-no-kami, who met with a terrible death. The most interesting temple of this quarter bears the name of Mio-hoodchi: it is in the midst of a veritable town of convents, access to which is afforded by a pathway of about a mile and a quarter, bordered by houses, occupied by priests or monks, and where sacred articles are sold similar to those in the tem-

ple of Quannon. The temple of Miohoodchi, large, handsome, and well looked to, is composed of many classes of rooms, of which the most remarkable is a large parlour to the left of the principal sanctuary, furnished with thousands of *ex-votos* suspended along the walls. These are generally pictures but little different from those which decorate certain Roman Catholic establishments, such as Notre Dame de la Garde, at Marseilles. They represent ships in the process of being wrecked, infants on their death-bed, and other scenes of distress and sorrow. Often in one corner of a picture the deity is represented to whom the votary is addressing his prayers. One of these pictures, more curious than most of them, represents an enormous tress of hair, almost a cable, which is nine inches in circumference and nearly 100 feet long. When one considers that the Japanese look on the head of hair as one of the valuable ornaments of mankind, and that they do not allow the loss of it but for motives of state, one has a right to marvel at this picture, a colossal proof of human superstition, and to the formation of which millions of men may have contributed.

The third and last part of Midsi extends to the South of the château, over a surface of twelve square miles, one of which is scarcely covered with citizens' houses, the rest is consecrated to palaces, gardens and religious buildings. This part of Yeddo is known best to foreigners, as being that in which the four European legations are established.

The British legation is at Todendi. Situated by the seaside, in the vicinity of Sinagawa, and on the to-kaido, the great high road of the empire, has great advantages. The minister and his suite occupy a set of apartments previously assigned to priests who serve in the temple of Todendi, situated at the end of a shady avenue and paved with stones. The British legation of Yeddo has been the scene of several events which have marked a sad phase in the history of the relations of Western nations with Japan. Here Sir Rutherford Alcock's interpreter was stabbed and Sir Rutherford himself attacked by a band of *lonines*. These are individuals collected from among the unemployed of society, such as young men out of work, disbanded soldiers, dismissed functionaries, &c., foreigners designate by the same name bandits and other dangerous men who have evinced hostility to those from Western nations who are establishing relations between their countries and Japan. Among the Japanese the term *lonine* has nothing in it of disrepute, and signifies a man with no employment. Those lonines who attacked Sir R. Alcock left five of their men killed on the spot, after having killed and wounded among others Mr. Oliphant, the secretary, and Mr. Morrison, the consul at Nagasaki; here also two English sailors were killed defending the veteran Colonel Neale, the temporary successor of Sir R. Alcock.

Sai-kai-dsi, the French legation, stands in a street parallel to the tokaido, and on an eminence from which there is an admirable view of the gulf. The Dutch consul-general when he is at Yeddo occupies a small temple, called Chio-dsi, which is situated in an undesirable position between the English and French legations. He seems there to

live like a prisoner of state, for his whole house is surrounded by Japanese soldiers, who do not lose sight of it all day, and during the night actually watch it even to the door of his bedroom. Thus is he exposed to every inconvenience of the position assigned to him at Yeddo, and passes the greater part of the year either at Decima or smong the Dutch, at Nagasaki or at Yokohama, in the vicinity of his countrymen. For a long time the United States minister only has continued to reside permanently at Yeddo; but since the destruction of Dsen-fou-si by fire, the seat of the American legation, General Pryne, the successor of Mr. Townsend Harris, has been obliged to follow the example of his colleagues, and establish himself at Yokohama. Dsen-fou-si was a temple in the interior of Yeddo, a mile and three quarters from Toden-si, and a mile and a quarter from Sai-kai-dsi. He had formerly the house of the bonzes attached to the service of a grand tera: the park in which it was situated was badly looked after, but it was large, with beautiful trees in it, among which was the pagoda fig tree *(ficus religiosa)* of colossal dimensions. The Japanese hold it in great veneration; in fact, in *ex-voto* fashion, and repair in crowds to it every evening to say their prayers. Mr. Henry Heusken, the secretary of Mr. Harris, lived in the temple of Dsen-fou-si. It was there where for nearly three years he took his daily rides on horseback in Yeddo or in its environs, where he studied with the taste of an antiquary, and was known in the choice and most refined quarters of the place. During the three months which I passed at Dsen-fou-si, he was my companion and guide on all occasions; to him I am indebted for most of the information which I have collected at Yeddo. Heusken perished by the hand of an assassin one evening as he was leaving Akabane, the residence of Count Eulembourg, the Prussian minister: after the interpreter of Sir R. Alcock, the unfortunate Denkouchki, has been interred in the park of the temple which has served as a cemetery. At present this cemetery is abandoned. It is said that the Japanese preserve their hatred of these innocent victims of national prejudice beyond death. The monument which Sir R. Alcock raised to the memory of his faithful secretary bears the inscription which states that Denkouchki was massacred by Japanese assassins. As to Mr. Harris, it has not been permitted to perpetuate the remembrance of a crime which causes so much just indignation;—the stone which covers the remains of Henry Heusken only gives the dates of his birth and death.

Beyond the foreign legations the quarter extending to the South of the chateau contains the temple of Megauro, one of the most celebrated teras of Yeddo, the cemetery of the great priests of the palace of the powerful prince of Satzuma, which passes for the richest of the capital, in fact, the old palace and mausoleum of the Taicoons. This magnificent palace is observed from a great distance as a lofty pagoda in the middle of a park: it is composed of many temples, and surrounded by ancient trees, which yield shelter and shade; and which mark in imposing stillness the last dwelling place of the ancient military chiefs of Japan.

At this stage of our review of the Japanese capital, in which we have given a sketch of its exterior, it is necessary to collect our observations on the moral life of its people, to record some particulars of the amount of the population, and the different portions forming it. This will be the last portion of our subject, for which we must refer to our note books and observations.

(To be continued.)

Proceedings in Japan.

We now make room here for the following correspondence which has passed between her Majesty's Secretary of State for Foreign Affairs and her Majesty's Chargé d'Affaires in Japan.

Earl Russell to Lieutenant-Colonel Neale.

Foreign Office, December 24th, 1862.

Sir,—The barbarous murder of Mr. Richardson, and the murderous assault on two gentlemen and a lady who were in his company, have inspired her Majesty's government with great and just indignation. It was to be hoped that the instant trial and condign punishment of the murderers, together with an offer of further reparation, would have shown, on the part of the Japanese government, a due sense of the magnitude of the offence which had been committed. But the letter of the Japanese Ministers of Foreign Affairs, dated the 16th of September, dispels this hope. In a tone of helplessness or evasion they say that, in the answer which Saboolo gave to their officer, there is something very improper, and that they will have the whole state of the case more accurately inquired into, and inform you of the result. There could have been no doubt in the minds of the Ministers of Japan that a barbarous murder had been committed; no doubt that other murders had, at the same time, been contemplated; and the only course which a government sensible of its duties, and able to perform them, could have pursued, was to arrest, try, convict, and execute the murderers. But even the first step of this process does not seem to have been taken. In fixing the reparation to be required, her Majesty's government have had to consider the anomalous state of political rule in Japan. They find two parties who are responsible to the British government: first, the government of Yeddo, who, when British subjects are attacked and murdered on the high road, in full daylight, by persons who are known, nevertheless allow those persons to remain unpunished; secondly, the Daimio Prince of Satsuma, whose relation, Simadzoo Saboolo, permitted, if he did not actually order, his retainers to commit this horrible crime, and who do not punish it.

You are instructed to ask as reparation from the Japanese government,—1, An ample and formal apology for the offence of permitting a murderous attack on British subjects passing on a road open by treaty

to them. 2, The payment of £100,000 as a penalty on Japan for this offence.

Next you will demand from the Daimio Prince of Satsuma,—1, The immediate trial and capital execution, in the presence of one or more of her Majesty's naval officers, of the chief perpetrators of the murder of Mr. Richardson, and of the murderous assault upon the lady and gentlemen who accompanied him. 2, The payment of £25,000, to be distributed to the relations of the murdered man, and to those who escaped with their lives the swords of the assassins on that occasion.

If the Japanese government should refuse the redress you are thus instructed to demand, you will inform thereof the Admiral or senior naval officer on the station, and you will call upon him to adopt such measures of reprisal or blockade, or of both, as he may judge best calculated to attain the end proposed. You will at the same time communicate the substance of your instructions to the envoys and naval commanders in Japan of other European powers; and you will concert with the British Admiral and the naval officers of those powers arrangements for the safety of foreigners during coercive operations.

If the Daimio Satsuma should not immediately agree to carry into effect the terms demanded of him, the Admiral should go with his own ship, and with such others as he may think fit to take with him, or he should send a sufficient force to the territory of the Prince, which I have been informed is a peninsula on the most southerly point of the island. He has a port, I am told, at the south-west end of the island of Kiu-siu. The Admiral or senior naval officer will be better able to judge than her Majesty's government can be whether it will be most expedient to blockade this port, or whether it will be possible or advisable to shell the residence of the Prince. I have also been informed that the Prince of Satsuma has steam-ships brought from Europe of considerable value; these might be seized or detained till redress is obtained.

During these operations, whether against the government of Japan or the Prince of Satsuma, care must be taken by the Admiral to protect the ports where British persons and property may be in jeopardy. The distinction between the government and the Daimios is one that must be kept in view.

The Prince of Satzuma is said by one of the Japanese ministers to be a powerful Daimio, who could not easily be coerced by the Japanese government. He must not, nor must the other Daimios, escape, on that account, the penalty of their misdeeds.

I am, &c.

RUSSELL.

Lieutenant-Colonel Neale to Earl Russell.

(Received August 27th.)

Yokohama, June 24th, 1863.

I hasten to announce to your lordship that I have received within

the walls of her Majesty's legation the whole amount of the indemnity demanded by her Majesty's government from the government of Yeddo, amounting to £110,000 sterling, represented by 440,000 Mexican dollars; the reparation affixed for the families of the guards murdered at her Majesty's legation on the 26th of June is comprised in this amount.

Lieutenant-Colonel Neale to Earl Russell.

(Received September 14th.)

Yokohama, July 13th, 1863.

My lord,—I have the satisfaction of transmitting herewith to your lordship the letter of apology addressed to me by the Japanese government, expressive of regret at the murders and outrages committed in this country upon British subjects during the course of last year. I transmit this paper in original Japanese, accompanied by a literal translation, as well as by a translation of the Dutch version. Thus the demands I have been instructed to make upon the government at Yeddo have been happily brought to a satisfactory and successful issue, not, however, without the most persistent efforts on my part to resist all difficulties and obstructions opposed by the distracted government of this country at so serious a crisis. In respect to the apology, however expedient I had deemed it to abstain from being over-exacting as to the terms in which it should be expressed,—especially as the payment at last, without comment, of the indemnity was of itself an acknowledgment of the justice of the reparation demanded,—still I was under the necessity of twice declining to accept two other written apologies tendered to me, as in translation they were obscure and undefined. The third I conceive to be clear and acceptable; and it remains for me to trust it will be found sufficiently satisfactory by her Majesty's government.

I have, &c.,

EDWARD ST. JOHN NEALE.

The Japanese Ministers for Foreign Affairs to Lieutenant-Colonel Neale.

Inclosure.—(Literal translation from the Japanese.)

We communicate with you by a dispatch. Last year at the British legation in Yeddo a wicked and murderous act took place. Again, on the tokaido a British subject was murdered. Such unfortunate affairs were for us highly to be regretted. Thus we hope that affairs likely to break off the intercourse between the two countries may not again arise. We desire to inform you thus much.—Respectful and humble communication.

(*July 3rd*, 1863.)

Lieutenant-Colonel Neale to Earl Russell.

Yokohama, August 26th, 1863.

My lord,—I had the honour to inform your lordship upon closing the last mail that I was on the point of embarking on board the flag-ship of Vice-Admiral Kuper, and of proceeding with the squadron under his command to Kagosima, the capital of the Prince of Satsuma. I deemed it right to acquaint the Tycoon's government of my intentions, and I accordingly addressed them a letter, a copy of which I have the honour to enclose. I promptly received a reply soliciting me at least to postpone the projected expedition. I had hardly received this written communication, when a vice-minister came down from Yeddo and sought an interview with me on the 5th instant. Far from urging further arguments to dissuade me from the intention of proceeding to the territory of Satsuma, he stated that the Tycoon's government purposed sending a Japanese steamer with us, having a high official on board. No steamer, however, appeared then or at any subsequent period.

The squadron, consisting of H.M.S. *Euryalus, Pearl, Perseus, Argus, Coquette, Racehorse,* and *Havoc,* weighed from its anchorage at Yokohama on the 6th instant. I was accompanied by most of the members of her Majesty's legation, distributed over her Majesty's ships,—their more or less proficiency in the Japanese language, it was deemed, might be highly useful, and the result has confirmed this expectation. Under easy steam and sail her Majesty's squadron reached the entrance of the bay of Kagosima on the evening of the 11th inst., and anchoring ground was found about ten p.m., after some difficulty, in the extreme depth of water, which was found generally to prevail in that noble bay.

Early in the morning of the ensuing day, the first boat, containing two officials, came off from the shore to the flag-ship. They inquired the nationality of the ships, whether it was our intention to proceed further into the bay, whether a native pilot was on board, what number of guns the ship carried, and other questions of this nature, which having been replied to, the boat returned to Kagosima. Her Majesty's squadron a few hours afterwards weighed and cast anchor off the batteries of the town. A second boat with four other officials came off immediately to the flag-ship, and stated that it was understood to be the intention to deliver a letter addressed to the Prince of Satsuma. My dispatch, as originally written, a copy of which I have already had the honour to transmit to your lordship, and amended only in respect to the altered dates, together with a supplementary letter announcing the Admiral's arrival with the squadron, and my own presence on board, were delivered to the officials, who undertook to return, with a receipt, copies of both of which, in their amended form, I have the honour to enclose. This they did in a few hours, and at the same time informed me that the Prince of Satsuma was not at Kagosima, but at a residence inland, about fifty miles distant; the officials again came on board and stated that they were charged by the three members composing the Prince of Satsuma's council to request that Admiral Kuper and myself

would come on shore, where a building for the reception of foreigners had been specially arranged for our interview. Great anxiety was evinced that we should accede to this proposal; and they urged that it would be impossible to commit to writing all that might be discussed. Admiral Kuper fully concurred with me in replying that the only business which had brought us to Kagosima was fully set forth in the dispatch I had presented, and which was clearly conveyed in three languages,—English, Japanese, and Dutch. We declined to proceed on shore or enter into any discussions. The officials departed much disconcerted that we should not land. Viewed by the light of the occurrences which followed, it may well be assumed that treachery and violence were in store for us, had we unsuspectingly fallen into their designs.

On the 13th instant, several officials, one of whom was stated to be of superior rank, again came alongside the flag ship, accompanied by numerous two-sworded adherents in several boats. They entered into long parley before coming on board, requested to know whether I would personally receive the high official; of this they were assured. They then requested permission that he should be accompanied on deck by at least forty of his adherents, which was acceded to by the Admiral, who at the same time directed a guard of marines to be drawn up, with fixed bayonets, facing the gangway by which they entered. Upon reaching the deck, these armed retainers of Satsuma were disposed of in single file along the line of guns, and at once assumed their natural position of sitting in a kneeling attitude. The high personage referred to then finally decided upon ascending the ship's side. I received him, the Admiral being present, when he exhibited the utmost agitation and confusion. He was speechless, when one of his attendant officers stated that he was charged to speak for his chief, and that he had to inform me that he was the bearer of the written reply to my dispatch, but that they had some serious matters to add in connexion with it. No sooner had he proceeded thus far, when it was found that a boat, waving a flag, had reached the ship, and communicated something, which, when made known to the chief official, caused him to rise suddenly and leave the cabin, return to it, and leave it again. Finally, I was informed by him that he must return to the shore immediately, as he had received a message to the effect that a mistake had been made in the dispatch, which must be rectified; upon which he hurriedly left with the undelivered dispatch, if, indeed, he had been the bearer of any such.

During the interval occupied by these communications, the batteries on shore were constantly manned, and the guns diligently trained and pointed at the ships of the squadron, and especially on the flag-ship, the whole of them being within range. These and other suspicious circumstances induced the Admiral to determine upon shifting the anchorage of the squadron to as convenient a position, though still partially within range, as the extreme depth of the water would admit. As the Japanese officials were descending the ship's side, the anchors of the squadron were weighing.

Contrary to my expectation, the official last referred to returned late in the evening to the flag-ship at the new anchorage, and delivered into my hands the answer to my despatch preferring the demands. A careful translation of that document I have here the honour to lay before your lordship. Having no further communication to make to me, the bearer of the letter left the ship. I deemed the general tone and purport of this reply of Satsuma's counsellors to be utterly unsatisfactory. It raised the question whether, according to the laws of Japan, a Daimio, travelling with his retinue, is not fully justified in beating or thrusting off the road all persons who encounter him on the highway. It raised also the question whether or not the Tycoon was free from blame for not having inserted in the treaty these assumed and extravagant privileges. The indemnity demanded, it is said in the reply, will be an after consideration, when it had been decided whether the Tycoon or the Daimio was to blame. Such being the general purport of the reply which I had received, I considered it to be my unavoidable and immediate duty to call upon Admiral Kuper at once to resort to such preliminary measures of coercion, by reprisals or otherwise, as he might deem most expedient and best calculated to arouse the Prince of Satsuma to a sense of the serious nature of our mission. I have the honour to enclose a copy of my despatch, addressed in that sense to the Admiral.

A relation of what ensued I can best convey to your lordship by laying before you the succinct and graphic despatch which Admiral Kuper addressed to me at the close of the operations which were enacted. It would be unbecoming in me to indulge in expressions of admiration at the able and gallant manner in which the operations, suddenly rendered necessary, were determined upon, and immediately carried out by the ships of her Majesty's squadron, under the immediate command and direction of Vice-Admiral Kuper, upon whom it devolves to bring to the knowledge of her Majesty's government the spirited incidents and all sufficient results which attended the combat at Kagosima. The strength of the batteries, mounting eighty-one guns, the gale blowing during the action, the comparatively severe loss sustained by us, especially in the untimely fate of those brilliant and deplored officers, Captains Josling and Wilmot, of the flag-ship, will be duly appreciated by her Majesty's government. I did not hesitate to convey to Admiral Kuper my unqualified opinion that enough had been effected to vindicate the outrage committed upon British subjects by the adherents of Satsuma, at least until I had the honour to receive your lordship's further instructions. The chief agent of that outrage is generally understood to have been Shimadzu Saboolo, the father of the Prince: his guards but obeyed his instructions. No power as yet brought to bear upon Japan by her Majesty's government is calculated to coerce the Prince of Satsuma to deliver up his father to condign punishment, as the principal perpetrator of the outrage committed. It was determined upon this to return to Yokohama, when, after a series of severe gales and typhoons prevailing at this

season on this dangerous coast, the squadron returned to this anchorage on the 24th inst.

Thus I have the satisfaction to report to your lordship, that the instructions with which I have been charged, onerous as they were palpably and in fact, and having reference to the outrage of last September, have been carried out in letter and in spirit. The indemnities demanded of the Tycoon's government are afloat on board her Majesty's ships. I have had the honour to transmit to your lordship the written apology of the government of Yeddo; and in respect to the Prince of Satsuma having ill-advisedly sought to evade the specific demands which her Majesty's government deemed it advisable to direct me to make upon him, after due consideration of all the circumstances, and after long forbearance, his capital is in ashes, his foundries destroyed, and his steamers burnt. It remains for me to trust that her Majesty's government may deem that my instructions have been thus fulfilled in a manner best adapted to the difficult circumstances with which I have been, and still continue to be, surrounded.

In conclusion, I trust your lordship will pardon me if I do not resist the natural impulse of desiring to bring under your lordship's notice the special and unlooked-for services rendered on the occasion of the expedition to Satsuma of Messrs. Eusden, Gower, Macdonald, Willis, Fletcher, Von Siebold, and Satow, of this legation. In their absence all communications with the shore at Kagosima must have failed. Interpreters from the shore were held back and never appeared; an attempt to impede all explanations rendered nugatory by a ready knowledge of their own language, which they found on board, nor shall I have accomplished my duty were I to omit to solicit your lordship's favourable notice to the devotion with which these members of her Majesty's civil service exposed themselves to the anticipated perils of naval combat, unaccompanied by any ostensible prospect of the ordinary honours and rewards attending the exposure of life in the profession of arms.

I have, &c.,
EDWARD ST. JOHN NEALE.

P.S. I have the honour to annex to this despatch memoranda of interviews held on board H.M.S. *Euryalus* with the officers of the Prince of Satsuma. E. ST. J. N.

(Inclosure.)

From the Japanese Ministers for Foreign Affairs to Lieutenant-Colonel Edward St. John Neale.

Yeddo, August 4th, 1863.

On receipt of your despatch of the 3rd August, we have fully understood that you intend to go, within three days, to the territory of the Prince of Satsuma, with the men-of-war now lying in the Bay of Yokohama, in order to demand satisfaction for the murder of a British

merchant on the Tokaido last year. But owing to the present unsettled state of affairs in our empire, which you witness and hear of, we are in great trouble, and intend to carry out several plans. Supposing now something untoward were to happen, then all the trouble and care both you and we have taken would have been in vain and fruitless; therefore we request the said departure may be delayed for the present.

With respect and consideration,

MATSDAIRA BUZENNO KAMI.
MIDDZOONO IDZOOMINO KAMI.
ITAKOORA SOOWONO KAMI.
INOWOO-YAY KAWATSINO KAMI.

Translated by R. EUSDEN.

(Inclosure.)

To His Highness Matsudaira Shiuri No Daiboo, the Daimio Prince of Satsuma.

Her Britannic Majesty's Legation in Japan, Yokohama, August 1st, 1863.

Your Highness,—It is well known to you that a barbarous murder of an unarmed and unoffending British subject and merchant was perpetrated on the 14th of the month of September last (21st day of 8th month of 2nd year of Bung-Kew of Japanese reckoning), upon the Tokaido, near Kanagawa, by persons attending the procession and surrounding the norimon of Shimadzu Saboolo, who, I am informed, is the father of your highness. It is equally known to you that a murderous assault was made at the same time by the same retinue upon a lady and two other gentlemen, British subjects, by whom he was accompanied, the two gentlemen having been severely and seriously wounded, and the lady escaping by a miracle.

The names of the British subjects here referred to are as follows:—Mr. Charles Lenox Richardson, murdered; Mrs. Borradaile; Mr. William Clarke, severely wounded; Mr. William Marshal, severely wounded. This event filled with great and just indignation the British government and people, and excited the sympathy of, and produced a painful impression upon all civilised countries. Impressed with friendly and considerate feelings towards the government of the Tycoon, with whom the Queen of Great Britain, my august sovereign, is in relations by treaty of peace and amity, I acted with proper consideration for the Tycoon's government by leaving in its hands the legitimate means of speedily arresting and bringing to capital punishment the murderers from among Shimadzu Saboolo's retinue. This necessary forbearance on my part has been entirely approved of by my government, and appreciated and acknowledged by the government of the Tycoon. A different course proposed at the moment to be adopted in the excitement attending this barbarous outrage might have resulted in the capture, and, perhaps, death, by summary retribution, of Shimadzu Saboolo himself.

Ten months have now elapsed since the perpetration of this unprovoked outrage, during which period my government has been duly informed by me of the circumstances attending it, while the Tycoon's ministers have held out to me from time to time assurances and hopes that the murderers would be given up by your highness, according to the Tycoon's desire, and sent to Yeddo for trial and execution. But I have had occasion to report to my government that removed in your distant domain from the direct influence of the supreme government, and shielded also by certain privileges and immunities which belong to Daimios of this empire, you had utterly disregarded all orders or decrees of the Japanese government calling upon you to afford justice by sending the real criminals to Yeddo. They have not been arrested or sent; and no redress has consequently been afforded by the Tycoon's government, however desirous it may be of doing so. In the meanwhile I have received the explicit instructions of my own government how to act in this matter.

The Tycoon's government may be impeded by the laws of the country, and more especially by political embarrassments, from enforcing its desires upon Daimios of the empire in regard to criminal acts committed by their adherents; but when British subjects are the victims of those acts, Japan, as a nation, must through its government pay a penalty, and disavow the misdeeds of its subjects, to whatever rank they may belong. Under instructions from my government I demanded from the Tycoon's government an apology and the payment of a considerable penalty for permitting the murderous attack made by your retainers on British subjects passing on a road open to them by treaty. Both these demands have been acceded to. But the British government has also decided that those circumstances constitute no reason why the real delinquents and actual murderers should be shielded by your highness, or by any means escape the condign punishment which they merit, and which they would be subjected to for great crimes, such as they have committed, in all other parts of the world.

It has thereupon been determined by my government, and I am instructed to demand of your highness, as follows:—First. The immediate trial and execution, in the presence of one or more of her Majesty's naval officers, of the chief perpetrators of the murder of Mr. Richardson, and of the murderous assault upon the lady and gentlemen who accompanied him. Secondly. The payment of £25,000 sterling, to be distributed to the relations of the murdered man, and to those who escaped with their lives the swords of the assassins on that occasion. These demands are required by her Majesty's government to be acceded to by your highness immediately upon their being made known to you. And upon your refusing, neglecting, or evading to do so, the Admiral commanding the British forces in these seas will adopt such coercive measures, increasing in their severity, as he may deem expedient to obtain the required satisfaction.

The commander of her Majesty's ship of war charged with the delivery of this letter is made acquainted with the specific demands

which I have the honour to communicate to you in this letter, and, according as they are accepted or refused, he has received instructions either to carry out and witness their execution within a period of days which will be named, or in the event of a refusal, to commence at once coercive operations pending the arrival of additional forces. Your highness is therefore earnestly requested seriously to consider the course you will adopt upon receipt of this communication, the terms of which it is not in my power to modify, alter, or discuss. I avail myself of this occasion to offer to your highness the assurance of my respect and consideration.

EDWARD ST. JOHN NEALE,
Her Britannic Majesty's Chargé d'Affaires in Japan.

(Inclosure.)

Translation of a Despatch in Japanese from Kawakami Tajima, Minister of Matsdaira Shiuri No Daiboo, Prince of Satsuma, to Colonel Neale, Her Britannic Majesty's Chargé d'Affaires.

It is just that a man who has killed another should be arrested and punished by death, as there is nothing more sacred than human life, and although we should like to secure them (the murderers), as we have endeavoured to do since last year, it is impossible for us to do so, owing to the political differences at present existing between the Daimios of Japan, some of whom even hide and protect such people; besides this, the murderers are not one, but several persons, and therefore find easier means of escape.

The journey to Yeddo (undertaken by Shimadzu Saboolo) was not with the object of committing murders, but to conciliate the two courts of Yeddo and Kioto; and you will easily, therefore, believe that our master (Shimadzu) could not have ordered it (the murder). Great offenders against the laws of their country (Japan) who escape, are liable to capital punishment. If therefore we can detect those in question, and, after examination, find them to be guilty, they shall be punished, and we will then inform the commanders of your men-of-war at Nagasaki, or at Yokohama, in order that they may come to witness their execution. You must therefore consent to the unavoidable delay which is necessary to carry out these measures. If we were to execute criminals condemned for other offences, and told you that they were the offenders (above referred to), you would not be able to recognize them; and this would be deceiving you, and not acting in accordance with the spirit of our ancestors.

The (provincial) governments of Japan are subordinate to the Yeddo government, and, as you are well aware, are subservient to the orders received from it. We have heard something about a treaty having been negotiated in which a certain limit was assigned to foreigners to move about in; but we have not heard of any stipulation by which they are authorized to impede the passage of a road. Supposing this happened in your country, travelling with a large number of retainers as we do here, would you not chastise (push out of the way and beat)

any one thus disregarding and breaking the existing laws of the country? If this were neglected princes could no longer travel. We repeat that we agree with you that the taking of human life is a very grave matter. On the other hand, the insufficiency of the Yeddo government, who govern and direct everything, is shown by their neglecting to insert in the treaty [with foreigners] the laws of the country [in respect to these matters] which have existed from ancient times. You will, therefore, be able to judge yourself whether the Yeddo government [for not inserting these laws] or my master [for carrying them out] is to be blamed. To decide on this important matter, a high official of the Yeddo government and one of our government ought to discuss it before you, and find out who is in the right. After the above question has thus been judged and settled, the money indemnity shall be arranged.

We have not received from the Tycoon any orders or communications by steamer that your men-of-war were coming here. Such statements are probably made with the object of representing us in a bad light. If it were not with this object you would certainly have them in writing from the Gorogio; and if so we request you to let us see them. In consequence of such mis-statements great misunderstandings are caused. All this surprises us much. Does it not surprise you? Our government acts in everything according to the orders of the Yeddo government. This is our open-hearted reply to the different subjects mentioned in your despatch.

29th day of the 6th month of the 3rd year of Bung-kew. 13th August, 1863.

KAWAKAMI TAJIMA.
SHISSEI, Minister.

Translated by
A. O. J. GOWER.
A. VON SIEBOLD.

(Inclosure.)

Vice-Admiral Kuper to Lieutenant-Colonel Neale.

Euryalus, in the Bay of Kagosima, August 17th, 1863.

Sir,—I have the honour to acknowledge the receipt of your despatch of the 14th instant, in which you request me to enter upon such measures of coercion as I may deem expedient and best calculated to awaken the Prince of Satsuma to a sense of the serious nature of the determinations which have brought her Majesty's squadron to this anchorage.

I immediately directed Captain Borlase, of the *Pearl*, to proceed at daylight on the following morning with a portion of the squadron, to a bay to the northward of Kagosima, for the purpose of seizing and bringing to our anchorage three steamers, the property of the prince, which had been previously ascertained to be lying there; Captain Borlase was also desired to avoid as much as possible all unnecessary bloodshed or active hostility. This service was executed with much zeal and discretion by Captain Borlase; and the three steamers,

namely, *England*, screw, 759 tons; *Sir George Grey*, screw, 492 tons; *Contest*, screw, 350 tons, arrived at the anchorage during the forenoon of the 15th inst., lashed alongside three of her Majesty's ships; the object I had in view being the detention of these vessels as reprisals until such time as the Prince of Satsuma should either comply with the demands made upon him, or should make advances with a view to their settlement.

These considerations were, however, suddenly and unexpectedly set aside by the assumption of hostilities on the part of the Japanese; for at noon of the same day, the batteries opened fire with shot and shell on the squadron, an act which it became necessary immediately to resent, in vindication of the honour of the flag, and as a punishment for the outrage. And as it was impossible for the small force at my command to carry out the requisite operations, and at the same time to retain possession of the three steamers in question, I gave orders that they should be set on fire and destroyed, which was accordingly done.

The squadron then, as you are aware, proceeded to engage the batteries of Kagosima, advancing in line of battle (the *Euryalus* leading) from the northernmost battery, along the whole line, and finally attacking the southernmost or spit battery; after which I deemed it advisable, in order to ensure the safety of her Majesty's ships, to direct them to seek an anchorage. The weather, which had been threatening for a gale, becoming at this time most unfavourable, and as night was approaching, the signal was made to discontinue the action, and the squadron returned to an anchorage under Sakura Sima. It was impossible to ascertain precisely the extent of the injury inflicted upon the batteries; but considering the heavy fire which was kept up from the ships at point blank range, the effect must have been considerable. Many guns were observed to be dismounted, the batteries were several times cleared, and the explosion of various magazines gave evidence of the destructive effects of our shell. One half of the town was in flames and entirely destroyed, as well as a very extensive arsenal or factory and gun foundry, and five large Loo-Chew junks, the property of the prince, in addition to the three steamers already described. A heavy typhoon blew during the night, and the conflagration increasing in proportion to the height of the storm, illuminated the entire bay.

On the following afternoon, the gale having moderated, and as I deemed it necessary to remove the squadron to a safer anchorage than the great depth of water opposite Kagosima afforded, and having also observed the Japanese at work erecting batteries on the hill immediately above the little bay where the small vessels were at anchor, close to the shore, we weighed, and passing in line between the batteries of Kagosima, steamed out and anchored to the southward of the island. This opportunity was taken advantage of to shell the batteries on the Sakura Sima side, which had not been previously engaged, and also the palace of the prince in Kagosima. These operations were attended with complete success. There is every reason to

suppose that the palace has been destroyed, as many shell were seen to burst in it, and the fire, which is still raging, affords reasonable ground for believing that the entire town of Kagosima is now a mass of ruins.

Thus having accomplished every act of retribution and punishment within the scope of operations of a small naval force, and having received from yourself the verbal expression of your satisfaction with the extent of those operations, I purpose returning with the squadron to Yokohama, immediately the partial refit which is now in progress shall admit of our putting to sea.

I have, &c.,
AUGUSTUS L. KUPER.

A despatch, of which the following is an extract, has been received from Vice-Admiral Kuper, C.B., the Commander-in-Chief of her Majesty's ships and vessels on the East India and China station.

Euryalus, Gulf of Yeddo, August 22nd.

In the forenoon of the 14th I proceeded in the *Havoc*, partly for the purpose of satisfying myself as to the position of the three steamers mentioned above, and also to examine the large bay or lake at the head of the gulf above Sakura Sima. It proved to be everywhere as deep as any part we had yet sounded, there being generally fifty fathoms within a hundred yards of the shore. A strong breeze from the eastward had already sprung up, and the rapid falling of the barometer indicating the probable approach of a typhoon or heavy gale, the topgallant masts were sent on deck.

I have now to report to their lordships the further progress of the events following the receipt, on the evening of this day (14th instant), of a despatch from her Majesty's Chargé d'Affaires, and its enclosures, in which I was requested to enter upon such measures of coercion as I might deem expedient and best calculated to awaken the Prince of Satsuma to a sense of the serious nature of the determinations which had brought her Majesty's squadron to the Bay of Kagosima.

The *Pearl*, *Coquette*, *Argus*, *Racehorse*, and *Havoc*, were sent at daylight on the 15th, under the orders of Captain Borlase, to seize the three steamers already referred to, and which may be briefly described as follows:—*England*, screw, 1,150 tons, purchased for 125,000 dollars; *Sir George Grey*, screw, 492 tons, purchased for 85,000 dollars; *Contest*, screw, 350 tons, purchased for 95,000 dollars. Captain Borlase was further directed to avoid, as much as possible, all unnecessary bloodshed or active hostility. The steamers were accordingly taken possession of without opposition, and brought down to our anchorage during the forenoon of the 15th, lashed alongside the *Coquette*, *Argus*, and *Racehorse*, which vessels anchored in the same bay as before; the object I had in view being the detention of these steamers as reprisals, until the Prince of Satsuma should either comply with the demands, or make overtures to her Majesty's Chargé d'Affaires which might lead to their settlement.

The weather still looked threatening.

At noon, during a squall, accompanied by much rain, the whole of the batteries on the Kagosima side suddenly opened fire upon the *Euryalus*, the only ship within range; but although many shot and shell passed over and close around her, no damage was done beyond cutting away a few ropes. Finding that the springs on the cable would not keep the ship's broadside on, and as it was impossible with the comparatively small force at my command to engage the batteries underweigh, and at the same time to retain possession of the steamers, I signalled to the *Coquette*, *Argus*, and *Racehorse*, to burn their prizes, and then to the whole squadron to weigh and form the line of battle according to seniority, the *Havoc* being directed to secure the destruction of the three steamers.

Previous to this, the *Perseus* having slipped her cable, was directed to fire on the north battery until the signal was made to form line of battle, which service was executed by Commander A. J. Kingston with great promptness.

Although the weather was now very dirty, with every indication of a typhoon, I considered it advisable not to postpone, until another day, the return of the fire of the Japanese, to punish the Prince of Satsuma for the outrage, and to vindicate the honour of the flag; and everything being now ready, I proceeded towards the batteries, opening fire upon the northernmost one with considerable effect, and passed, at slow speed, along the whole line, within point blank range. Owing probably to the unfavourable state of the weather, the ships astern did not maintain their positions in as close order as I could have wished, and the *Euryalus* was consequently exposed to a very heavy and well directed fire from several of the batteries at the same time, and suffered somewhat severely. About this time, also, and whilst in the thickest of the action, I deeply regret to state that I was deprived, at the same moment, of the assistance of Captain Josling and Commander Wilmot, both of whom were killed by the same shot whilst standing by me on the bridge of the *Euryalus*, directing the fire of the quarters, and setting an example of coolness and gallantry which was emulated throughout the entire ship.

In consequence of the dense smoke, and occasional heavy showers, it was difficult to ascertain the extent of the damage done to the earthwork batteries, but by the time the *Euryalus* got abreast of the last or southernmost battery, I could observe the town to be on fire in several places; and the weather having now assumed a most threatening appearance, I considered it advisable to discontinue the engagement, and to seek a secure anchorage for her Majesty's ships. The *Racehorse*, owing to a momentary stoppage of her engines, unfortunately took the ground opposite the northern battery; but by the prompt energy of the commanders of the *Coquette*, *Argus*, and *Havoc*, which vessels were despatched to her assistance, she was got off without damage. The steady fire kept up by Commander Charles R. F. Boxer prevented the *Racehorse* receiving any serious injury from the battery, which had already been much disabled by the fire of the

other ships. The *Havoc* was then ordered to set fire to five large junks belonging to the Prince of Satsuma, which Lieutenant George Poole accomplished in a most satisfactory manner: and these, as well as a very extensive arsenal and foundry, for the manufacture of guns, shot, and shell, together with large storehouses adjoining, were also completely destroyed.

During the whole of the succeeding night it blew almost a hurricane, but all the vessels of the squadron rode it out without accident, with the exception of the *Perseus*, which vessel dragged her anchors off the bank into 60 fathoms water, and was compelled to slip her cable during the following forenoon, when the gale had somewhat moderated. The gale subsided gradually during the 16th, and as I had observed the Japanese at work, apparently erecting batteries on the hill above the anchorage, enveloped in trees and bushes, and which might have inflicted much damage upon the small vessels lying within pistol shot of the shore, I became anxious for their safety, and determined to move the squadron out to the anchorage we had occupied on the night of our arrival in the gulf, for the purpose of repairing damages, fishing spars and refitting, previous to proceeding to sea.

The squadron accordingly weighed at three p.m. of the 16th, and passing in line between the batteries of Kagosima and Sakura Sima, steamed through the channel and anchored to the southward of the island, taking advantage of the occasion to shell the batteries on the Sakura side, which had not been previously engaged, and also the palace of the prince in Kagosima. A feeble fire only was returned from the batteries which had not been closely engaged in the first attack, and this happily without effect upon her Majesty's ships.

The injury inflicted upon the possessions and property of the Prince of Satsuma, during the operations above described, may be briefly summed up as follows, viz.:—The disabling of many guns, explosion of magazines, and other serious damage to the principal batteries, the destruction by fire of the three steamers and five large junks before mentioned, the whole of the town of Kagosima and palace of the prince, together with the large arsenal and gun factory and adjacent storehouses, added to which may be noticed the injury to many of the junks lying in the inner harbour, caused by explosion of shells which may have passed over the batteries. The conflagration thus created continued with unabated ardour up to the time of the departure of the squadron, forty-eight hours subsequently to the first attack.

I have already reported to their lordships, in a separate despatch, the severe loss the profession has sustained in the melancholy deaths of Captain John J. S. Josling and Commander Edward Wilmot, both of this ship, who fell whilst gallantly doing their duty in the face of a heavy and destructive fire. With much regret I have to add that the returns received from the various ships present a list of casualties unusually great, being no less than 13 killed and 50 wounded, the half of which occurred in my flag-ship alone. The particulars of these casualties will be found in an enclosure to this despatch.

Having thus accomplished every act of retribution and punishment

within the scope of the operations of a small naval force, and having received from her Majesty's chargé d'affaires the expression of his satisfaction with the extent and complete result of those operations, and of which I trust her Majesty's government may also be pleased to approve, I left the gulf of Kagosima, in company with the squadron, on the afternoon of the 17th instant, on my return to Yokohama.

It now becomes my duty to point out to their lordships the zealous and efficient assistance I received during the above operations, carried out in a totally unknown port, and under circumstances of considerable difficulty, from stress of weather, &c., from the various officers present at Kagosima. I deemed it proper to convey to the squadron generally (as will be seen by the annexed copy of a memorandum issued on the 16th instant) the sense I entertained of the gallantry and zeal displayed by all classes: and although the melancholy termination of the gallant careers of Captain Josling and Commander Wilmot has enabled me to reward with immediate promotion a few of the officers engaged, I should be wanting in appreciation of the same high qualities displayed by others, were I not to bring their names prominently to the notice of the Lords Commissioners of the Admiralty for their favourable consideration.

The services of Captain John Borlase, C.B., of the *Pearl*, have been so frequently brought before their lordships by my predecessor in this command that I feel it will be unnecessary for me to do more than to add my testimony to the valuable assistance I have invariably received from that officer, and particularly during the operations I have here had the honour of describing. Commander John H. I. Alexander, of the *Coquette* (since promoted); Commander L. J. Moore, of the *Argus;* Commander A. J. Kingston, of the *Perseus;* and C. R. F. Boxer, of the *Racehorse*,, were severally and collectively most active and energetic in their cooperation, and in their efforts to carry out my wishes in every respect. Lieutenant George Poole, commanding the gunboat *Havoc*, an officer of long standing and high character, rendered most useful and efficient assistance in zealously performing the various duties with which he was entrusted, and merited my warmest acknowledgments.

The services of other officers under my command, I would also desire to commend to their lordships' favourable notice; but those which have been brought more prominently to my knowledge are those of Mr. W. H. Parker, master of my flag-ship, who, with the assistance of the masters of the ships present, succeeded in making a rough survey of the bay of Kagosima, without which the squadron would have been unable to take up the eligible position it subsequently occupied whilst attacking the batteries. The steady and confident manner in which Mr. Parker steered the *Euryalus* within point blank range deserved my highest commendations.

I have also to thank Captain Frederick Brine, Royal Engineers, whose services were placed at my disposal by the Major-General commanding in China, for much useful information as to the strength and position of the batteries, &c.

Their lordships will observe the testimony borne by Mr. Morgan, surgeon, to the able assistance rendered him by Mr. Charles R. Godfrey, acting-surgeon of the *Vulcan*, who at the time of the engagement was on board this ship waiting a passage to Shanghai.

In order to make the nature of the operations described in this despatch the more intelligible to their lordships, I have the honour to enclose a chart of the bay of Kagosima and position of the batteries, together with an approximate return of the guns they respectively contained at the time of the attack.

I have, &c.,

AUGUSTUS L. KUPER,

Vice-Admiral and Commander-in-Chief.

To the Secretary of the Admiralty.

THE WESTERN DIVISION OF THE MEDITERRANEAN.—*Navigation of the Gulf of Lyons.*

(Continued from page 581.)

IX. *Crossing the Gulf with S.W. Winds.*—As to the direction of the wind for crossing the gulf—S.W. winds are the most favourable; yet it is important to consider that with these winds in winter the weather is never fine. However, it happens sometimes that they do reach the coast of Provence without being boisterous.

These winds must be considered in two classes. If the weather is tolerably clear and the gulf quiet it may be expected that the wind will veer westerly, and even to N.W., and the clearer and less humid the atmosphere the more likely will this be. Then, if the barometer is not under 29·5 inches, the gulf may be crossed and the route adopted as for westerly winds. But if the weather be louring and the gulf unquiet it is the veritable S.W. wind, and in this case nothing should be done unless the wind is particularly moderate. The barometer being 29·5, one should endeavour as much as possible to make the voyage in daylight, and may be assured it will not be doing too much by seeing if the S.W. wind really reaches the coast of Provence.

In such case the vessel should make direct for Planier, and when she is considered ten miles from it should keep to port, so as to make the land off Cape Mejean, by which Planier will be passed a few miles off, and if the weather is not very dull it will be seen. This cape is the most favourable landfall in the gloomy weather of a S.W. wind, for besides the land there being of a moderate height, and consequently less covered by mist than if higher, as that to the eastward of Marseilles, there are large patches of red and white ground about it, well adapted to be seen through the gloom, and a vessel may approach it as near as she pleases without danger.

We have recommended first making direct for Planier, and in this

route the weather should be attentively considered. If the wind draws to the westward without clearing the sky it will hold; but if on drawing westerly it becomes clearer, get quickly to the latitude of Planier. If the wind should draw southerly nothing need be said but that it may then veer eastward, and that after becoming South it may get to S.E.; in which case gain the 3° of longitude as soon as possible, and from there it will be seen whether or not to get further East if the wind keeps changing and comes from Riou, if it remains at South, or, indeed, if the position of the vessel requires it.

But, the wind being S.W., if the weather is darkish, the gulf unsettled, the barometer below 29·5, or if the wind is strong, the vessel should stop at Rosas, and if not doing this should keep well off shore. That is hard, no doubt, but depend that nine times out of ten it will be right; for in these cases, if the S.W. wind reaches Provence, it is unapproachable even by day; and if it does not, it is almost certain that an easterly gale will follow, with every probability of a sudden change to the Orsure or the Mistral, however little the weather may be irritated, and bad weather may always be expected.

X. *To Cross the Gulf with a Southerly Wind.*—There should be no difference in crossing the gulf with the wind at South, as at S.W.; but the former is in all probability but indicative of the wind becoming East. In all cases, therefore, a vessel would proceed as in the foregoing case.

It should be observed that while the weather continues doubtful the direct course should be adopted. It will be a serious inconvenience should a vessel decide too soon on gaining northing, for if she should afterwards be caught with the change to the East, she may find herself in a position which may turn out a bad one, and it would be advisable therefore to let the weather declare itself. The inconvenience would be less in getting to the East, for if it changes to the Mistral the vessel may not reach her destination at once, but she will generally be safe on the coast of Provence.

XI. *Crossing the Gulf with a S.E. Wind.*—The S.E. wind, next to the Mistral, is the most prevalent of the gulf. In summer it always brings fine weather. In winter, when an easterly wind has been blowing, it is hard generally from the S.E., but it admits of a vessel crossing the gulf. When it blows at this season (winter) from opposite directions it should never be trusted, and the less so when S.W. winds may have been blowing on the coast of Catalonia.

Let us suppose an easterly wind well established, with which there will be an overcast sky, but with no storm, rain or no rain, the barometer at 29·5 or over, the gulf with a moderate sea, as is the case when the weather is moderate everywhere, for then the clouds follow their course, heaping together somewhere in the West and not in the North; then, if it does not blow more than a double-reefed topsail breeze, and the courses may be carried, there will be fine weather from the S.E. This occurs in winter, but especially in autumn, and in such cases the gulf may always be crossed.

But if, on entering the gulf, the S.E. wind does not admit of the

mainsail being carried, or appearances are bad and the barometer below 29·5, the port tack may be taken and the ship may stand seaward; but if she is near the land she had better bring up at Rosas.

As to the route to be adopted here, attention should be paid to the wind hauling to the eastward in the middle of the gulf, and to the N.E. on the coast of Provence. This should induce a vessel to gain 5° 20′ E. as soon as possible; from thence to make for Cape Sicie if still well off shore, and if not far off it to make for the Bec de l'Aigle. She will not fail to arrive when Riou bears N. 50° W. [N. 69° W.], or Planier N. 60° W. [N. 79° W.]

Should the weather be such as to leave nothing visible, being on one of these bearings by the reckoning only, then, should it not be daylight, the vessel should stand on, even when it is in the direction of the Bic de l'Aigle.

No danger need be apprehended from Cassidaigne, which is but three miles from the shore. There are two instances of ships at this distance not seeing the land. A vessel finding herself in this unfortunate condition on one of the above bearings by the reckoning, should keep her ground on one tack and the other without leaving it, and wait a clear. But, whether by day or night, to stand on, a vessel must be sufficiently to windward of 5° 20′ E. to make what she can by daylight.

If, therefore, a vessel is in this position, being near 5° 20′ E., with a fresh breeze, she may have great difficulty in keeping her ground, for it must be remembered that the current sets West. The sea is always running very high, and even when the wind admits of sail being carried a vessel is by no means sure of keeping to windward; moreover, the wind may also occasionally freshen, and she may not maintain her ground until daylight. But in this position she must make for Planier and try to see it; it matters little if, by erroneous reckoning, she passes to leeward of it. But when it is made out she should steer so as to pass about a mile from it, and when past it should steer so as to pass to leeward of the Marseilles Isles, but close to them if the wind admits; and she will then get into the gulf, where she will find a pilot, taking care to have a light ready to show for one. If, in spite of all her efforts, the vessel passes several miles to leeward of Planier, she must run on to near the land, and there, under what shelter she may have, in a few boards she will be inside the islands. This manœuvre is the more necessary the worse the weather is outside. No fear need be entertained of missing the Gulf of Marseilles, unless a gale of the Orsure comes on, which is then directly opposed to the foregoing. But with the worst of weather from the East at night, as soon as the vessel is off the Isles of Marseilles she may furl her mainsail, which she will no longer require, for being sheltered entirely from the sea, with three reefs in her topsails, the foresail, and the brigantine or a benjamin, she will get in without trouble.

If the vessel should arrive at night, even with the finest weather, she should not pass to windward of the Marseilles Isles, unless she has a pilot. If arriving in daylight, however thick the weather may

be, she should always wait a clear for reconnoitring. Remember that to the East of Marseilles the land is very high; to the West it is of moderate height, unless far to leeward, and there it is very low. Hence when the land ahead is seen very high, this alone will enable a vessel to approach it without fear.

It will be evident from the foregoing that there is great advantage in a vessel knowing her exact position. If the longitude be known to half a dozen minutes, by being in 5° 20′ E. and making good a true North course, six minutes of error to East or West need not prevent her running, however obscure may be the weather. The greatest danger will be Planier, the light of which, or the white tower of it, should be seen a mile off, in order to avoid the rocks lying half a mile from it in a S.W. direction.

XII. *Easterly and N.E. Winds.*—In all seasons, with easterly and N.E. winds, vessels should remain on the coast of Catalonia. Generally speaking they are obliged to do so. But if the weather should be fine where would they go? With the port tacks on board they would stand out to sea; with the starboard tacks down they would get into the worst parts of the gulf. A common sailing vessel need not attempt to gain her port, but a ship of higher pretensions, and in summer, may do so. In winter, to remain on the coast of Catalonia is the hard fate of all.

XIII. *Case of a Vessel being locked in the Gulf.*—This is a case in which a vessel with her starboard tacks aboard could not get into Marseilles, and with her port tacks down could not weather Cape Creux. Although such a position presupposes bad weather, it is not always desperate, and a vessel may be far enough out to use her sails; and for the rest it is merely what is done in an extreme condition.

Let us suppose, then, that we are caught in the Gulf of Foz, off Cape Couronne, or off the beach of Tignes, the mouths of the Rhone. We may observe that this is the very place where ships are full often caught, as much from the proximity of Marseilles as from the S.E. currents. Should a ship off Cape Couronne be able to clear Cape Mejean, even by a mile, she must do so, and come to an anchor in the Estaque. But if she cannot clear the cape, which will soon be determined, she must take the other tack to weather Cape Couronne, and then she will get into the Gulf of Foz, to run and anchor at Bouc or in the gulf itself.

Being caught off the Tignes, she must risk all to beat off as chances may best offer, and come to an anchor in the Gulf of Foz, or in that of St. Maries. If one had a choice, preference should be given to the Gulf of Foz with S.E. winds, drawing to South, and the Gulf of St. Maries with S.E. winds. All the rest depends on circumstances.

With winds from South to S.W. the coast of Cape Couronne should be carefully avoided, and time should be taken to gain the Gulf of Marseilles or that of Foz. With winds from South to S.E. the sands of Tignes should be most carefully avoided, and time should early be taken to gain the Gulf of Foz or that of St. Maries.

The worse the weather is the more critical the position of the ship,

and the greater should be the haste to get into one of the gulfs above-mentioned, as the only chance of safety from the dangers that threaten, and that too when the wind makes that dead to leeward to which the ship may be running.

Unfortunately, in this bad weather, it too often happens that nothing can be seen, or, if so, at a very short distance. Nevertheless, as it may be possible to sound ahead, if a vessel is under her main topsail, close-reefed, and the reefed foresail, there will be only these to take in, and soundings should be frequently taken. These may be compared with the plan, and thus it will be possible to avoid the shore and to drift or direct the vessel in the gulf. It is necessary here, in most cases, to come to some determination, and to venture on standing into the Gulf of Foz in spite of the thickness of the weather, rather than let the vessel drift at the mercy of the wind. A vessel should steer for the middle of it, in case of a small error being fatal to her.

Should a vessel run for the Gulf of Foz,—as soon as she finds herself in less than twenty fathoms she will be inside, and then, if obliged to do so, she may anchor anywhere. But anchorage should not be taken, if possible, in more than twelve fathoms. Thus a vessel running into the gulf near the middle, where she will steer N.N.W. until she has twelve fathoms, then runs two points and a quarter to port, till she has eight fathoms, and drops her anchor; and here she may ride out a heavy gale without any harm, in what is called the "Anchorage of Repose."

If a vessel runs for the Gulf of St. Maries—and it is a very good anchorage with S.E. to N.E. winds—she may come to in eight fathoms, Point Beineduc or Point Tignes bearing S.E. two miles. This point may even be brought South, and she will then be in five to six fathoms, more than half a mile from the beach. A vessel should always reserve to herself the power of standing out to sea in case of a westerly wind, and be able to weather the point with S.W. winds. But in dark weather, and in all cases of necessity, she should anchor in the middle of the gulf, in ten to twelve fathoms. If a vessel is caught near the Gulf of Aigues-Mortes, she must, as a last resource, anchor in eight fathoms. She may run, if she can, along the coast to starboard; but in this case it is important not to anchor in more than eight fathoms, otherwise she will be on bad ground.

A vessel carefully managed is not likely to be caught in the vicinity of this last gulf. For it cannot be supposed that she would run the gauntlet of all the rest of the coast as far as Cape Creux, or, at least, that she would not try to get into Cette. Now, the large ships which go to Cette do so from Marseilles to load, and have a pilot on board, and small craft run in in all weathers. Nevertheless, should a vessel find herself embayed near this port, she must go there in spite of all its difficulties. If she is embayed about Agde she will endeavour to take the anchorage of Fort Brescou.

In fact, a vessel finding herself embayed in the Gulf of Lyons must look for her safety in one of the small bays in the middle of it, when even the wind will be right into it; and for this reason, that the land

always gives more or less shelter from the storm, and the wind always varies near the shore. Whenever a vessel, then, is running in a critical position she must endeavour to manage her course so as to keep a bay under her lee; and when there is every chance of her not having room to drift longer than daylight she must resolve to come to an anchor before night, unless she is certain that she can keep the gulf even through the night.

Perhaps it would be preferable, when a vessel is reduced to such an extremity as the above, to come to with a single anchor and two chain cables on end of each other, and not to let go at first more than forty or fifty fathoms. Then, when the anchor holds, to sound, and, according to the depth, to veer more or less, so that the anchor may get hold of the ground well, and there will be a good chance that it will hold on, especially if a second anchor were let go with a third chain.

If one were certain that the anchor would drag, it would be better then to veer on all chains, for the ship dragging all together would be longer about it. This would afford some chance of avoiding the worst danger, for the gale might slacken and from one moment to another it might clear up; and if it be night this might evade the wreck until daylight, which in itself is of some importance.

We may conclude, then, that a ship which can let go an anchor with two chains on end, besides having another to let go, ought to be able to ride out the storm; while, being under way, she may find herself drifting to the coast without being certain of getting into a bay.

XIV. *The Port of Bouc.*—There is from seventeen to eighteen feet water in the entrance of this port, and fourteen or more inside of it. The anchorage is to the left on entering round the pier of the small light, and vessels lying there will always indicate the position of that pier.

At all times of day in moderate weather a pilot will be found before entering. But let us suppose it may be necessary to take this port in bad weather, and this in a S.W. gale, or, more probably, in a gale from South to East.

To take this port in a S.W. gale the vessel will have her foresail and main topsail set, with as many reefs in it as required, and she will keep these two sails set as long as possible, and a jib always. Although running with the wind aft, sail must still be carried to enable the vessel to answer her helm readily, in spite of the sea, and to clear the entrance promptly, which is very narrow. She should keep the middle of the entrance, without borrowing the least to port. As soon as she is within Point Languette (the pier of the light to port) or Point Levis of the fortress (a large square tower to starboard), or, in fact, as soon as it is seen by the way of the ship that her passage of the entrance is sure, she should shorten sail, first with the foresail, and round to port round the pier head. Then stand on with head to the northward and lead in hand as far as desirable, according to draft of water, and come to an anchor as soon as sheltered from the wind under the lee of the mole head. The time for entering, which would be about six a.m., should be set about early on the first of the wind

moderating. With a seaman's glance at the lighthouse pier the time to set about it may be determined, and in all cases this will be when Point Levis of the fort shows itself; and this is most important to observe, so as to avoid getting upon it and being wrecked.

This port has an imposing appearance, but there is no water for large ships, as we have said above. It is well sheltered, but requires the utmost promptness in manœuvring, especially in taking off sail, and when there are many vessels lying there the last arrived will only have small shelter. But this is a condition which must be risked, and for this, if sail is taken off outside from the fear of some accident, the vessel will run the risk of being lost.

It may also occur that the wind hauls to the N.E., so that, being well to the eastward, a vessel may find herself with the entrance hidden. Care must be taken to provide against this very dangerous case. To avoid it, all the fore and aft sails must be set, and, in fact, as much sail as possible, in spite of the wind; and when on the point of entering the low sails should be taken in. Then, if the vessel finds herself screened suddenly on making the entrance, the topgallant sails may be taken in and the topsails set quickly. The way of the ship and the fore and aft sails should take her into the port.

In this port, excepting on the starboard shore on entering and the lighthouse pier as far as the foot of the town, the bottom is composed everywhere of soft mud.

(To be continued.)

The Gale.

At this period of the year, when heavy storms are of frequent occurrence, the following article on "The Gale," taken from the last number of the Journal of the National Life-Boat Institution, will be perused with interest.

We are not about to write a sermon, although we have commenced with a text; but the sentiment conveyed by it is so beautiful and appropriate to our subject that we cannot resist its introduction. And surely it may be both advantageous and interesting to many of our seafaring readers to study reverentially, and somewhat more attentively than they may have already done, that mysterious phenomenon, the mighty gale, which, though they see it not, they both sensitively hear and keenly feel; whose effects, so far as evident to them, may have seemed to be only or chiefly evil; and on which, in moments of anxiety or self-reproach, some of them may even have looked with fear and trembling, as an agent of Divine wrath, strewing its pathway with devastation and woe.

Now, we hope to make it clear to such persons that the fiercest gale,

"The wind bloweth where it listeth, and thou hearest the sound thereof, but canst not tell whence it cometh, and whither it goeth."

however calamitous in some of its effects, is not an instrument of anger, or the result of a fortuitous chance; but that, on the contrary, it is a part of a well considered and benevolent plan, chiefly an instrument of good, and that its partially destructive effects are only sufficient to place it in the category of imperfection, in which all things in this temporary world must be classified. And surely they may derive from such knowledge that calm and resolute acquiescence in God's providence as shall come to their aid when danger threatens, and impart to them the coolness of head and strength of nerve which shall best enable them to successfully battle with and avert its consequences.

If in any cases such should be the result, we shall have attained the practical end which we have in view. For how many valuable ships, and still more valuable human lives, annually perish from the want of that cool judgment and presence of mind in those in command, which, in moments of extreme peril, is beyond price!

It is, of course, known to every one that the wind is merely the air in motion: but the nature of the air, the reason why it is put in motion, and what occasions its being so, is known to comparatively few. We will briefly attempt to supply that rudimentary knowledge of the subject which should be possessed by every one, and which cannot but be both interesting and useful.

The air, which is the first essential to all animal and vegetable life, is what is termed an elastic fluid: although invisible to us, it is as much a fluid as water and the many other ordinary liquid bodies which are visible to the eye, and with which every person is familiar; but it is much lighter than liquids, or, technically speaking, it has less density. It also possesses the property of elasticity to an indefinite extent, which water and other liquid bodies do not. Thus water, even under enormous pressure, can only be slightly compressed into a smaller compass; but air can be compressed by force, or expanded by the withdrawal of pressure, to an amazing extent. For instance, a thousand cubic feet of air, by the aid of sufficiently powerful machinery, might be compressed into the space of one cubic inch, whilst, on the other hand, if from an air-tight vessel, of sufficient strength, holding a thousand cubic feet of air, the whole of it except one cubic inch could be artificially abstracted, the remaining cubic inch would, from its own elasticity or expansive power, completely fill the whole vessel.

The air which surrounds this globe is a compound body,—that is to say, it is composed of different bodies, which can be separated one from the other. Its principal ingredients are two gases, called oxygen and nitrogen; these are mechanically combined in the proportion of four measures of nitrogen to one measure of oxygen. In the great laboratory of nature they are being constantly separated the one from the other, by the respiration or breathing of animals and of plants, and by combustion or burning, and also by the oxidation of metals, fermentation, &c.

This important body, the air, without which no animal or vegetable life could for a moment exist, and on the purity of which the healthy

state of each so greatly depends, has been generally supposed to be of essentially a local character, being confined to a comparatively short distance above the earth's surface, and which distance has been variously computed by astronomers at about forty or forty-five miles. Such, however, is the elasticity of the air, that at the height of about three and a half miles above the sea level, the aeronaut or mountain traveller has ascended through one half of the atmosphere; the remaining half being less subject to pressure and the attraction of gravitation, occupying no less than forty or more miles in vertical height. At the level of the sea the barometer stands at the mean height of 30 inches; but at the height of 3·4 miles it stands at only 15 inches, at 6·8 miles at 7·50 inches.

Some idea of the attenuation of the air at a short distance above the earth's surface has been lately exemplified by Messrs. Glaisher and Coxwell, in their perilous balloon ascents in this country, when, on one occasion, at a few thousand feet above the earth's surface, the pigeons they threw out, beating the "thin air" with their powerful wings, obtained no support therefrom, but fell rapidly, as though lifeless, towards the earth; and when at the extreme height of six and a half miles, to which they ascended, the combined effects of the reduced pressure on their bodies and the more rarefied food to their lungs reduced Mr. Glaisher to a state of insensibility, and almost overpowered Mr. Coxwell, thus proclaiming, as in so many words, to the race of man, "So far canst thou come, but no farther, and hither shall thy proud course be stayed."

We have stated that the air is a compound body, and that its component parts are readily separable the one from the other by various means. It is also capable of holding foreign bodies, such as aqueous and other vapours and exhalations, and minute particles of vegetable and mineral solids, in the shape of dust; and of retaining in connection with it other gases, the products of the decomposition of animal and vegetable matter, and of combustion. It follows, therefore, that its properties near the earth's surface, as a respiratory and alimentary medium, must be of a varying character, according as foreign bodies, by exhalation or otherwise, have mingled with it. It is, however, a remarkable proof of design that the two chief constituents of the atmosphere are always in the same proportion: for whether in a fever hospital or on the top of a mountain, the nitrogen and the oxygen are in the ratio of four to one.

But, even if experience did not prove such to be the case, we might reasonably expect, from the analogies of nature, that some one especial state and proportional combination of the ingredients of the air would be fitter for the respiration and health of animals and vegetation than any other, and that, therefore, some plan would have to be devised and arranged to maintain generally that happy equilibrium. We need not, however, theorise on this point: for the statistics of health and the returns of the registrars of deaths only too plainly record the often dreadful effects of poisoned air in our larger cities and towns, from want of ventilation in the dwellings of the poor, and from insufficient

or imperfect sewerage in general; and in many of our rural districts, from the malaria arising from undrained marshes and swamps.

Before, however, seeking for that machinery in nature, devised to compensate for such local disturbances of the purity and life-supporting properties of the air we breathe and live on, it may be worth while to consider for a moment, some of the known important properties of the air, although all those properties which Infinite Wisdom has planned may not, and perhaps never will, be discovered by man. In describing, or rather briefly relating, some of these wondrous properties, we shall not attempt to enter into an explanation of them, this not being a scientific treatise, and our only object being to convey some faint impression, in this one phase of nature, to the minds of the more unscientific of our readers, of the wisdom, and power, and contrivance that have been, and are being, exerted by the Great Creator of all things for the sustenance and welfare of his creatures.

1. *Support of Animal and Vegetable Life.*—The first and highest function of the air, if we may reverently use the expression, is the support of the life of man, of intelligent beings; the support of the life of all the inferior races of animals and of the vegetable world being subservient to it. It will be sufficient to state that this wonderful power is effected through the medium of organs which, in the higher classes of animals, reside in the lungs and in the skin, and in plants in their leaves, which organs have the power of decomposing the air, and appropriating that portion of it which is necessary for the growth or support of animal or plant, and discarding that part which would be useless or injurious to it. It will be sufficient to further state generally that that part of the air which is exhaled by the animal as a product of respiration is necessary to the plant, and that that part which is changed by the animal and by combustion is vivified, so to speak, by the expiratory organs of the vegetable world, and that thus the general equilibrium or purity of the atmosphere is maintained.

2. *Combustion.*—Without the medium of the air there could be no combustion, as the process is commonly understood, since fire cannot under ordinary circumstances exist unless fed by oxygen gas; and inflammable bodies, in giving out heat and light, decompose the air and consume its oxygen. Indeed, the process by which the air is decomposed and its oxygen appropriated by the breathing organs of animals, thereby producing animal heat, is a species of combustion. How great a necessity, therefore, is this property of the air must be felt by every one.

3. *Evaporation.*—Another important property of the air or atmosphere, caused by its density and weight, is the distribution of moisture. The minute aqueous particles which now float upwards through the air become partially condensed under change of temperature; they congregate in clouds, and are carried by the winds of heaven over the dry land, there to fall in refreshing rain, revivifying the face of nature, and replenishing the lakes and springs and rivers for the use of man. If there were no atmosphere, the ocean, to be sure, and the dry land would still exist: but the former would be calm, and still,

and lifeless, a veritable "dead sea," and the latter one great waste. No life, no motion, no sound around the whole vast globe to disturb the eternal still and silent void, a void which it is painfpl even to contemplate.

4. *Reflection of Light.*—A fourth remarkable property of the air is the reflection and diffusion of light. If there were no air there would be perfect darkness on every spot on which the sun's rays did not fall; no object would be visible, even under the shadow of a house or a wall, and intense darkness would be in all our dwellings, for, as already stated, without the air there could be no combustion, and, therefore, no artificial light.

5. *Transmission of Sound.*—Without the air there would be no sound, all sound being occasioned by a motion or vibration of the particles of the air, so that without the air there could be no speech.

Our space, however, will not allow us even to enumerate all the known properties or functions of this wonderful and beautiful fluid. Without it, we could not navigate the ocean,—we could work no metals; indeed, as we have already shown, without it we could not live.

Such being, then, the all-important character of this surrounding medium in which "we live, and move, and have our being," we might feel sure, as inferred under a previous heading, that some adequate machinery would be set in motion to preserve it in the purest and most fitting condition to fulfil the important functions required from it.

Such a machinery exists in the wind,—that is, in the motion given to the air itself; through which motion as complete a circulation and intermingling of parts and purification of the whole is provided as exists in the animal body by the circulation of the blood, and in the waters of the globe by the system of ocean currents and tides, and rivers, and streams. The great "trade winds," as they are termed, near the ocean's surface, and the great counter or return currents, in the higher regions of the air, being, as it were, the gigantic arteries and veins of the system, and the lesser and more temporary winds being subsidiary to them.

It will be sufficient here to state that the chief cause of the wind is change of temperature in the air over large surfaces: the heated air, for instance, as in the tropics, becoming lighter by expansion, and ascending into the higher regions, and the colder and heavier air from the Poles rushing on, like an ocean tide, to supply its place. The winds are also affected by the motion of the earth on its axis, and probably, to some extent, like the waters of the sea, by the moon's attraction.

That, however, with which we have chiefly to do is the point from which we started, that the great object of the wind, even of the fiercest gale, is a benevolent one, affecting the whole human race; that any evil which accompanies it is minor and temporary, affecting comparatively but few persons; and that the loss of human life which is occasioned by it at sea arises, for the most part, from the unskilfulness or ignorance, and only too often from the culpable neglect, of the owners of shipping property, and of seamen themselves.

The Water Mills of Argostoli.*

It was a good resolve of Professor Ansted to make a timely visit to the little septinsular republic of the Ionian Isles, to note their state and condition previous to any change which may fairly be expected to arise from the anticipated transfer of them from the guardianship of this country to their now legitimate sovereign. The great change will speedily come off, and it will be an interesting trial in the eyes of Europe to find whether the islanders know how to bear their good fortune. Meanwhile we have in the work before us the result of the Professor's observations at this turning point in the history of these islands; and, well known as they are, with their motley mixture of inhabitants, to our nautical readers, we propose giving some extracts from it. And first of the Argostoli Mills, that extraordinary phenomenon of a huge stream of sea water rushing down as it were into the bowels of the earth; sufficient, indeed, to convey the notion of an underground river, such as was at one time supposed—but in an opposite manner—to have been the termination of the Niger, before Lander set that question at rest. There are, however, other highly interesting considerations presented by phenomena of the sea in the Mediterranean, some of which we shall be able to recur to from the valuable work before us.

The following is the Professor's account of the mills at Argostoli, driven by sea water running into the earth:—

A curious natural phenomenon occurs and is taken advantage of in the neighbourhood of Argostoli. At four points on the coast, the sea, at its ordinary level, enters a very narrow creek, or broken rocky channel, and after running somewhat rapidly through this channel and among broken fragments of rock for a short distance, it gradually becomes sucked into the earth and disappears. By conducting the water through an artificial canal for a few yards, and so regulating its course and forcing all the water that enters to pass in a single stream beneath an undershot wheel, power enough is obtained in two cases to drive a mill. Mills have in fact been placed there by an enterprising Englishman, and are constantly at work. The stream after being utilized, is allowed to take to its natural channel, and is lost among the rocks.

It is common enough to drive a wheel by a current of water going from the land towards the sea; but it is certainly rare, and, as far as I am aware, peculiar to the locality, to find mills driven by a current of sea water, acting quite independently of tide, the water constantly and steadily rushing in over the earth's surface and finally disappearing. It is not the river god pursuing the nymph, but the great Neptune himself invading the domain. No wonder the Cephalonians are proud of their mystery; and it will be interesting to consider the circumstances attending it.

* *The Ionian Islands in the Year* 1863,—*By Professor Ansted, M.A., F.R.S.* Allen and Co., London.

Apart from the facts that the water sucked into the earth is sea water, and that it enters below the sea level, there is nothing extraordinary or unusual; for numerous instances occur in every limestone country of streams, often of very considerable dimensions, entering into open fissures and disappearing. In England there are two or three cases of this kind, and in the Ionian Islands absorption of water into the earth is so rapid, that there is hardly an instance of any appreciable quantity of the rain-fall being retained long enough on the surface to form streams and carry off the water to the sea. Almost all the rain is there absorbed, and this is certainly the result of the cracked and broken nature of the limestone rock—of the numerous natural caverns penetrating every part—of the constant enlargement of fissures into caverns in one place, and the choking up of caverns by stalagmite and stalactite in another—and of the especially fissured and cavernous nature of certain kinds of limestone, of which the rocks found in the Ionian Islands and Greece afford notable examples.

But it is certainly very seldom that we are able to satisfy ourselves of the empty state of the limestone caverns close to the sea and below the sea level, as we can at Argostoli; and for this reason, if for no other, the phenomena are worthy of particular notice.

The general condition of the surface is as follows. The small harbour of Argostoli is enclosed on both sides by the hard, broken, limestone rock so common in the islands. On the east side it rises immediately into hills of moderate elevation; and on the west side, behind the town, there is a plateau, scarcely above the usual level of the water, rising about two or three hundred yards from the shore into a low ridge, which, in fact, by its projection into the gulf makes the harbour. Between the shore line and this low ridge there is an evident depression of the surface in all that part over which the sea, when it enters is sucked in. There is evidently beneath this part an extensive cavernous tract, which may well hold much more water than during any ordinary season or succession of seasons can drain naturally into it in consequence of the rainfall at the surface.

But what, it will be asked, becomes of the waters of the sea thus pouring in continually to fill the cavern? Certainly, in time, any cavity must be filled, if it has no natural outlet, and if water is constantly entering it. How, also, can the water run off, if its level in the cavern is below the sea level. It is not, perhaps, so difficult as may be thought to answer these queries.

The water that everywhere enters the earth is always circulating. It not only pours down into and amongst all rocks, but it is afterwards lifted, and the level of these subterraneous stores is greatly elevated by operations going on at the surface, often at a great distance above.

The cause of this is evaporation, which proceeds incessantly from the surface of all rocks, but especially from limestones. The narrow crevices, common in limestone rocks, act as capillary tubes. When water falls on the surface of such rock, it finds its way down readily, and this seems quite natural; but when, in hot countries, where there is a long summer season of great drought, the surface becomes dry

and hot, moisture rises in steam from below; and, as the heat and dryness increase, the accumulated waters become more and more exhausted. All this goes on without reference to the actual level of the water line within the earth, which may be far beneath the level of the sea.

That this is the case in the softer limestone rocks, even when not cracked, has been proved by actual experiment. That it takes place to an enormous extent in the limestones of the eastern Mediterranean is proved, if in no other way, by the fact that vines, planted among bare stones, without soil, obtain an ample supply of moisture from the earth, and ripen their fruit to perfection in the hottest and driest seasons. No doubt the earth and rocks are hot, and appear dry; but so long as there remains any water below that has passed down during the rainy season, so long will a part of that water be given back to the dry and thirsty soil above.

If, then, as is probably the case, there is so large an evaporation from the part of the surface of the Island of Cephalonia, within range of this district, as to keep the water level of the year below the sea level, in spite of the joint supply of rain and sea water, it is clear that the water may run in for ever at the same rate without filling up the space. And this I believe to be the correct explanation of the phenomenon.

The influx of water, however, is not small. It amounts, as far as I could make out, to more than half a million of gallons per diem, for the two mills together. The fall of water from the sea level into the cavities, where it disappears, seems to be little more than a foot or eighteen inches.

There appears to be something like a lunar tide in the harbour and gulf of Argostoli, the water entering and flowing out twice a day, and the level of the water varying about six inches in ordinary weather, and when there are no disturbing influences. Any wind blowing steadily for some time, and all storms, whether at a moderate distance or near, affect the water level in a marked degree, and complicate the apparent tide. In one of the cavities where the water disappears from the surface, the level of the surface of the water below may always be reached, and it is said to rise and fall with that of the sea, even when the influx of the water is stopped. This is quite possible, without assuming a free communication, which would of course at once fill the cavern to the sea level.

There is a constant tendency to choke up the crevices through which the water disappears, by a seaweed very common on this coast. This and the silt would probably soon interfere greatly with the current that enters the crevices, if the channel were not kept artificially clear. The water, however, is greedily and rapidly absorbed by the whole surface of broken ground near the sea, between the two mills.

It will be evident that if the sea water finds its way into any large natural cavity from which it is afterwards evaporated, a deposit of salt must be taking place in this cavity, or in rocks adjacent or connected with it. Assuming the influx to be at the rate already mentioned,

this may be estimated roughly at about equivalent to an area of ten or twelve acres of solid matter, one foot thick, accumulated each year. It is an interesting question to consider where this deposit is going on, and whether saline springs may not thus be fed. There are no known springs in the island of Cephalonia that present any large quantity of saline matter.

Note.—Not having the means of accurate measurement, and not being able to learn that the quantity of water entering the land has ever even been estimated by the mill owners, I can only give these quantities as rough approximations to the truth.

The Forts at Spithead.

Orders have been issued for the fortifications of Spithead to be proceeded with at once, and by the early part of the ensuing spring the work of laying down the foundations will have begun in real earnest. There are to be three forts, stationed respectively on the Horse, Noman, and Sturbridge Shoals. The Horse Shoal stretches for a considerable distance into the sea from the southern shore of Portsea Island, and it forms the N.E. boundary of the only channel which makes Portsmouth Harbour accessible to large vessels. The S.W. boundary of this channel is formed by the Noman Shoal, which juts out from the N.E. shore of the isle of Wight; and it is upon the extreme points of these shoals, that is to say where the channel is the narrowest, that two of the forts are to be constructed, the breadth of navigable water between them being about 2,100 feet. The Sturbridge Shoal lies more to the westward, off Ryde, and the fort to be raised there will not only prove to be exceedingly dangerous to any vessel attempting to run between it and the isle of Wight, but will cross fire with a powerful independent battery flanking Fort Monckton, at the eastern point of Stokes Bay.

The distance between the Sturbridge and the Noman Shoals is 4,000 yards, and between the Sturbridge and the Horse, 5,330. A narrow channel runs between the Noman and the isle of Wight, but it is close to the site of the proposed battery, and if it ran in shore it would be exposed to a powerful battery which is being erected on the island at Puckpool, only 3,300 yards away from the Noman.

With regard to the superstructure of the insulated forts, it is impossible to give any description at present, for the obviously satisfactory reason that no plans have as yet been prepared. It will be two years at least before the foundations are laid, and science may in the mean time do much towards perfecting our knowledge of the art of defence. The present intention is to build the superstructure of iron, and the strength of the basement will, therefore, be proportioned to the weight it is intended to bear. All the forts will be circular in

form, the external diameter being 205 feet, and the foundation will be faced with granite. As to the number of guns with which each is to be armed, that of course depends upon the progress which is made in artillery science, but there can be no doubt that they will be armed with guns of the heaviest calibre which it is possible to make.

In laying the foundations of works of this kind, of course the great object is to obtain a good bottom. So far as the Horse Shoal is concerned—and it is the only one where any precise examination has been completed—nature has strongly favoured us in this respect. It is there found that an artificial bottom will be perfectly unnecessary. The depth over the shoal is about 11 feet at low water, spring tide. The boring of the shoal to the depth of 55 feet shows that the upper stratum consists of 5 feet of compact shingle and sand; the second stratum is composed of 18 feet of sand, containing pieces of bark and branches of trees partly carbonised; the third, of blue clay, containing layers of vegetable matter, eight feet thick; the fourth, shingle and sand with shells, five feet thick; the fifth, blue silty clay, to the depth of seventeen feet, and then sand and shingle. The shoal is, therefore, substantial enough to bear any weight, and the boring has been carried so far, not for the purpose of finding a more substantial foundation, but to obtain fresh water.

The method by which this result is to be obtained is ingenious yet simple. A wrought iron cylinder, six feet in diameter, is sunk into the upper stratum, and as the various strata are excavated by divers inside and the cylinder sinks lower and lower, successive lengths of cast iron tube, of the same diameter, are added to it. As we have already intimated, this cylinder has been sunk to the depth of fifty-five feet below the surface of the shoal, and ninety feet below high water mark, and the divers now experience considerable difficulty in pursuing their labours, inasmuch as the pressure of atmosphere pumped into the helmet is nearly three times the pressure of the atmosphere on the surface of the earth.

Sir Morton Peto has fallen into a strange error in forming an opinion as to the use of this cylinder. In a pamphlet which he has recently published, he gravely informs the public that a shaft has been sunk to the depth of fifty or sixty feet, and that no bottom has as yet been found of sufficient stability for the construction of a fort, the fact being that the upper stratum is sufficiently compact for the purpose, without any artificial foundation whatever, and the simple use of the shaft is, as we have already described, to obtain a supply of fresh water.

The Sturbridge Shoal differs from the Horse in the fact that it consists of a bank of clay, and will probably require an artificial foundation, the depth of water over it at low spring tides being about seventeen feet. The Noman, it is expected, will offer a foundation equally substantial with that at the Horse.

For the construction of these works, a circular staging will be erected round each fort, and on it will be constructed radiating steam travellers, so that the stone and other material will be raised from the

vessels by steam power, and deposited on the exact spot where it is required. The piles upon which the superstructure of the staging will be supported will be fitted with heavy cast iron screws, and will be screwed into the ground by means of a capstan head fixed on each pile. The foundations will not be laid by means of a coffer dam, as in ordinary cases, but the ground will be levelled and each block of stone laid by divers in helmets.

The construction of these extensive works will be under the superintendence of Mr. Hawkshaw, of Great George Street, London; the resident engineer being Mr. Harris, son of Sir William Snow Harris. The contractor is Mr. Leather, who was also the contractor for the construction of Portland Breakwater. Mr. Leather has already begun the establishment of extensive works in Stokes Bay for the manufacture of concrete blocks and the preparation and reception of stone and other material used in the foundations of the forts, and to facilitate shipment he has constructed a pier with a steam crane.

Hampshire Telegraph.

CHANGES IN COAST LINES,—*By S. M. Saxby, Esq., R.N.*

When you first step on the strand of a district and look around,—say, for example, the place is Torquay, or the Dorset coast, or the coast of Cornwall, or the Isle of Wight,—do not some such thoughts as the following pass involuntarily through the mind, supposing it to be free from care or anxiety:—"Dear me! what an extraordinary scene! There's a magnificent cliff! Look at those detached white rocks! Oh! they are the Needles, are they! How did they ever get there? Look at that most singular cliff face—all the colours of the rainbow! Why, that of course, must be the place where all the bottles of Alum Bay sand come from! But what a curious change takes place within a few yards of it, for the adjoining cliff is all chalk! How singularly regular those black lines are on the face of the chalk!" &c., &c.

While thus absorbed in mere casual musings, suppose a friend at your elbow to answer your remarks thus:—"This bay was all scooped out by the action of water, and I could tell you how it was done. These "Needles" were once connected with, and formed a continuation of the chalk cliff, until the sea bored through the softer portions, and left the harder parts standing as you find them. As to the coloured cliffs, they only exhibit different states of the oxidation of metals, such as iron, calcium, aluminum, &c. I could easily explain this too, for the action of water has done it all. And as to the black lines in the chalk, I could with all simplicity of language show you the probable cause; but it is a scientific question, and as you are not a man of science, perhaps you would rather decline entering upon it."

Now, no one likes to intrude his remarks and opinions on unwilling hearers, even if he be ready at proper times to impart a share of his

intellectual gains; but the "proper times" present themselves much more frequently than is generally supposed.

Again,—Suppose that in walking with your friend through the streets of a city with which he was unacquainted, you were desirous of interesting him in what he saw. You would not tax your memory in order to recount or narrate the history of the several edifices about you. Enough for your and his purpose would be some short remarks upon striking features as plainly apparent in the edifices themselves. If these introduced an interesting discussion, until it became evident that certain further explanations on your part would enhance that interest and pleasure which was evidently establishing an enjoyment in the mind of your companion,—would it be friendly in you to manifest indifference when approaching a certain point in your discussion or inquiry, merely because it was touching upon the skirts of science? And yet this is too often our practice. We too often, by underrating the capacity of our companion, withhold from him the benefit of improving remarks. We want men, and especially young ones, to acquire the habit of thinking upon all that surrounds them, and particularly when placed under favourable circumstances.

Under this growing impression, and availing myself of a professional privilege, I attempted, as an encouragement, to show, in the *Nautical Magazine* for August, 1861, at page 432, in commencing the consideration of the "Changes in the Coast Line of England," that no one can estimate beforehand the reward attendant on even moderately diligent research; and some useful hints were there given to those who might be desirous of making better use of their eyes and intelligence when upon a sea coast; and I promised to return to the subject when further investigation might have given me additional qualifications for the task. Subsequent observations having confirmed previous convictions enable me to respectfully offer some interesting results; and I should feel obliged by being allowed to record them in the useful and venerable pages of the *Nautical*.

It would seem but reasonable to suppose that the coast has particular attractions for nautical men,—but is it really so? Sailors in general view the shore as a mere limit to the ocean, on which their activity of mind and body is called into professional exercise. Beyond a careless glance at the facilities for landing, and the nature of the coast considered with reference to its safety or dangers to shipping, their thoughts commonly find as few resting points as do those of the veriest landsmen.

If, indeed, their bodily eyes could see handspikes and anchor stocks growing in the adjoining meadows, and could gather dead-eyes and sheaved blocks "dead ripe" from the hedges, the case might be different. But there exists an indifference of precisely that kind which needs correction. Far better is it for the well trained mind to see, as it were, in every oak the store from which we draw our supplies in ship-building: if it cannot with the natural eye see the various knees and timbers and planks which are destined at some future time to be taken from it, deep interest must surely attach to a tree, the source

of such articles and which is so precious to our country. One might even be excused if he lifted his hat in salute to so venerable an object as an old oak,—especially because we, as a nation, hallow its "heart" as the symbol and emblem of the toughness and soundness of our "jolly tars."

The habit of thinking makes a vast difference between a man who has acquired it and a man who is without it. It is to the acquisition of this habit in some of our most distinguished men that we owe our best institutions. It was this habit in men renowned in science which gave us a Board of Trade, the success of which has already told surprisingly upon sailors in at least one particular. Compare the intelligence we find among merchant captains in these days with that of the same class fifty years since. The Board of Trade has encouraged the habit of observation in several scientific branches; and the country is thus reaping the benefit, as well as are the individuals themselves.

In the occasional leisure incident to their avocations at sea, sailors really have excellent opportunities for scientific research, particularly in long voyages; it cannot, therefore, be wrong to give them every assistance. The habit of observing is no burden to a man: it accompanies him with an unbidden fidelity in all his wanderings, and often, in his otherwise solitary moments, supplies profitably the place of a companionship. I remember seeing, some years since, at Hâvre de Grace, a whole museum of valuable objects, principally in natural history, which had been collected solely by the merchant sailors of the port from foreign countries. Probably, similar contributions may have been made by our own seamen to English ports; but if so, they are not so conspicuously known to be such.

Certain it is that in the pages of the *Nautical* we have abundant proof that a spirit of inquiry is increasing even in the Mercantile Marine. The highly interesting and elegantly illustrated remarks by Captain Toynbee and others may be adduced as characteristics of that energy which so surely belongs to British seamen, who proverbially carry out what they attempt, and there can be no better qualification."

But it may be suggested or suspected by some that examinations of coast lines, as necessarily involving geological explanations, are scarcely compatible with the pursuits and requirements of naval men; and if so, the consistency of my attempting to occupy your valuable and respected pages is liable to question. But does not the *Admiralty Manual*, which is issued by their lordships, embody every encouragement for investigating scientific subjects? And, indeed, it specially calls upon its officers for examinations into currents, deposits, and changes; speculations on which it is my object to convert into a pleasant and useful pastime. These are the words of the *Manual*:—

After encouraging the study of geology, it adds, at page 268,—"Again, on sea shores, he can watch the breakers *slowly eating into the cliffs*." . . "and he can examine their action under various circumstances. He here sees going on upon an infinitessimally small scale, that which has planed down whole continents, levelled mountains, hollowed out great valleys," &c. . . "He is admirably

situated for studying the still active causes of those changes which, accumulated during long continued ages, it is the object of geology to record and explain."

And at page 269,—"Perhaps no science requires so little preparatory study as geology, and none so readily yields, especially in foreign countries, new and striking points of interest. Some of the highest problems in geology wait on the observer in distant regions for explanation."

At page 270,—"Let no one be deterred from geology by the want of mineralogical knowledge: many excellent geologists have known but little."

At page 274 is particularly enjoined an examination into "the source of the sediments and pebbles," &c.

It remains for me then to fulfil my promise in placing before your readers the main points to be considered in entering upon the question of "Changes in our Coast Line." Should I be tempted to occasionally indulge in great freedom of language, and scatter a few pleasantries among the serious and earnest details of description, your readers will not, I hope, pronounce it an unwarrantable intrusion on the dignity of a science which is second only in its grandeur to astronomy. Why may not the wonders of creation be discussed in a joyous spirit? and the operations of its inscrutable laws with cheerfulness? Length of face is no criterion of depth of knowledge. Were it so, who would become a student? All nature is said to "smile" with intelligence on her lovers,—why should not we, in return, gratefully smile too? One would surely prefer talking to, or writing for, those who view nature with a buoyant spirit, than to those in whose impression of the world's Great Creator they think only of the sternness of the Lawgiver and the severity of the Judge!

Men ordinarily speak of the "dreary waste," and the "dismal swamp," and the "frightful precipice," and the "forbidding rock,"—but everything yields its treasures to the brain and cabinet, if we will only gather them. Even the refuse of the excavation or quarry, cast upon the road side in readiness to be trodden under foot by man and beast, has furnished to me, as to others, objects of high interest, adorning, not insignificantly, a collection of, perhaps, some 10,000 specimens. Who has not, at sea, in the Gulf Stream or the Tropics, spent his pleasant hour in the examination of the wonders contained in a bucket of ocean water?

But, whether at sea or on land, let only the buzz of a passing fly, the fragrance of an unobtrusive flower, the characteristic contour of a hill, the form of a weed, herb, tree,—nay, the very fungus upon the decaying road side gate, or on the prostrate, branchless trunk,—or the fragment of a stone,—let each tell us its tale of wonder and reveal to us its marvels, and it may well be asked—Who would be an idler? Did such only lead us into community with the thoughts and writings of the wisest and greatest philosophers it would seem enough,—providing for us a fund of permanent mental resource and enjoyment. But it does more, for, by imperceptible stages, it leads us into profit-

able and soothing contemplations of a Great First Cause, our Maker and Preserver!

Geology really offers peculiar enticements to the sailor, who has under his eye so wide an examination of a coast line in his voyages at home and abroad; and, indeed, the sailor officer has frequent duties on the coast which favour research. Many a watering party or a walking party has been converted into a pleasant and delighted group of "scientific students" by the intelligence of an individual among them. We thus benefit ourselves and others too.

I have said that the habit of thinking is convenient to us, often taking the part of companionship. Memory furnishes me at once with many an example,—as one of them I give the following:—

Those who know the small coast-side towns of northern France will readily appreciate their isolation from all things beyond mere fishing and coasting occupations, and will easily imagine the apparently forlorn condition of an English traveller, finding himself on one occasion accidentally detained at one of them, viz., at St. Valery en Caux. That the natives of such towns have a very limited intercourse with the (to them) outer world, the following will show.

An Englishman, who had drunk his pekoe, souchong, &c., in Canton itself, and who was (in his own opinion) somewhat of a connoisseur in teas, called at a French roadside inn, on a pleasant summer's evening, to allay thirst and alleviate fatigue. Imagine his horror at beholding, soon afterwards, a *garçon* enter with a pint basin, containing not only tea, but tea leaves and a dessert spoon (Query—Wherewith to eat the leaves?).

This happened in 1853, and could have afforded little promise of a pleasurable sojourn in so outlandish and primitive a place. But the visitor in this case was a practical sailor geologist and mineralogist. His experience of shore and coast, and of the inexhaustible resources of the naturalist were as available in that dull place as in other districts; for there, within a few minutes' walk, lay the shingle beach and coast line. A borrowed hammer soon revealed another confirmation of the fact, that to the inquirer Nature wears in all places one inviting aspect. The wonders of the boulders, which are not unlike, in outward appearance, those at Sandown Bay, in the Isle of Wight, were quickly developed. Petrified sponges in particular, corals, infusoria in flint, and, indeed, a whole museum of marvels, were lying in myriads of specimens, some of great beauty, only waiting the hand of the man of leisure to gather them. Of course I returned to my quaint little inn laden like a pack horse.

The same species of wealth is scattered on the shore at Fecamp, Hâvre de Grace, and especially in front of the green-sand bluff of Cape la Hêve. Call it beach, shingle, rubble, or rubbish as we may, I would strongly urge this truth, viz.,—There is on every coast, between low and high water mark, enough to pleasantly and profitably amuse, instruct, and enrich a thinking mind.

Unfortunately, the details of a work on geology can be but little appreciated by a mere casual reader. The majesty of the science

overawes the indifferent student. As soon would he think of scaling the frowning precipice for amusement as of attempting deliberately the study of geology. But let us only entice him to the *foot of the cliff*, so that the almost hidden, but safe and easy steps, which were not perceptible at a distance, come into view, and the higher he mounts the more he will enjoy it, and will persuade others to mount too.

It will be convenient first to disclose a few such steps (in a continuation of this paper), as necessary to the full and satisfactory consideration of such enormous changes as have, in not a very remote period, occurred in the coast line of the English Channel.

(To be continued.)

The Royal Naval Reserve.

If there be one thing which can be called a fixed idea of the English mind, it is that if our country is to be maintained in its high position amongst the nations, the first human agency in securing such a result must be the possession of a naval force capable of protecting our commerce all over the world, and, at home, of preserving our shores from the descent of the invader. We never had much difficulty about the ships from the days when King Edward sailed with 3,000 vessels to Helvoetsluys, down to the great revolutionary war, when every sea was covered with our fleets, and the coasts of France were so strictly blockaded that it was said that not a cockboat could venture out of a French port without the certainty of being snapped up by an English cruiser. It was in the supply of men that the pinch lay, and this, not because we had not enough of sailors, or that our sailors shrunk from warfare, but that the commerce of the nation was always so great as to absorb all our maritime enterprise and bone and muscle, and force the government in time of war or emergency into expedients for manning the navy, which were always unpopular, but which in the present days of general enlightenment and publicity have become impossible. The great problem for statesmen and naval administrators has always been to utilize, by some popular and acceptable means, the immense force of trained seamen which our commerce has created, for the defence of the country when required; and it would seem as if, by the establishment of the Royal Naval Reserve, we have at length cut the Gordian Knot.

The difficulty of obtaining competent seamen for our navy reached its culminating point during the recent Russian war. In former wars, our Admiralty when pinched for seamen took their choice of three expedients, or sometimes adopted all three simultaneously. They could either lay an embargo on merchant ships about to proceed to sea, or they could offer a tempting bounty, or, last and worst of all, they could

issue a proclamation compulsorily requiring the service of seafaring men in classes; that is to say, they could let the ferocious pressgangs loose in all our seaports, kidnapping every man they met, whether seafaring or not, and forcing their captives with unheard of barbarities into the service of the navy. It is not necessary to waste much space in showing that two of these old fashioned expedients have now become obsolete. No minister would now be mad enough to lay an embargo on our outgoing merchant ships, nor would any, we fancy, be willing to put his hand to a proclamation letting loose the pressgang. Of the old machinery, therefore, for raising men for the navy there only remained the bounty, as a possible expedient, but this, which was tried very recently on an unprecedented scale of liberality, besides being open to all sorts of fraud, has been found calculated to fill the navy only with the worst and most undesirable class of seamen.

In the presence of so many difficulties standing in the way of an object of the deepest national importance, the conception and institution of the Royal Naval Reserve must be admitted to have been a happy event for England. In 1858 the royal commission was appointed, including among its members experienced statesmen, veteran naval officers, merchant shipmasters and shipowners, and by that commission the subject of manning the navy was carefully considered in all its bearings. The great fruit of its labours was the establishment of the Royal Naval Reserve, and it is to the undeniable success and rapid progress of that institution that we now hope to attract the attention of the general public.

By the regulations of the Royal Naval Reserve all British-born seamen of good character whose ages do not exceed thirty years may be enrolled, and the condition of their service is that they shall attend gun drill for twenty-eight days in every year, and be liable to be called out for active service in case of emergency. The intention of the force is, in fact, that it shall be on the water what the volunteers are on the land,—namely, the last line of the national defence, with this important difference, however, in favour of the Reserve, that the men receive permanent pay at the rate of £6 per annum, and a guinea a week whilst out for drill, and that they may look forward to a pension or Greenwich Hospital in their old age. The captains of the mercantile marine are eligible for commissions, at present rising no higher than that of lieutenant, but there is a strong hope that the rank of commander will also be shortly thrown open to such officers of the Reserve as shall have shown more than ordinary zeal in promoting its success. It will be seen, therefore, that nothing could be fairer or more liberal than the terms upon which the institution was established, and yet it made but slow way for a long time. Jack, who had the traditions of the pressgang period, with all its traps and devices, fresh in his head, smelt suspiciously at the tempting bait for some time. It was, he thought, too good to be true; and in the majority of instances his wife or sweetheart, as the case might be, made every effort to strengthen this adverse opinion. Some of the women feared that their husbands

were sure to be killed; others that they would lose their relish for home: but it will perhaps surprise many of our readers to learn that a large proportion of objection took the religious form. A great recruiting field for the Naval Reserve would, of course, be the northern colliery ports, and there, it is known, the seamen who have but short voyages to make spend a good deal of time ashore, and are very regular attendants at their various places of worship. There, the criminality of war in any shape is often insisted on from the pulpit, and the doctrine had obtained so firm a hold on the minds of many of our "Geordies," but more especially on their wives, as in the first instance very much to mar the success of the Royal Naval Reserve. But time, as is always the case when the matter in hand has merits which will bear its searching test, has done wonders. The sailors began to drop in for enrolment by degrees, and those who did so, finding what were the real character and advantages of the institution, became so many willing agents to advertise it further into popularity. Small shipowners, who feared that the "Reserve" men would think too much of themselves, and demand higher wages, were in the commencement a great stumbling block, but their petty obstructiveness was more than neutralised by the patriotic and liberal conduct of the great magnates of the mercantile marine, who gave the Reserve their warmest support, and in all cases preferred reserve men when manning their own ships. These intelligent merchants soon saw how much more likely they were to be well served by men of character, and of whom it might be literally said that "they had a stake in the country," than by the casual wanderers of the docks and quays, of whose qualifications or character they could know nothing until the knowledge was too late to be of any avail. Some of them, whose ships traded to piratical seas, soon found out that a little training in the working of ships' guns and small arms would sometimes turn out to be a valuable acquisition to their crews. It is not many days since accounts were received of the destruction of one of our ships by pirates in the Chinese seas, preceded by the murder of the crew. Had that ship had a few guns, and had her crew been Naval Reserve men, if only of one year's standing, that terrible catastrophe would most assuredly have been averted.

The results of the favouring causes we have enumerated have been most gratifying. In four short years a force of 17,000 picked and trained seamen has been enrolled, all of whom have been made perfect in the great gun and small arm drill, and 180 officers have received commissions ranking "with but after" lieutenants in the royal navy, these latter having every reason to hope that before a very long time has elapsed the higher rank of commander will also be thrown open to their patriotic ambition.

The maximum of men contemplated by the Royal Commission was 30,000; and there is no doubt but that, with a little encouragement from the press and the public, that number will very shortly be attained. A great responsibility in the administrative management of

the force will rest in the Registrar-General of Merchant Seamen's department, which has, in fact, since the institution of the Royal Naval Reserve, become the great connecting link between the two royal services and that vast body of trained and efficient seamen who in time of peace navigate our innumerable merchant ships to and from the remotest corners of the world. Much will, we repeat, depend on the efficient working of this department, but very much also on causes over which administration, however efficient, will have no control. It will lie with the officers of the royal navy frankly to accept their mercantile brethren as comrades on equal terms, and not by any supercilious airs of exclusiveness to wound the feelings of fine manly fellows, who may, perhaps, have been from their youth upwards too busy learning the duties of a asilor to find time for acquiring all the artificial graces of a *petit maître*.

We do not mean to say that such consideration will be necessary in the case of all or even a large proportion of the officers who receive commissions in the Reserve, for we have amongst our merchant captains and officers hundreds of men whose intelligence and manners would fit them for any society: but there may occur cases in which the study of Chesterfield will have to be commenced after the assumption of the epaulette, and in such cases it is to be hoped that the officers of the royal navy will act as do their military brethren when they receive a comrade from the ranks, and not as too many naval officers have already done with the engineer officers, who, since the universal use of steam, have become of the utmost importance in a man-of-war. Much more mischief than the general public are aware of has been done to her Majesty's naval service by the persistent snubbing to which the steam engineers have been exposed in men-of-war from the combatant officers of the ship, and it is to be hoped that the success of the Royal Naval Reserve will not be obstructed by similar disloyal and contemptible proceedings.

There is a rumour, in the correctness of which the officers of the Royal Naval Reserve have firm faith, and which, both for their sake and the sake of the valuable institution to which they belong, we trust may turn out to be well founded. It is to the effect that the Queen, delighted at the rapid progress already made by the Reserve, and anxious to make its success a complete and established fact, contemplates giving the force a most distinguished mark of her royal approbation by appointing his Royal Highness Prince Alfred to be its commander. Should such turn out happily to be the case, that which has hitherto been a success will rapidly become a triumph, and the Royal Naval Reserve will thenceforth be accepted as one of the great national facts of the country.—*Daily News.*

Mishap to the Royal Mail Steamer "Africa."

The following is the official report to the Board of Trade relative to the mishap to the British and North American Royal Mail Steamer *Africa*:—

November 12th, 1863.

My Lords,—I have the honour to report, that I have, in conjunction with Captains Harris and Baker, the Nautical Assessors of your Lordships' Board, held an inquiry into the casualty which occurred to the steamship *Africa*, off Cape Race, on the 12th of October last.

The *Africa* is a paddle-wheel steamer, built of wood, at Greenock, in 1850, of 2,226 gross and 1,216 registered tonnage, and of 800 horse-power. She is the property of the British and North American Royal Mail Steampacket Company, and was under the command of Mr. James Stone, who held a certificate of competency as master, dated January 7th, 1851. She had a crew of 130 hands, all told, and was in every respect thoroughly equipped.

The *Africa* left Liverpool October 3rd, carrying the mails, 125 cabin passengers, and a general cargo, bound for Halifax and New York. After touching at Queenstown on the following day, she sailed again at 3h. 38h. p.m.; made the Fastnet at 10h. 20m. p.m., and thence took her departure on her voyage to America. Observations for latitude and longitude were obtained daily from the 5th to the 11th inclusive, and up to that date nothing occurred which calls for comment. At noon of the 12th a good observation was obtained for latitude, which placed them in 47° 11′ N.; but as no sights had been obtained for the chronometers, the longitude was calculated to be 50° 21′ W.; and Cape Race was estimated to bear S. 73° 26′ W. true, distant 112 miles. The weather at noon is represented in the log-book to have been strong from the S.S.W. At 6h. p.m., increasing winds and stormy weather, sea rising, and sail was shortened. At 7h. 30m. p.m. wind shifted to West, and all sail was taken in. At 8h. p.m., moderating breezes and thick foggy weather, with rain. From noon to 6h. p.m. the course steered was W.b.N.½N., and the speed of the vessel was 12½ knots an hour. At 6h. p.m. the course was altered to W.½N., and so continued, at a speed of 11 knots an hour, until she struck, about 9h. 50m. p.m., somewhere, probably, in the vicinity of the extreme point of Cape Race; but the exact position was never ascertained.

Immediately before striking, the master, who was on deck, states that he saw a whitish line on the edge of the water on the starboard bow, which he knew could not at that season be ice, and instantly gave orders to put the helm hard a starboard. Almost simultaneously the first mate gave a similar order, having seen the same object, which was also at the same time reported by the look out men. The vessel payed off under her starboard helm two or three points, when she took the ground. The engines were then stopped, and it would appear from the evidence that she remained there for about twenty

minutes, during which time her head payed off to port. Shortly after striking the water was discovered to have filled the fore peak, and also to have found its way into the engine-room. The engines were moved slowly ahead, which had the effect of casting her head more to seaward, and the captain having discovered that the channel ahead appeared free from danger, gave orders to go on at full speed, which was done, and the vessel went off apparently into deep water; but neither previously nor subsequently to the accident was the lead used.

After consultation with the chief engineer, the captain determined to run for St. John, Newfoundland, the then nearest port. In proceeding thither the vessel became almost unmanageable from the injured state of the rudder, and the quantity of water in the forehold; but the master succeeded, notwithstanding the stormy state of the weather, in getting her into St. John on the 13th, about 2h. p.m., and beached her in the harbour. After some repairs were effected by means of divers, and the construction of a tank in the fore part of the ship, she sailed from St. John on the 27th October, and, after a very stormy passage across the Atlantic, was brought safely into Liverpool on the 3rd of November instant.

I should here mention that the captain, who, at the request of his legal adviser, was sworn to give evidence, does not agree with the mate's entries in the log-book as to the state of the weather on the evening of the accident. The terms he used to describe the weather were, "dark and hazy, not foggy, a little rain occasionally, sometimes clearing up;" and the mate, in his evidence, disclaims any intention of implying by the entry in the log that the weather was what would be called "dense fog." But the united testimony of the witnesses certainly goes to prove that the night was very dark and thick, with drizzling rain; and in confirmation of this fact several of them give it as their opinion that a ship's light might have been seen at a distance of from one to two miles. In my opinion the strongest indication of the dark and thick state of the weather is the circumstance that the danger was scarcely seen before the ship struck.

I cannot dismiss the question of discrepancy between the entries in the log-book and the evidence of the witnesses without a word of comment on the statement made by the master, that he was not in the habit of examining the log-book—a duty which, I am informed by the Assessors, he ought to consider as incumbent on him both for his own protection and for the benefit of his owners, in case of accident or loss.

It is with regret that I am compelled to pronounce the master in default. By a reference to the chart, and from his own evidence, the courses steered would have taken him within six or seven miles of Cape Race, assuming that he had no lateral current, as the compasses appear to have been perfectly correct. This course, in the estimation of my Assessors, is too fine in such weather, and in a vicinity so notoriously dangerous. I am of opinion that a cast of the lead should have been taken about 9h. p.m., when the computed distance from noon had been run. This precaution would have shown the captain

that he was not justified in assuming his position to be such as he too confidently concluded, and that instead of being, as he supposed, sixteen miles to the southward of the cape, he was in reality close upon the land.

The neglect to use the lead under such circumstances, and the navigation of his vessel at full speed off this coast in thick weather, undoubtedly caused this accident; and after the repeated warnings which commanders of vessels on the North American stations have received in reference to both these points, I am bound to visit him with severe censure. I confess that it is painful to me to do so in this, as in every other case, when the commander is a man of great experience,—and Captain Stone appears to have hitherto navigated his ships in safety for 115 voyages across the Atlantic. The result proves that such a man even may get into difficulties with all his experience, and shows the necessity which is laid upon all commanders to use every precaution in their power. And why these precautions should be invariably used in the Royal Navy, and the neglect of them visited with most severe penalties, while in the Merchant Service they are so frequently omitted, I am at a loss to understand.

In the sentence which the court has deemed it to be their painful duty to pass on Captain Stone every consideration has been given to his long and hitherto successful career, and the court has borne in mind his subsequent and laudable exertions in bringing home safely his disabled ship. This case differs from others of a recent date in the fact that there has been no loss of life or of the ship, and I have therefore felt justified in passing a lighter sentence. But I have, with the full concurrence of the Nautical Assessors, suspended the certificate of Mr. James Stone for six calendar months from this date.

I have, &c.,
T. S. RAFFLES, *Police Magistrate.*

We concur in this report,

HY. HARRIS, R. B. BAKER, } *Nautical Assessors.*

A most numerously attended meeting of captains and others connected with the Mercantile Marine Service of the port has been held in the Cotton Sales' Room, Exchange Buildings, Liverpool, to consider the question of Board of Trade inquiries, and also the action of the late court in suspending the certificate of Captain Stone.

Major Walter, the chairman, in opening the proceedings, condemned the constitution of the tribunal which had suspended Captain Stone's certificate for an alleged mistake in the navigation of the steamship *Africa*. It was certain, Major Walter remarked, that a couple of assessors sent down from the Board of Trade were not in a position to try a man for an error—if it could be called an error—which their experience, or rather want of experience, in the matter, could not enable them to understand.

Captain Judkins, in moving the first resolution, contended that

Captain Stone was not called upon to use the lead on the occasion in question. The accident to the *Africa* was not caused by the non-use of the lead, but by an unaccountable northerly under-current. He (the speaker) had crossed the Atlantic some 300 times, but he had never considered it necessary to cast the lead at the place alluded to near Cape Race. Captain Judkins stated that if a whistle or any other signal had been placed on Cape Race the accident to the *Africa* would have been avoided, and many other sad disasters also prevented. He strongly blamed the British government for refusing an American invention of a steam-whistle which had been offered to them, and hoped that when the inventor came to this country with his signal he would be better treated, as far as the approaches to Liverpool were concerned, by the local authorities. He then moved—"That this meeting views with indignation the principles and practice of the constitution of the courts of inquiry into wrecks and casualties to British merchant ships. It believes these tribunals, which have the power and exercise the power of inflicting the most severe and penal sentences, depriving men of their certificates, and thus of the means of living, are opposed to the fundamental principles of the legislation of this country and to the rights of Britons."

Mr. H. G. Wilson seconded the resolution, which was carried by acclamation.

Captain Walter Paton (of the *Great Eastern*) proposed the next resolution, as follows:—"That every constitutional means be taken during the next session of parliament to procure the abolition of the present courts of inquiry, and to place the masters and officers of the Mercantile Marine in the same position as all other classes of her Majesty's subjects. That the chairman of this meeting be authorized to sign a petition to parliament for this purpose."

Mr. Thomas Chilton seconded the motion, which was carried with enthusiasm.

A third resolution was then moved by Captain Rees, to the effect—"That every effort be now made to obtain the immediate return of Captain Stone's certificate."

Seconded by Mr. Nicholas Duckworth, and carried with great cheering.

The last resolution, bearing on the immediate subject of the meeting, was moved by Captain Ballantine, and seconded by Mr. J. Jackson, and was as follows:—"That this meeting now pledges itself to use every exertion to carry out the foregoing resolutions." Carried unanimously.

The meeting was afterwards addressed by Captain Judkins, who commented upon the impossibility of captains of ships going continuously slow on these voyages, and at the same time constantly using the lead, as recommended by the Board of Trade. If they did so they would never get across the Atlantic, in mail steamers especially; they must trust very often to their experience, and experience only.

A vote of thanks to the chairman closed the proceedings, which were of a very earnest character throughout.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*The "Africa"—Report of the Royal National Life-Boat Institution—Kidnapping South Sea Islanders.*

A considerable amount of discussion took place at the Club on the narrow escape of the *Africa* on Cape Race and the suspension of the master's certificate by the Board of Trade,—and no small surprise expressed at the resolutions adopted at a meeting with a view to reinstate the master. But the prevailing opinion was that the *Africa* not having taken a single cast of the lead when making the land in a fog, not knowing where she was or even where she ran on shore when she was got off again, that the termination of the inquiry by the Board of Trade could not end otherwise than it did—in the suspension of the master's certificate. It was fortunate that it was not a similar case to the *Anglo-Saxon*, and the meeting was looked on as being as much directed against the established custom of inquiries into wrecks as unnecessary! as against requiring the lead to be used at all. The opinion of the Club seemed to be that the real object of the meeting was to do away with the use of the lead altogether, and that ships that had been accustomed to the same voyage so often did not require any reckoning, and as for observation that was perfectly unnecessary,—opinion was all that was required. What would be the opinion of the public on such navigation was another thing. It was also remarked that ships carefully navigated even when they knew not where they were, if they would put their lead overboard would find a bank of 15 fathoms, five miles from Cape Race, left on purpose as if by nature, with which they could recognise their place on the chart, and get round Cape Race easily even in fog without running against it.

The Chairman called on the Secretary to read the unusually interesting report of the noble services of the boats of the National Life-Boat Institution during the recent heavy gales. It was observed that in that period the lifeboats were instrumental in rescuing thirty-four lives; also, in bringing safely to port four vessels with their crews, consisting of twenty-five men. The lifeboats also went off in reply to signals of distress on ten occasions. The expence of all these services was £166. He (the Chairman) felt assured that every friend of the cause of humanity would peruse with great interest these gratifying facts, and he felt confident that the Club would heartily join him in wishing continued prosperity to the National Life-Boat Institution.

The report commenced by stating that—

Payments amounting to £30 were voted to the crew of the Fleetwood lifeboat, in admiration of their noble conduct on two occasions. First, in rescuing on the night of the 29th of October, during a terrific gale of wind, the crew of four men from the schooner *Northern Light*, of Preston, which had struck on one of the outlying sand banks in the vicinity of Fleetwood. The lifeboat had been towed out by the steam-tug *Wyre*, and when near the wreck the boat was cast

adrift. She was at once lost sight of in the intensely dark night and she in her turn lost sight of the wreck. But the cries of the poor men were fortunately heard even above the howling of the storm and the big waves which were ready to engulf them. However, after much skilful manœuvring, the wreck was at last fetched, and her crew snatched from a watery grave, amidst the hearty cheers of the lifeboat crew, who afterwards safely brought them on shore.

On the following night, the 30th, the same valuable lifeboat again went out in tow of the same steam-tug, in reply to signals of distress from the ship *Lillias*, of St. John, New Brunswick, which had struck on a sand bank off Fleetwood, but this time her services were of no avail, the crew of the ship having been rescued by two steamers.

A payment of £13 was also made to the crew of the Southport lifeboat of the institution, in acknowledgment of their intrepid conduct in rescuing, on the night of the 31st of October, during a hurricane, the crew of seventeen men of the Norwegian barque *Tamworth*, of Skien, which had struck, and afterwards became totally wrecked, on Trunk Hill Sands, about five miles from Southport. This was another gallant rescue, the captain of the ship expressing his admiration of it, and stating that he and his crew must have met with a watery grave but for the services of the lifeboat. The lifeboat after leaving the vessel, was filled by a heavy sea, but she instantly cleared herself of the same. These poor foreigners, when they return to their own country, are often lost in admiration of the means provided on the English coast to save their lives in case of shipwreck; and sometimes contributions are received from them by the National Life-Boat Institution as an acknowledgment of their gratitude.

Rewards amounting to £33 were also voted to the crews of the society's lifeboats stationed at Dundalk, Drogheda, Campbeltown, Fraserburgh, and Tramore, for rescuing, during recent heavy gales, the following shipwrecked persons:—Four from the schooner *Arion*, of Workington; four from the schooner *Gipso*, of Drogheda; seven men from the barque *Providence*, of Dantzic; one from the smack *Saucy Jack*, of Inverness; and one from the brig *Marietta*, of Lisbon; making a total of 207 lives saved by the lifeboats of the institution during the current year, and a grand total of nearly 14,000 lives saved by the society's lifeboats or by special exertions for which it has granted rewards, since its commencement.

While performing these noble services, some of which were accomplished during the dark hours of the night, the lifeboats in every instance were reported to have behaved admirably, and it was said that their gallant crews never flinched for a moment under the most perilous circumstances. Sometimes, indeed, the men's situation was truly awful. Lost in the darkness of the night, and the sea rolling mountains high, the danger of the lifeboat men,—many of whom had left behind them on quitting their beds to pursue their mission of mercy, wives and children,—can be better imagined than described. But this is some of the kind of work, be he high or low, in which an Englishman has ever delighted to perform noble deeds of daring; and

the lifeboat work develops it in its grandest form,—to snatch from a watery grave poor fellows that have long to live, and that have to live for ever.

Rewards to the amount of £20 were also granted to the lifeboats of the institution at Holyhead, Rye, Buddon Ness (Dundee), and Walmer, for assisting to bring safely into port the Italian brig *Comoglino;* schooner *Sir Colin Campbell*, of Whitby; schooner *Giulia*, of Palermo; and the ketch *Snip*, of Amsterdam. These vessels must have gone to pieces in the absence of the services of the lifeboats.

The society's lifeboats at Seaton Carew, Rhyll, Kingstown, Silloth, Fleetwood, Holyhead, Cemlyn, New Brighton, Kingsgate, and Penarth had each gone off in reply to a signal of distress, with the view of saving life; but the vessel had subsequently got out of danger, or their crew had been rescued by other means. For these services £70 had been voted by the institution.

A reward was also granted to two coast guard men at Sotherness, near Dumfries, in testimony of their having rushed into the surf and rescued ten men from a boat belonging to the brig *Antigua Packet*, of Liverpool, which, during a gale of wind, had become a total wreck, through the misconduct of the master, at the entrance of the Solway Firth. The brig's boat had drifted on to the Scotch coast on the other side of the channel.

Various other rewards were likewise voted to the crews of shore boats for their laudable exertions in saving life from wrecks on our coasts.

Captain Ward, R.N., the inspector of lifeboats of the National Life-Boat Institution, read a report on his recent visit to the lifeboats of the society from Berwick-on-Tweed to the Humber. He found the boats everywhere in excellent order, possessing the confidence of their crews, and reflecting much credit on the superintendence of the local committees, who everywhere work so cordially with the Life-Boat Institution.

New lifeboats had been sent during the past month by the institution to Teignmouth, Devon, and to Swansea. Captain D. Robertson, R. N., the assistant-inspector of lifeboats of the society, had accompanied them to their stations. The boats had, as usual, been conveyed free, by the kind permission of the directors, over the Great Western and the other connecting lines of railway.

It was reported that an eminent Parsee mercantile firm in the city of London had recently presented to the institution the sum of £2,000 to establish a lifeboat on the English coast, and to permanently keep it up. The committee expressed their highest appreciation of this munificent gift, and decided upon calling the new lifeboat the *Parsee.*

A communication was read from the Comptroller of the Royal Navy stating that it was proposed to supply all vessels of war with a lifeboat in lieu of one of the boats usually carried, and asking the institution for all the information in its power on the subject of ships' lifeboats.

A letter was also read from the Rev. E. Hewlett, of St. Paul's, Manchester, stating that he was establishing an association in con-

nection with his church on behalf of the institution, in order that they might raise the cost of a lifeboat.

Lady Maxwell, of Monreith, N.B., had sent the society a kind contribution of £2 2s., which had been put in a contribution box, on behalf of the society, in the entrance hall of her mansion.

Payments amounting to upwards of £1,100 were ordered to be made on various lifeboat establishments. The committee gave instructions for some of the funded capital of the institution to be sold to meet the heavy demands upon it. The proceedings then terminated.

[We now give the conclusion of the Kidnapping in South Pacific which press of matter compelled us to postpone.]

The President inquired of the accused, Unibaso, whether he was aware that the natives were destined for the Chincha Islands?—The accused denied all knowledge of it.

This document having been surrendered by the American and read in court,

The President of the Court (addressing himself to the prisoner Unibaso) said,—Unibaso, stand up. It is needless to ask you whether you know this licence?—I do know it. I did not know that the colonists (!) were destined for the Chincha Islands. As the licence is endorsed I did not know whether they were to be sent to the Chinchas or to country estates *(haciendas)*.

Why did you not tell the Paumotuans that they were to be employed in the guano work?—I did not know that they would be so employed. It was for the owner of the ship to give to the colonists that destination which appeared to him best.

A most charming picture of the future was presented to these Indians; they were given glimpses, as it were, of a paradise before them, when it was degrading labour for which they were destined?—I never had orders about them from the owners.

In whose hands was this licence on board?—It was in my possession.

The President to Lee Knapp,—You know this licence; the captain has shown it to you?—I do not know it. The captain one day, at the door of his cabin, partially unfolded it before me, but I did not make myself acquainted with its contents.

The President to Umbaso,—Have you shown that licence to Lee Knapp?—No: I thought he was acquainted with the contents of it, since he had received orders from the owner.

The witness Reilly is recalled.

The President to Reilly,—Remember that you have sworn to tell the truth, the whole truth, and nothing but the truth. Did you know that the Indians were destined for the Chincha Islands?—I had some suspicion of it, which became afterwards certainty. The former contractor for the Chincha Islands, Domingo Elias, having finished his contract, had taken away all his plant; the present contractor, not finding a sufficient supply of Chinese, was obliged to employ free labourers, which put him to a considerable expence, and hindered him from

meeting the demand for cargoes of guano. Mons. Wholey had already employed agents to collect free labourers; when he decided on sending out the *Mercedes*, I thought that the labourers from here were for the Chinchas. Moreover, whilst I was in the Paumotus, at the end of the conversations between the captain and Lee Knapp, that party said to me, "These Indians are sufficiently unfortunate in being destined to be sent to the Chinchas, so that they ought to be well used on board."

How many years have you been a resident in Peru?—For the last twelve years.

I observe that you speak at times of free labourers; are there then labourers that are slaves?—I was alluding to the Chinese voluntarily bound servants working at the rate of five piasters a month. They are given a little rice to live upon.

Give us some details of the treatment of these labourers.—I kept a restaurant at the Chinchas for a year. That guano business is a horrible sort of work. They bury the Chinese, and sometimes disinter the bodies eight or ten days afterwards, when they have occasion to dig where the bodies have been placed. They are always given rice of the worst quality for their food. I can speak positively to all this, having been myself an eye witness. They are very much ill-used,—absolutely like slaves.

Is there no representative of the Peruvian government at the Chinchas?—There is a governor on the island, but I do not know whether he concerns himself to prevent the ill treatment of which I speak. I do not know even that he has the right of doing so. What I am very certain of is, that matters there are just as I have stated them to be.

What are the punishments that are inflicted on these labourers?—They are flogged and heavily ironed.

The President to Mr. Orsmond, the interpreter,—Translate the deposition of the witness Reilly to the natives of the Paumotus now present in court.—Mr. Orsmond repeated in Tahitian what had just been said.

There was a profound sensation of astonishment amongst the natives when they heard what had been said.

At this stage of the proceedings Mr. Longomazino, as the authorized agent for those natives who were carried away from their homes by the brig *Mercedes*, addressed the court on the *partie civile*, showing cause why damages should be awarded to those whose interests he was there to represent. In a legal document, dated the 9th of March, 1863, the court was moved to grant damages to the complaining parties on four special grounds. 1st. Because the natives carried away had been assured that they were only to be employed in the cultivation of coffee, sugar, and rice, whereas the contract presented to them for signature was so drawn as to leave it open to the parties who hired them to employ them on any kind of work whatever. 2nd. There was a false statement in the agreements as to where they were to be sent. 3rd. There was a false promise that they should have the option of being sent back to their country. 4th. There was a false

assurance that the contract was made under the express sanction of the local government, and with the consent of the fathers of the Catholic mission in the Paumotus. In the case of Tepaiah, Tuata, Rua, and their families, there was a special claim put forward for damages, those parties having been carried off under the pretext of offering them a gratuitous passage to their homes. The legal instrument set forth in strong terms the reasons which argued the guilt of Unibaso, Lee Knapp, and Grandet, acting under the directions of the owners of the *Mercedes*, and it prayed that the owners of that ship might be made liable to such damages as the court should see fit to award. The instrument also claimed damages to the amount of 24,000 francs, from Unibaso, the captain of the *Mercedes*, and from Lee Knapp, the pilot and interpreter, and from the representatives of Charles Grandet. It was also prayed that the parties cast in damages should be made to pay the cost of the proceedings.

M. Longomazino argued the cause for the injured parties with great force and legal acumen, but the nature of the subject treated of in his address is too technical to interest an ordinary English reader.

The Deputy Public Prosecutor addressed the court for the prosecution at great length, urging the points wherein the evidence and the facts of the case bore against the prisoners Unibaso and Knapp, and against Grandet, then deceased.

M. Robin then addressed the court, and made a long and ingenious defence for the captain, Unibaso, questioning the legality of the taking of the *Mercedes*, exonerating Unibaso from responsibility in the affair, and throwing the onus of the proceedings objected to on Knapp as the shipper and representative of the owners.

M. Nollenberger then, as counsel for Lee Knapp, read a written defence on his behalf. This defence denied the responsibility sought to be thrown upon him; Unibaso alone was the responsible party.

M. Longomazino, the Deputy Public Prosecutor, and M. Robin again addressed the court, when the tribunal retired to deliberate. On their return the President gave the judgment of the court.

The accused Unibaso and Lee Knapp were found guilty. The sentence of the court on Unibazo was five years' hard labour and a fine of 18,500 francs (£770); and the sentence on Lee Knapp, ten years' hard labour. The said Unibaso and Knapp, and the representatives of Grandet were declared to be responsible for all costs and charges in the case. The owners of the *Mercedes* were also declared to be responsible for the acts of their agents, and the ship ordered to be sold,

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Curious Mirage Seen in British Guiana.

Your readers may remember the descriptions given by Latham and Vince of the unexpected appearance of the clear outline of the French coast, with the fishing boats, as seen from Hastings; and the curious phenomenon of having the whole of Dover Castle above the horizon from Ramsgate. Analogous to this was a refraction witnessed by the

writer, on the 28th of July, 1863, in British Guiana, on the Essequibo. We were then in the closing part of the long wet season, with great sun-heat and heavy showers alternating; and much rain, following thunder, had fallen in the early part of the day. Towards 2h. p.m. the rain-clouds took up, and a brilliant sky opened, such as is often witnessed in South America in the rainy months. Having occasion to ride to a plantation on Wakenaam Island, some miles off, to take boat for one of the islands higher up, I came to a spot which commands no view beyond a narrow circle of luxuriant trees and pasture. I beheld the whole scene changed. Before me the land was dwarfed, and Hog Island, from its north-western line, onwards to its north-eastern, was seen, with the channel between. Though a little hazy, I satisfied myself that the outline was correct, with the tall courada and mangrove trees which gird the beach. It was a marvellous deception, produced probably by strata of air, of unequal density and temperature, not far from the earth. On getting out upon the river, which was very calm, and looking to the north, in the direction opposite to that of the mirage described, I beheld a small island at the mouth of the Essequibo floating, so to speak, in air. This phenomenon I have often seen.

D. P. THOMSON, M.D., J.P., British Guiana.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 614.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
46. Morecambe Bay	England, W. coast	53° 53·5′ N., 23° 35′ W.	R.	38	10	Est. Oct., '63. Red light. (*a.*)
47. Viareggio	Italy, West coast	43° 51·7′ N., 10° 14·6′ E.	F.	46	10	Est. 1st Nov., '63.
Port Longone	Elba Island	.....	..	..	13	Est. 1st Nov., '63.
48. Downs	.....	.....	F.	..	..	A cable's length South of South Break Buoy.
49. Passe de l'Ouest	Dunkerque Road	Entrance	F.	..	..	Est. 15th Nov., '63. Two lights. (*b.*)
50. Beirut	Syria	.....	..	..	..	Est. 21st Oct., '63.
51. Harwich	Dovercourt	.....	F.	..	..	Est. 2nd Nov., '63. (*c.*)

F. Fixed. Fl. Fixed and Flashing. R. Revolving. I. Intermitting. Est. Established.

(a.) 46.—The light-vessel has her name painted on her sides, a globe at the mast-head, and is moored in 9½ fathoms at low water springs, with St. Bees Head lighthouse bearing N.b.E., distant 38 miles; Walney lighthouse, N.E.b.E.¼ E., 12½ miles; foot of Wyre lighthouse, E.¼ S., 14 miles; Blackpool church, S.E.¼ E., 13½ miles; Skerries lighthouse, W.¼ S., 51½ miles; Calf of Man lighthouse, N.W.b.W., 51½ miles.

All bearings are magnetic. Variation 23° 35′ W. in 1863.

(b.) 49.—The outer light-vessel, named Ruytingen, shows a *revolving red* light, attaining its greatest brilliancy every *half minute*. The light is 33 feet above the level of the sea, visible in clear weather from a distance of 10 miles. The vessel is in 4½ fathoms water, with Gravelines lighthouse bearing S.E.¼S., distance 3 miles, and in lat. 51° 3′ 19″ N., long. 2° 7′ 51″ E.

The inner light-vessel, named Mardyck, shows a *fixed red* light, 33 feet above the level of the sea, and visible in clear weather from a distance of 6 miles. The vessel is in 5 fathoms water, with Mardyck church tower bearing S.¼W., distant 2·4 miles, in lat. 51° 3′ 37″ N., long. 2° 14′ 12″ E.

Directions.—Bound to Dunkerque Road from the northward bring Gravelines high fixed white light and the Ruytingen revolving red light in line, bearing S.W.¼S., which will lead between the In Ruytingen and the eastern flats of the Out Ruytingen banks, and westward of the shallow parts of the Middle Dyck and Breedt Banks to the Ruytingen light-vessel. From the westward the Ruytingen and Mardyck floating lights in line lead to Dunkerque Road. The Ruytingen floating revolving red light and Dunkerque revolving white light in one, lead just to the southward of the tail of the West Dyck.

All bearings are magnetic. Variation 20° 0′ West in 1863.

(c.) 51.—The high light is placed at an elevation of 45 feet above the level of high water, and should be seen when bearing from N.b.E. northerly, round by North to W.¼N.

The low light is placed at an elevation of 27 feet above the level of high water, and should be seen between the bearings of N.W.¼W. and W.N.W.

The two lights seen in line one above the other bearing N.W.b.W.¼W. lead between the inner Ridge and the Andrews buoys.

The light at Landguard Point changes, as heretofore, from red to white at the Beach End buoy; and a narrow strip of *red* light strikes the North Shelf buoy on the bearing of N.b.W.

The former lights at Harwich are discontinued.

All bearings are magnetic. Variation 20° 30′ W. in 1863.

North Atlantic.—Cape Race,—*Newfoundland.*

In reference to the approaches to Cape Race, and the currents and soundings off that headland, the following additional information has been communicated to the Admiralty by Captain J. Orlebar, R.N.

Currents.—Although the current between the Grand Bank and Newfoundland commonly sets to the W.S.W., sometimes at a rate of nearly one mile per hour, it is not always so, and near the shore, in moderate weather it even changes with the tide. At these times during the flood it runs to the S.W., and during the ebb to the N.E., the former being the stronger. Westward of Cape Race, it must also be remembered that, the current so frequently setting to the N.W., one mile per hour in the offing is not invariable in strength or direction, but is affected greatly by the prevailing wind. It is observed generally to run in upon the eastern side of the great bays indenting the South coast of Newfoundland, and out on their western side. In the offing it is influenced by the winds, and near the shore it is also altered and influenced by the tides; so that during spring tides, the stream of ebb runs weakly to the S.E., and the stream of flood to the N.W., the latter sometimes two miles per hour round the headlands.

Directions.—Vessels coming from the eastward in thick weather, if sounding carefully, will probably strike the Ballard Bank, which is parallel to the shore and about fifteen miles long, varying from one to five miles across. A careful comparison of the soundings thus obtained with those on the new Admiralty chart, will show the position of the vessel with sufficient accuracy to enable the navigator to round Cape Race without danger.

For instance, if after sounding in about 80 fathoms and one cast of comparatively shoal water, that is from 30 to 12 fathoms should be obtained, and afterwards the depth increases to 40 fathoms, it may be concluded that the vessel has passed over the narrow part of the Ballard Bank, and is to the northward of the cape, and the course should be changed accordingly.

But if shoal water under 30 fathoms continue for five miles, and then deepens slightly, and again becomes shoal, the vessel may be safely concluded to be on the southern part of the bank, and therefore South of Cape Race, and her course to the westward may be continued with confidence.

A vessel from the westward in thick weather may round Cape Pine and Cape Race with perfect safety, if only attention be given to the lead. The water shoals gradually to the shore, and at the distance of ten miles there is not more than 40 fathoms, so that maintaining a depth of more than 30 fathoms no risk can be incurred.

It is to be regretted that there is no well marked difference in the nature of the soundings off these headlands that would show the position of a vessel, the bottom being generally rock, with shells of the sea egg, grey sand and small stones predominating.

The following dangers have been determined in position by Captain Orlebar, R.N., during the summer of 1863. The following bearings are by compass. Variation 30° W.

Newfoundland,—Cape Spear to Cape Race.

Bay Bulls, Mogotty Rock,—6 feet water, lies half a mile from the head of the harbour, and half a cable E.b.S. from the gravel beach of Magotty Cove.

Man-of-war Rock,—9 feet water, lies one cable S.S.E. from the S.E. point of Green Island.

Offer Rock,—6 fathoms water, lies S.b.W. a mile and a tenth from Cape Neddick.

Horse Rock,—5 fathoms water, lies E.b.S. four cables from the North part of Cape Broyle.

Old Harry,—2 fathoms water, lies S.E. ½ S. five and a half cables from the North part of Cape Broyle.

Cape Broyle Harbour Rock,—2 fathoms water, lies W.N.W. six and a half cables from the North point of the Narrows of Cape Broyle Harbour.

Burns-Head Rock,—2½ fathoms water, lies W. ¾ N. three and half cables from the southern part of the Hare's Ears, and one and a half cables from the shore.

Crow-Island Rock,—2 fathoms water, lies S.E.b.E. one and a half cables from the East end of Crow Island.

Bear Rock,—3 fathoms water, lies S. ½ E. one cable from the North point of Bearcove Point.

Sunkers,—4 feet water, lies S.W. one and three quarter cables from the South point of Bearcove Point.

Renewse Harbour.—In the Sailing Directions heretofore published, the North shore of this harbour is directed to be kept aboard; this is a mistake, for all the dangers are on that side, the South shore being free from dangers.

Kettlebottom,—6 feet water, lies South two and a half cables from the northern head of Renewse.

Whitehorse Rock,—2 fathoms water, lies N.b.W. one and a half cables from Shag Rock.

Cripple Rock,—15 feet water, lies W.b.S. ¾ S. a mile and three quarters from Cape Race Lighthouse.

Shingle Rock,—6 fathoms water, lies S.E.b.E. one mile from Mistaken Point.

Another rock, with 6 or 7 fathoms water, has been observed by the lighthouse keeper to break occasionally after very heavy weather, about a mile S.W. ¾ S. from the lighthouse.

JACK REEF,*—*Indian Ocean,—Does not exist.*

Contract S. S. Nemesis, Point de Galle, October 4th, 1863.

Sir,—I have the honour to make the following report for the information of the Secretary of the Admiralty and Hydrographer.

In the month of August last there appeared in a Colombo paper the following statement:—

"*Shoal between Aden and Galle*.—Captain Jack, of the barque *Eddystone*, recently arrived at Colombo from Aden, reports the discovery on the morning of the 11th inst. (August) of a new and dangerous shoal in lat. 10° 10′ N., and long. 63° 40′ E. It appeared to him to be a patch above water about two miles in extent, resembling a recent coral formation. The *Eddystone* passed close to this reef, and got soundings, ten, nine, eight, and seven fathoms respectively. This discovery is of material importance, as the above bearings would place the shoal immediately in the track of steamers running between Galle and Aden."

On the 24th of August last, at 7h. 30m. a.m., in fine weather, with a clear visible horizon, the wind being S.W., the *Nemesis* passed over the spot indicated. No shoal was seen, but patches of discoloured water were observed, in which no bottom was found with eighty-five fathoms.

Deeming it of great national importance that the newspaper report should, as far as possible under the circumstances, be either confirmed or refuted, it was with my full concurrence that the commander of

* See page 616.

the *Nemesis*, on the 30th September, made that more lengthened search, which the exigencies of the public service had not permitted to be done on the 24th August.

With reference to the track chart sent herewith, I note the following:—4h. 50m. a.m., September 30th, 1863. Lat. by Capella, 10° 10′ N., long. by account, 62° 51′ E. Steered S. 88° E., thirty-five miles. 8h. a.m., long. chronometer, 63° 24′, lat. by account, 10° 11′ N., steered East, sixteen miles. 9h. 45m., long. by chron., 63° 40′, lat. by account, 10° 11′ N., ten miles. Noon, lat. by obs., 10° 18′ N., long. by chron., 63° 40′ E., steered South, eight miles. 1h. p.m. steered S.E. five miles. 1h. 30m.—N.E., five miles; and at 2h. p.m. steered S. 88° E., sixteen miles: at 3h. 30m. p.m. shaped course for Galle.

As on the previous date, long dark patches of discoloured water, greenish and purple, were seen; but no shoal, though the eye extended over a radius of at least ten miles, from every position noted in the chart, the wind blowing a moderate breeze from the northward, and the horizon remarkably clear and visible.

I concur with the opinion of the commander of the *Nemesis* that no such reported shoal exists.

I beg to state that the above service has been performed without causing any inconvenience or delay to the public service in the transmission of the mails.

I am, &c.,
HENRY B. KING, *Commander, R.N., and Naval Agent attached to Nemesis.*

To Captain C. G. E. Patey, R.N.,
Superintendent of Packets.

SPANISH NAVAL PAPER.—We have received the first two numbers of the *Gaceta Maritima* of Madrid, which appears to be an official publication of the Spanish Minister of Marine, containing accounts of the maritime and mercantile affairs, as well as colonial, of Spain. It promises to be a most valuable publication, and we hail its appearance with satisfaction, promising ourselves much interesting matter from its columns. It is a novelty of its kind,—for it is long since we have seen any attempt at a periodical publication devoted as this is to maritime affairs from the archives of Madrid. We cordially wish it success in its appearance every fifth day of the month.

END OF VOL. XXXII.

INDEX TO VOLUME FOR 1863.

ENLARGED SERIES.

LIGHTS

LONDON:

WALTER SPIERS, PRINTER, GREAT PRESCOT STREET.

To accompany the Nautical Magazine.

WRECK CHART OF THE BRITISH ISLES FOR 1862.

Compiled from the Board of Trade Register.

SHOWING ALSO THE PRESENT LIFE BOAT STATIONS

• Signifies a casualty.
⎓ Represents a Life Boat.

Scale of Nautic Miles.
10 0 50 100

SUMMARY.

In 1862 the Number of Vessels wrecked on the coasts and in the seas of the United Kingdom was 1327.
Of these 455 were total wrecks, 66 sunk by collision, making the number totally lost 521.
Vessels stranded and damaged so as to require to discharge Cargo 605. by Collision 611, total 1306, making the whole number of Casualties 1827 and the Loss of Life as far as can be ascertained 690.

	Life Boats	Mortar and Rocket Stations	
There are	158	170	in England
	20	26	" Scotland
	21	42	" Ireland
	179	238	

Published by Charles Knight, 90, Fleet St.
& by the National Life Boat Institution, 14, John St. Adelphi, London.

Royal National Life-Boat Institution,

For the Preservation of Life from Shipwreck.

(Incorporated by Royal Charter.)

Patroness—Her Most Gracious Majesty the Queen.
President—Admiral His Grace the Duke of Northumberland, K.G., F.R.S.
Chairman—Thomas Baring, Esq., M.P., F.R.S., *V.P.* *Deputy-Chairman*—Thomas Chapman, Esq., F.R.S., *V.P.*
Secretary—Richard Lewis, Esq. *Inspector of Life-Boats*—Capt. J. R. Ward, RN.

APPEAL.

The Committee of Management have to state that, since the beginning of the year 1860, the Royal National Life-boat Institution has expended 32,000*l.* on various Life-boat Establishments on the Coasts of England, Scotland, and Ireland. During the same period the Life-boats of the Institution have been instrumental in rescuing the Crews of the following Wrecked Vessels:—

1860.

Schooner *Ann Mitchell*, of Montrose 1
Schooner *Jane Roper*, of Ulverstone 6
Brig *Pallas*, of Shields 3
Ship *Ann Mitchell*, of Glasgow .. . 9
Smack *John Bull*, of Yarmouth ... 5
Schooner *Catherine*, of Newry 4
Barque *Niagara*, of Shields 11
A Barge of Teignmouth 2
Brig *George and James*, of London 8
Brig *Zephyr*, of Whitby 6
Coble *Honour*, of Cullercoats..... 3
Schooner *Eliza*, of North Shields.. 7
Barque *Oberon*, of Liverpool..... 15
Brigantine *Nancy*, of Teignmouth. 9
Smack *Wonder*, of Teignmouth ... 2
Brig *Scotia*, of Sunderland 6
Sloop *Three Brothers*, of Goole ... 5
Sloop *Charlotte*, of Woodbridge ... 5
Brig *Ann*, of Blyth 8
Sloop *Hope*, of Dublin 3
Schooner *Druid*, of Aberystwyth .. 5
Barque *Vermont*, of Halifax, U.S. . 16
Schooner *Wm. Keith*, of Carnarvon. 2
Brig *Flying Fish*, of Whitby 5
Elizabeth Ann, of Lyme Regis 3
Steam Dredge, at Newhaven..... 9
Sch. *Admiral Hood*, of Rochester .. 6
Sch. *Susan and Isabella*, of Dundee 5
Schooner *Rose*, of Lynn 3
Brig *Prodroma*, of Stockton..... 11
Brig *Eliza*, of Middlesborough 7
Brigantine *Freia*, of Königsberg... 6
Brigantine *Diana*, of Fredrikshamn 7
Brig *Gloucester*, of South shields .. 7
210
Number of lives saved by shore-boats and other means, for which the Institution has granted rewards in 1860 .. 245
Total 455

1861.

Brig *Lovely Nelly*, of Seaham..... 6
Brigantine *Nugget*, of Bideford 5
Schooner *Prospect*, of Berwick..... 6
Sloop *Thomas and Jane*, of St. Ives 3
Fishing-boat of Whitburn 4
Brig *Arethusa*, of Blyth 8
Schooner *Dewi Wyn*, of Portmadoc 2
Flat *Cymraes*, of Beaumaris..... 2
Schooner *William*, of Morecambe.. 5
Smack *Gipsy*, of Newry 4
Schooner *Margaret Anne*, of Preston 4
Brig *New Draper*, of Whitehaven.. 8
Schooner *William*, of Liverpool ... 5
Lugger *Nimrod*, of Castletown 2
Brig *Providence*, of Shields 9
Brig *Mayflower*, of Newcastle 8
Schooner *Village Maid*, of Fleetwood 4
Barque *Guyana*, of Glasgow 19
Brig *Roman Empress*, of Shields .. 10
Brig *San Spiridione*, of Galaxide .. 2
Schooner *Voador du Vouga*, of Viana 8
French Brig *La Jeune Marie Thérese* 6
Barque *Perseverance*, of Scarborough 5
Schooner *Elizabeth*, of Bridgewater 4
Ship *Danube*, of Belfast 17
Schooner *Hortensia*, of Hanover ... 4
Schooner *Oregon*, of Stonehaven ... 4
Brig *St Michael*, of Marans..... 8
Spanish Barque *Primera de Torreviega*—Saved vessel and 1
Schooner *Hurrell*, of Penzance—Saved vessel and crew 4
Barque *Frederick*, of London..... 1
Brig *Anne*, of Plymouth—Saved vessel and crew 8
Schooner *Betsey*, of Peterhead—Saved vessel and crew..... 6
Barge *Peace*, of London..... 2
Lugger *Saucy Lass*, of Lowestoft.. 11
Smack *Adventure*, of Harwich..... 10
Pilot cutter *Whim*, of Lowestoft... 7
Barque *Undaunted*, of Aberdeen .. 11
Wrecked boat on Blackwater Bank, on the Irish Coast 1
Schooner *Skylark*, of Folkestone... 6
Brig *Lively*, of Clay, Norfolk 5
Barque *Robert Watson*, of Sunderland 5
Sch. *Auchincruive*, of Grangemouth 6
Schooner *Friends*, of Lynn..... 4
Schooner *Eliza Anne*, of Dublin ... 5
Brig *Content*, of Sunderland..... 5
Smack *Ellen Owens*, of Cardigan... 3
Schooner *Fly*, of Whitby—Saved vessel and crew..... 4
Schooner *Epimachus*, of Amsterdam 5
288
Number of lives saved by shore-boats and other means, for which the Institution has granted rewards in 1861 .. 136
Total 424

1862.

Schooner *Bellona*, of Red Bay..... 1
Brig *Pioneer*, of Carnarvon 1
Schooner *Princess Alice*, of Ipswich 5
Brig *Minerva*, of Workington 4
Schooner *Elizabeth and Hannah*, of Newburgh 6
Brig *Sisters*, of Whitby..... 9
Brigantine *Matilda*, of Stockholm.. 4
Brig *Jane*, of North Shields..... 10
Schooner *Liberty*, of Dublin..... 3
Schooner *Sylphiden*, of Nakskov—Saved vessel and crew..... 7
Brig *Trial*, of Poole 7
Barque *Cedarine*, of Bermuda.... 134
Smack *Frodsham*, of Liverpool.... 2
Sloop *William*, of Liverpool 5
Sloop *Elizabeth*, of Teignmouth .. 3
Barque *Cruz V.*, of Oporto..... .. 14
Barque *Druid*, of Sunderland 9
Schooner *Rook*, of Liverpool 3
Smack *Merrion Lass*, of Aberystwyth—Saved vessel and crew ... 3
Fishing-boats of Whitburn..... ... 12
Barge *Henry Everest*, of Rochester. 4
Ship *Annie E. Hooper*, of Baltimore 18
Schooner, *Ceres*, of Arbroath—Saved vessel and crew 5
Sloop *Loftus*, of Padstow 4
Schooner *Ellen*, of Liverpool—Saved vessel and crew 3
Smack *Mary Elizabeth*, of Padstow 3
Smack *John*, of Teignmouth 2
Schooner *Osprey*, of Fraserburgh .. 6
Schooner *James Davell*, of Newcastle—Saved vessel and crew .. 2
Schooner *Champion*, of Liverpool.. 10
Galliot *Aremana*, of Jaffa—Assisted to save vessel and crew 6
Ship *James Browne*, of Philadelphia —Assisted to save vessel and crew 18
Smack *Countess of Lisburne*, of Aberystwyth..... 3
Screw Steamer *Alice*, of Leith 12
Barque *Brazil*, of Liverpool 13
Schooner *Little Aggie*, of Berwick.. 4
Schooner *Sisters*, of Wick 3
358
Number of lives saved by shore-boats and other means, for which the Institution has granted rewards in 1862.. 213
Total 571

Summary of Lives Saved:—

1860. . . . . 455 | 1861. . . . . 424 | 1862. . . . . 571 | Total 1,450

For these joint numerous services in saving 1,450 lives from shipwreck, the Institution has granted rewards amounting to 3,501*l.* 12*s.* 7*d.* in addition to 68 Silver Medals.

The number of lives saved by the Life-boats of the Society, and other means, since its formation, is 12,800; for which services, 82 Gold Medals, 718 Silver Medals, and 16,478*l.* in cash, have been paid in rewards. The Institution has also expended 67,000*l.* on Life-boats, Life-boat Transporting-carriages, and Boat-houses.

The Committee desire to express their grateful sense of the generous support which they have received from the British public during the past few years, a support which has enabled them to establish their present magnificent fleet of 123 life-boats on the shores of the United Kingdom. Deeply sensible, however, of the great responsibility that rests on them to maintain their fleet in a thoroughly efficient state, and its crews practised in the management of their boats which can only be effected by a large and permanent annual income, they earnestly appeal to all classes of their countrymen to aid them in upholding and perpetuating so great and truly national a work.

Donations and *Annual Subscriptions* will be thankfully received by the Bankers of the Institution, Messrs. Willis, Percival and Co., 76 Lombard Street; Messrs. Coutts and Co., 59 Strand; Messrs. Herries, Farquhar, and Co., 16 St. James's Street, London; by all the Bankers in the United Kingdom; and by the Secretary, Richard Lewis, Esq., at the Office of the Institution, 14 John Street, Adelphi, London,—W.C.

(1.) 1*st January*, 1863. [Over

LIST OF THE LIFE-BOAT STATIONS

OF THE

ROYAL NATIONAL LIFE-BOAT INSTITUTION.

ENGLAND.

NORTHUMBERLAND—	1	Berwick-on-Tweed.
		North Sunderland.
		Boulmer.
		Alnmouth.
	5	Hauxley.
		Newbiggin.
		Cullercoats.
		Tynemouth
DURHAM . .	10	Whitburn.
YORKSHIRE . .		Middlesborough.
		Redcar.
		Saltburn.
		Whitby.
	15	Scarborough.
		Filey.
		Bridlington.
		Hornsea.
		Withernsea.
NORFOLK .	20	Blakeney.
		Cromer.
		Mundesley.
		Bacton.
		Palling.
	25	Winterton.
		Caistor.
		Yarmouth, No. 1.
		" No. 2.
SUFFOLK. . .		Lowestoft.
	30	Pakefield.
		Southwold.
		Thorpeness, No. 1.
		" No. 2.
		Aldborough.
KENT . .	35	Kingsgate.
		Margate.
		Walmer.
		Dover.
		Dungeness.
SUSSEX . .	40	Camber.
		Rye.
		Hastings.
		Eastbourne.
		Newhaven.
	45	Brighton.
		Selsey.
ISLE OF WIGHT .		Brighstone Grange.
		Brooke.
GUERNSEY . .		St. Samson.
DORSET . . .	50	Lyme Regis.
SOUTH DEVON . .		Exmouth.
		Teignmouth
		Plymouth.
CORNWALL . .		Fowey.
	55	Lizard.
		Porthleven.
		Penzance.
		Sennen Cove.
		St. Ives.
	60	Newquay.
		Padstow.
		Bude Haven.
NORTH DEVON .		Appledore.
		Braunton.

WALES.

GLAMORGANSHIRE—	65	Penarth.
		Porthcawl.
CARMARTHENSHIRE—		Llanelly.
		Carmarthen Bay.
PEMBROKESHIRE .		Tenby.
	70	Fishguard.
CARDIGANSHIRE .		Cardigan
		Aberystwyth
MERIONETHSHIRE .		Aberdovey.
		Barmouth.
CARNARVONSHIRE—	75	Portmadoc.
ANGLESEY .		Llanddwyn.
		Rhoscolyn.
		Holyhead.
		Cemlyn.
	80	Moelfre
		Penmon.
CARNARVONSHIRE—		Orme's Head.
FLINTSHIRE . .		Rhyl (Tubular).
CHESHIRE . . .		New Brighton.
LANCASHIRE .	85	Southport.
		Lytham.
		Fleetwood.
CUMBERLAND. . .		Silloth.
ISLE OF MAN . . .		Castletown.

SCOTLAND.

KIRKCUDBRIGHT .	90	Kirkcudbright.
AYRSHIRE . . .		Ayr.
		Irvine.
ARGYLLSHIRE . .		Campbeltown.
CAITHNESS-SHIRE .		Thurso.
ELGINSHIRE—	95	Lossiemouth.
BANFFSHIRE . .		Buckie.
		Banff.
ABERDEENSHIRE .		Fraserburgh.
FORFAR		Buddon Ness.
	100	Broughty Ferry
FIFESHIRE . . .		St. Andrews.
HADDINGTONSHIRE .		North Berwick.

IRELAND.

CO. ANTRIM . . .		Portrush.
DOWN . . .		Groomsport.
	105	Tyrella
		Newcastle.
LOUTH . .		Dundalk.
		Drogheda.
DUBLIN . . .		Skerries.
	110	Howth.
		Poolbeg.
		Kingstown.
WICKLOW . .		Wicklow.
		Arklow.
WEXFORD .	115	Cahore.
		Wexford.
		Rossiare Fort.
		Carnsore.
WATERFORD—		Tramore.
	120	Dungarvan.
		Ardmore.
CORK		Youghal.
	123	Ballycotton.

The following are Extracts from the General Rules of Management:—

"Each Life-boat to have a Coxswain Superintendent, with a fixed Annual Salary of £8.

"The Life-boat to be regularly taken afloat for exercise once every quarter, fully manned and equipped, so that the Crew may be familiar with her qualities and proper management. On every occasion of exercise, the men are to be paid 5*s.* each in stormy weather, and 3*s.* each in fine weather; and on every occasion of going off to a Wreck to save Life, each of the Crew to receive 10*s.* by day and £1 by night, and equal shares of any Local Subscriptions which may be raised to reward any special act of gallantry or exertion.

"The Crew are provided with Life-belts. The Coxswain is required to keep a list of all the Life-boat Stores, which are to be examined once a quarter by the Local Committee, in order to their being repaired, or replaced, if in the least degree in a doubtful condition.

"The Life-boat to be kept on her Carriage, in the Boat-house, with all her gear in her ready for use. Signals are agreed upon for calling the Life-boats' Crews together; and immediately on intimation of a Wreck, or Vessel in distress, the Coxswain is to muster his Crew, launch his Boat, and proceed to her assistance.

"The Local Committee to make quarterly inspection, and Report to the Institution as to the behaviour of the Boat during exercise, pointing out any defect that may be remedied, and offering any suggestion that may conduce to the efficiency of the service."

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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-five* 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 *Euxine* 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 *Euxine*, 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. ENGLEDUE,

Superintendent of the Peninsular & Oriental Co.

DESTRUCTION OF IRON SHIPS BY GALVANIC ACTION INDUCED BY PREPARATIONS OF COPPER.—The French floating battery *La Gloire* has lately been examined, and found to be seriously injured by the action of copper on her iron plates, the whole of which, below the waterline, will have to be removed, being converted into a kind of plumbago by galvanic action. We had occasion, some time since, to call attention to the extraordinary state of her Majesty's ships *Triton* and *Sharpshooter*. On their being docked for examination, the iron plates were in some places reduced to the thickness of writing paper, and in the case of the *Triton* the scrapers actually went through the plates when removing the tons of oysters, barnacles, &c., attached to her bottom. It appears that this ship had been coated with a preparation of copper, and the destruction of the plates and rivets arose from galvanic action on the exposed surface of the iron where the under-coating had become rubbed off under the bows and forefoot and along the light-load waterline. The salvation of this ship from foundering was, no doubt, occasioned by the adhesion of the shell fish She has just been thoroughly repaired at Devonport Dockyard, and is now coated with Messrs. Peacock and Buchan's preparation, which is superseding the copper preparations hitherto used in her Majesty's Dockyards.—*Shipping Gazette.*

The paddle-wheel steam-vessel *Triton*, 6, at Devonport, having been thoroughly repaired, rigged and stored, is now nearly ready for the first division of the steam reserve. This is the ship the iron plates of which were reduced to the thickness of paper by galvanic action, induced by the vessel having been coated with a preparation of copper. She is now covered outside with the composition of Peacock and Buchan.—*Times*, *22nd Dec.* 1862.

Vide Pamphlet pp. 1, 2.

† Oxide of Copper ground up in Naptha.

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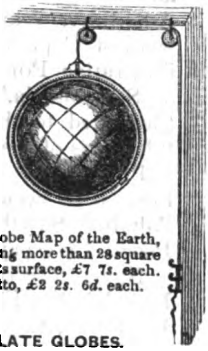

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From J. R. Engledue, Esq., to Messrs. Peacock and Buchan.

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 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.

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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. ENGLEDUE,
Superintendent of the Peninsular & Oriental Co.

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