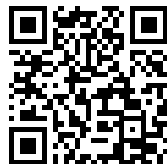

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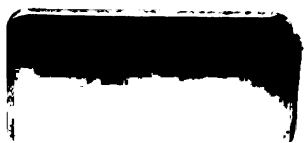




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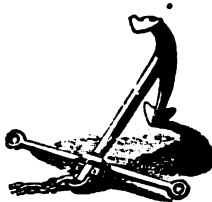
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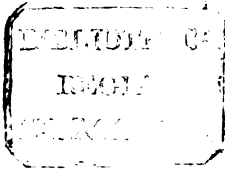


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JANUARY, 1862.

ON THE PROPER DEPTHS FOR ELECTRIC CABLES AS AT PRESENT
CONSTRUCTED,—*By Captain T. Spratt, R.N., C.B., H.M.S.*
“Medina.”

The completion of the Malta and Alexandria submarine cable will no doubt revive public interest in submarine telegraphy, particularly after the appearance of the Commissioners' inquiry into past failures and future practicability in this important subject. It was my lot to be connected with the Varna and Crimean cable, of 310 miles, one of the earliest laid of any great length. Instead of laying it direct, as intended, at my suggestion it was laid entirely in shallow water, by making a long detour, so that the uncertain risks of the direct deep route were avoided. Most of the Levant lines successfully laid or attempted in 1858 have shared my attention, so that my interest in these questions has been constantly kept on the alert, with the view to a right understanding of some of the difficulties and causes of immediate or subsequent failure.

It was therefore very soon evident to me that deep sea cables of great length almost always failed from being cast into these depths without being in any way tested for the trying conditions to which they would be there subject, arising from pressure and its effect in the immediate or ultimate development of faults in the cable that would not be of material consequence in moderate depths. That, in fact, the fair test of efficiency was only made after they had reached great depths, and were then irrecoverable, either for repair or even that the real cause of their failure might be ascertained and corrected.

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A consideration, therefore, of the possible effect of the enormous pressure of 1,000 or 2,000 fathoms of water on any part of the cable at all imperfect in its several coatings;—along with its multitude of splices, the spongy condition of certain parts from the impurity of the gutta percha, as well as the possibility that after long soaking under that pressure its particles might be displaced and water absorbed instead,—satisfied me that these were the main reasons for the failures of the several deep sea cables that had occurred, and induced me to foretell the same fate for cables laid in a similar manner; for who could ensure before laying the cable that the condition of the material part of the cable, namely its insulating covering, was perfect. Such were my views, and of which I made no secret in the autumn of 1858, after the failure of the first attempt with the Crete and Alexandria cable, which directed my attention to the subject.

Previous to that time, however, some testing for the effect of pressure had been carried out before consigning cables to the great deeps. This I had presumed on, and was hopeful of ultimate success. But such was not the case, and my hopes that submarine cables were so tested before they were thrown to the ocean deeps went to the winds.

It was a few months afterwards (the spring of 1859) that I had the good fortune to meet the talented and much lamented engineer, Mr. Stephenson, on his passage through Malta, to whom I communicated my views on this subject. The same apprehension as to the results of ocean pressure on deep sea cables was as fully entertained by him as by myself, and doubts of the efficiency of electric cables were equally as strong in his mind unless they were fairly tested for the conditions they would be subject to in those depths.

It was not until the blue book on submarine cables was published, a few weeks since, that I was informed a Commission had been inquiring into the various questions connected with the causes of failure of submarine telegraphy, and that there had been so many important experiments carried out in reference to the subject. I was therefore both surprised and gratified to learn from the perusal of their report that so much had been done in the right way of obtaining a correct knowledge of the difficulties connected with submarine telegraphy in the deeper portions of the sea. But I regretted, notwithstanding the numerous experiments made as to ocean pressure on the various substances recommended as insulations, to find that one result was that although gutta percha, when freed of all its impurities, was almost impervious to water under a limited period of testing with very high pressure, yet that the risks were considered by these gentlemen to be still great, from the delicacy of this insulating material and the uncertainty of producing a perfect insulation throughout the entire length of cable,—in fact, to span the ocean's bed; and yet to know that a single defect entails the certain loss of the whole! The great desideratum, then, is unfortunately still, as I have from the first apprehended, the risk of ocean pressure on imperfect adhesion of the several coats of the insulating gutta percha, arising from positive spongy parts that rise imperceptibly under ordinary tests and from

faulty manipulation of some one or two of the many hundreds of splices that must be formed in a long cable. Some eminent individuals, however, interested in its practicability, yet believe that success is not far distant, although not actually accomplished. The civilised world are interested in its success, and the motto must be *nil desperandum*. On this point the Gutta Percha Company entertain sanguine hopes as to the practicability of producing an insulator possessing the desired properties;—although it does not yet appear that any experiment has been prolonged sufficiently to prove that these will be gained in ocean depths;—in fact, that hundreds of miles of cable can be rendered perfect in insulation throughout, although they may be so in the distance of a few miles.

There is one remark, however, in Mr. Chatterton's last letter in the blue book that deserves notice. It comes from the organ of the Gutta Percha Company, expressing their unbounded confidence in the practicability of gutta-percha-covered-wires, and says that their "success is certain *if* laid in the sea uninjured." This of course includes all defects of manipulation, as well as injuries subsequently produced,—defects which cannot be discovered by the test that can be applied to cables in their entirety on shore or in the vessel before being cast to the deep, and only when submerged for a certain time under the severe pressure of the ocean depths, and after some hundreds of splices, &c., have been subjected to their effects.

That "IF," then, embraces the whole question, considering the numerous chances against obtaining the required perfection, as the cable has to pass through many processes of manipulation, and many hands before it is laid in the sea. Hence it would seem that the question rests entirely with the Gutta Percha Company;—that they should be not only the makers and coverers but also the depositors of such cables, to ensure the best results for those who order them, since there are so many divided interests that do not suffer by the ultimate failure of a cable: first, the maker of the core; next, the party that covers it; and thirdly, the contractor who lays it,—the latter of whom only is under any penalty for failure occurring within a brief period, which may be reckoned as a few hours in comparison with the period it is required to last before it can be assumed as a complete success. Again, the question seems to lie fairly and properly with the Gutta Percha Company, in respect of deep sea cables; for as these are by common consent considered to require no external wire covering for great depths, this company becomes the sole manufacturers of them, and should therefore be the sole parties to take the risk of laying them and the guarantee of their remaining efficient during a reasonable time.

Now it might be fairly advanced that until an entire cable of some 500 or 600 miles in length can be tested for the pressures of the ocean at depths of 1,500 or 2,000 fathoms and upwards before it is laid in those depths, it is not in a fair condition to be depended on; as a defect of manufacture or injury cannot be discovered until too late to amend it: because to recover the cable from these depths for

the purpose of cutting out a fault and to effect a repair, even if discovered a few hours after the bottom is reached, is almost hopeless. Therefore, as such a perfect testing of a long cable in its entirety is impracticable before being laid in those depths, the speculation is hardly a fair one until the Gutta Percha Company can show that they can make a cable capable of resisting those pressures, and perfect as an insulator. The responsibility and guarantee then lies fairly in their hands and no others.

The several cables that have been laid in depths of 500 fathoms and upwards have all failed entirely in course of time, since of the 11,000 miles of cable that have been laid, 3,000 miles only have lasted and are at present working, and these are the truly shallow sea cables,—that is, those lying in depths under 400 and 500 fathoms, which I regard as the line of demarcation at present for practical, that is durable, submarine telegraphy. The Algiers and Mahon cable may certainly be excepted, but it is yet in its infancy of trial, as particularly shown by Mr. Chatterton's letter abovementioned. Defects in this cable may be concealed by the tar that covers it; and this may remain for weeks and months, until the sea water or soft mud which surrounds it has at last absorbed and dissipated it, and thus caused its ultimate failure, like the Malta and Corfu and Malta and Cagliari cables.

But hope is the wand of wisdom in all scientific experimental research, however obscure; and we have a right to hope when, under the direction of the late able Commission, so much important fact has already been established, and we see portions of the cable tested under as high a pressure as can be applied,—so to search all the defects of manufacture before the cable is committed to the severer test of the ocean deeps. The pressure tank of Mr. Reed is undoubtedly a great step in the right way to success, since he states that lengths of five miles can now be tested by him for a few minutes under the pressure of 600lbs. per square inch and upwards,—that is, for the pressure of about 250 fathoms. But Mr. Reed, in his letter to the Commission, dated January, 1861, also states as follows (page 448 of the Report):—

“ I now bring the hydraulic pump into action and exert a pressure equal to 600lbs. on the square inch, and after this pressure has remained for ten or fifteen minutes the galvanometer is again recorded, and if it remains quiescent you may consider the cable safe for a depth of 250 fathoms; the pressure is still continued till it equals a column of water whose height is equal to the depth of the sea where the cable is to be laid, adding a sufficient margin to the pressure to make it perfectly safe, on the same principle as testing a beam or girder that is to carry a given weight—the pressure must exceed this weight or its safety becomes endangered. If we suppose the cable destined for the Atlantic and the depths to be 2,000 fathoms, equal to 12,000 feet, the pressure applied in this case would be 5,295lbs. on the square inch, equal to 2 tons. 7 cwt. 1 qr. 3 lbs. When this pressure has remained on for fifteen minutes again note the galvano-

meter, and if still quiescent your cable is sound, and may be safely immersed to the required depth."

Now this seems to imply that the pressure tank is capable of testing five miles length of any cable for the pressure of 2,000 fathoms as well as for 250, namely 5,295lbs. upon the square inch for ten or fifteen minutes. If the pressure tank of Mr. Reed is really able to bear this enormous pressure and to hold five miles and a half of cable, then a great step has indeed been effected; although it is not then, in my humble opinion, sufficiently tried until fifty instead of five miles can be so tested before cast into depths of from 1,000 to 2,000 fathoms. But the capabilities of this pressure tank, as above implied, so far exceed that which has been previously known to be effected on such a scale, that I am forced to apprehend there is some mistake in the implied meaning, which might deceive the public if not explained more fully, as it seems to me to require by its publication in a book of official authority.

The above considerations upon the risks and uncertainties of the perfect manufacture and conservation of insulation from injury before the laying of deep sea cables of great length, at the present moment turns the question then entirely into the consideration of the difficulties and risks connected with cables laid in moderate depths, and of the best mode of avoiding them; since it is evident that the depths where the ocean pressure can be tested for beforehand are those only that can be fairly advocated with a reasonable hope of success.

Now the question of the depth best adapted for cables involves several considerations in order to ensure the best results,—namely, first, the immediate improvement which the insulator undergoes from diminishing temperature, and *its permanency*; next, the security of the cable from injury after being laid; then the facility of recovering the cable for repair; and then the economy of maintenance afterwards.

The practicability of laying electric cables in any depth has been so clearly demonstrated by the successful laying the two first lines of important length, namely, the Black Sea and the Atlantic, from the different natures of those cables—these, in fact, having included so entirely the extreme conditions connected with the question—it now hardly enters into the calculation of risk. For the Black Sea cable was without an external covering of any kind, and was consequently laid out without machinery, excepting the cones and rings to guide it; in fact, it ran out over a simple hook suspended above the quarter-deck, and thus ran out as easily as a log-line, at an average of about four knots an hour.

The Atlantic cable, on the contrary, was coated with wire, and, as now generally admitted, was ponderous to no purpose for the depths it was to lie in. But the paying out machinery finally introduced by Messrs. Bright, Canning, and Clifford had the cable within entire control, and the object was finally effected under difficulties that are likely to occur again in connection with cable laying;—any properly

adapted cable can therefore be laid without the risks connected with the paying out being a serious consideration in connection with the undertaking.* And on this fact there is no doubt the public have long been misled, as they have also been in regard to the probable consequences of oceanic pressure on the deep sea cables that were being advocated and manufactured for those deeps. Since as few shallow water cables have been laid without some faults appearing, the effect of ocean pressure on any such untested and undiscovered defects was a simple calculation of risks connected with the responsibility of the undertaking.

But the saving excuses for most of these failures of deep sea cables have been various: the unfortunate officer employed to pilot may be charged with going far from his course, thereby causing the cable to run short; or he may be said to have so ill timed the start of laying out as to encounter tempestuous weather, the vessel with the cable in consequence being obliged to stop and hold on to it, perhaps in a strained and faulty condition, until better weather allowed its repair, the final rupture and loss being then inevitable.

Again, the teredo, that hungry worm with its all devouring mandibles, has been asserted to have bored into the cable in all depths, and that they are even so minute in great depths that the aid of a powerful microscope is required to detect the cells bored by them through the gutta percha. The animals, however, it is said, are not found in them, so that these microscopic punctures alluded to were no doubt those that were to be found in gutta percha previously to the submersion of the cable.

Submarine volcanoes also have been made to play some part in the question of failures; and no doubt heated ground from such sources, on which the cable might be lying, as well as sulphureous exhalation, might injure it.

Next, the edges of precipices and narrow chasms in the deeps have been imagined, and made to account for the failure of faulty cables, because the supposed currents in those deeps had chafed them at the point of suspension. But in truth those deep waters are well known to most nautical surveyors to be free from sensible movement,—in fact, to be perfectly quiescent; and even the slopes are, I believe, in general not more abrupt than the steepest gradient of any railway or road yet made, and their surface is really ten times as soft as the most muddy steppe in Russia.

Thus much for depths of 500 fathoms and upwards.

Again, coral has been another of the unforeseen causes advanced for the disappointed public and shareholders at the failure of the deep sea cables. But unfortunately corals do not grow in the deep water, where the most serious faults have occurred. If they did so, their

* But in our opinion no cable must ever be expected to remain perfect and be successful if it undergo the strain which this controlling machine was capable of exerting on it.—ED.

principal effect on a cable would arise from their aftergrowth, and thereby entanglement of the cable, thus keeping it on the bottom and diminishing the risks of injury from chafing.

The main considerations, then, regarding the proper depths for electric cables are, first, those from which it may be easily recovered for repair, having a soft bottom, and thence easily regained by creeping for it. But this cannot be generally ensured, unless in depths of 100 fathoms and upwards, for the ground with 100 fathoms and less over it is the most prolific of animal life and organic debris. Hence this ground is often encumbered with patches of accumulated and indurated organic matter, more particularly so between the depths of from 20 to 70 and 80 fathoms than over them. And, again, since in depths less than 30 fathoms it undergoes motion from heavy gales and tidal action, it is there consequently that the cable is more likely to be left exposed by the native rock or its moving debris of gravel, sand, and broken shells; more subject to oxidation and destruction than if quietly reposing well covered by the soft ooze of greater depths. The difficulty of picking up a cable from alternately hard and soft ground after such oxidation has gone on is therefore greatly increased, for the grapnel may or may not be checked by the hard ground or by the cable. The wire covering of the cable decaying more or less with time, many portions of a cable thus picked up by underrunning it, after having been some time at the bottom, may be unfit for relaying after the strain that has necessarily been brought upon it in raising it to the surface against the great resistance to which it is subject. I am certainly inclined to think few such will be fit to be relaid, from the injuries they receive under the process of picking up when stretched as they now are.

It is therefore necessary to provide for easily recovering the cable in all reachable depths of upwards of 100 fathoms, however long it may have been down and weakened by oxidation, that will ensure the bright of the cable being brought to the surface without straining it, so as to renew only small portions instead of a whole section of the cable. It was therefore recently proposed by me that this should be done always by paying out at well defined intervals—perhaps upon an intervening bank or at uniform distances—a certain amount of slack for so lifting the cable to the surface without straining or rupturing the adjacent parts, to get at it for repair where faults have occurred. This plan I recommend to be adopted at intervals of not less than twenty miles by paying out slowly 400 or 500 fathoms of cable at each position, and upon zigzag courses of about 100 fathoms each, to prevent it from falling on the bottom in coils, thus taking kinks when hauled on, which I believe would allow the cable to be lifted in depths of from 100 to 300 fathoms without difficulty. For when it lies on soft bottom a very light grapnel would be sufficient. And the creeping should be carried on only from boats, instead of from a ship, as at present, and this also in very fine weather, when a splice can be made after it has been raised. In such weather the cable when hooked would be more easily felt, if it be done judiciously,

I have frequently dredged in those depths during the past twenty years, and therefore speak with confidence upon its practicability in connection with the plan of paying out at short intervals sufficient slack in the manner above suggested. Thus kinking is avoided, and yet the cable may be lifted to the surface without straining it, as is the common consequence of the present mode of laying them with a supposed allowance of one or two per cent. only. But even if it really should be five or six per cent., it is evident that it would not be slack enough to allow the cable to be raised anywhere without straining or breaking it, except in such shallow water as to be out of the question. Since heavy shore end cables are alone suited to those depths, to raise such a cable would of course involve the same difficulty in respect to the lifting of it to the surface as the lifting of the light cable in the deeper water.

Now let us consider the conditions to which the insulating medium of a cable is subject on being first immersed. First,—of course there will in most cases be a contraction from an immediate diminution of temperature; one that in the first 100 or 200 fathoms will have a material effect, as it is often ten degrees or more, according to the season and place. This amount, as is well known, would sometimes about double the insulating properties of the gutta percha. This is always found in laying submarine cables in the deep waters. Electricians call and measure these improving or deteriorating effects on the gutta percha under different terms, namely, conductivity and resistance, both indicating the same influence, but inversely; the one being measured from the quantity of the subtle fluid the gutta percha conducts, and the other from what it retains. In common language and for a common sense view of the question, apart from technicalities, each is capable of indicating the amount of loss of the fluid by leakage through the gutta percha under its varied density from expansion and contraction in changes of temperature, the effects of a positive fault or small aperture being measured in the same manner.

The next effect after immersion is that resulting from the increasing pressure of the water arising from the increased depths. This might also increase the insulation of a *perfect cable* by causing some small amount of contraction under the compression. But it would only be of small amount, and nothing in comparison with that resulting from decrease of temperature. But as we have not yet arrived at the practicability of making a great length of cable perfect in insulation throughout, the effects of such compression on minute pores, invisible under ordinary tests, would be to force the surrounding fluid into all such pores, and eventually to reach the wire—the heart of the cable. A loss of insulation would be an immediate result, followed by its ultimate destruction. But a question of time then arises, depending on the number of such minute defects, their size, and the thickness of the gutta percha.

Thus it is evident there is a marked line of depth, a defined margin between the great improvement resulting from temperature and the great risks resulting from ocean pressure. And these facts and rea-

sonings have been my guides in forming an opinion as to what are the safe depths for deep sea cables,—the term being the same for all cables that are not properly shore end or shallow water cables, within reach of anchors, or where tides or currents would in any way affect them.

The Mediterranean temperatures are known to be not very low at great depths, but reach their minimum as a permanency in from 100 to 300 fathoms; and this minimum temperature seems to correspond with the average annual temperature of the locality itself. And as the Mediterranean is divided into a series of basins, with comparatively intermediate shallows, it is its surface waters, about the depth of 200 or 300 fathoms (being that of the barriers which separate them) that unite by their superficial and encircling currents. Thus, as the depth across the Strait of Gibraltar is under 200 fathoms, the very cold waters in the depths of the Atlantic or of the Black Sea do not intermingle and exert their individual temperature in the depths of the central basins. The temperature of the deeper waters of the Mediterranean, Archipelago, Sea of Marmora, and Black Sea are consequently each dependent on local influences, namely, from the solar or atmospheric temperature above them. Therefore the minimum temperatures of their deeper parts correspond nearly with the mean annual temperature over them.

The following are some of the temperatures taken by me in various parts of the Mediterranean :—

Grecian Archipelago, July 25th.

Air	86°
Surface	78
10 fathoms	74
20 "	74
60 "	64
90 "	64
120 "	56

Off Crete, September 20th, 1852.

Air	76°
Surface	75
10 fathoms	72
50 "	59
120 "	56

Between Malta and Tripoli, May 1861.

Surface	62°
Bottom in 295 fathoms	62

Off the Coast of Egypt, in April.

Surface	63
20 fathoms	61½
270 "	59½

Off the Coast of Egypt, November 15th, 1861.

Surface	73°
30 fathoms	71
50 "	68
80 "	64
100 "	62½

In the Gulf of Syrtis, February 21st, 1861.

Surface	61°
20 fathoms	62
50 "	62
200 "	62½

Gulf of Syrtis, February 27th.

Air	56°
Surface	60
50 fathoms	61
100 "	61½

Off Arab Gulf, West of Alexandria, April 6th.

Air ..	68°
Surface	62
20 fathoms	61½
900 " on bottom	59½

Another thermometer, a simple minimum, at 1 fm. above bottom, 58½°.

<i>Off Crete, June 14th, 1860.</i>		<i>Off East End of Rhodes, August 25th, 1860.</i>	
Air	80°	Barometer, 29.88.	Hydrometer, 74°
Surface	73	Air	88°
10 fathoms	68	Surface	82
20 "	68	10 fathoms	81
30 "	68	20 "	79½
50 "	63	30 "	78½
100 "	59½	50 "	77
200 "	59½	100 "	73
1240 "	59½	In 300 fathoms water, but the lower temperatures were not obtained for the lower depths.	

In the Grecian Archipelago I long since showed it to be constant at about 54° or 55° in depths from 100 fathoms and downwards. In that sea the temperature of the intermediate depths between 100 fathoms and the surface, in the summer season, range from 55° to 76°, and indeed even up to 80° and 86° sometimes in the littoral waters of enclosed gulfs and shallow bays.

In the eastern and western basins of the Mediterranean it will have, consequently, a higher minimum temperature than that; and I find that it is about 59° in all depths from 300 down to 2,000 fathoms. But between 300 and the depths of 30 fathoms there is an increasing variation from that temperature to 73° and to 75° in the summer months, but confined more particularly to the depths between 80 and 100 fathoms and the surface. But in the winter months of December, January, February, and March the upper depth is nearly at the minimum temperature of the deepest parts below, namely from 59° to 62°, varying with the locality and depths of water there. Thus it is that in these months the surface and deep waters of the Mediterranean are at a constant temperature of about 10° or 15° above that of the atmosphere. After the month of March, however, the solar influence begins sensibly to raise both sea and atmospheric temperature, so that in July, in the southern part of the Mediterranean, it is at its maximum of about 75° from the surface down to the depth about 30 fathoms below it.

Therefore from the well known and very important influence of temperature in improving or diminishing the insulation of gutta percha, it is of much consequence that a cable should repose in depths where the waters will be almost constantly at the minimum temperature of the deep, so to prevent the effects of annual changes on its insulating condition that would take place, and especially between 50 fathoms and the surface. For this change of condition by the alternate contraction and expansion of the insulator must evidently afford great facilities to the development of any latent defects or faults, by facilitating the absorption of water and the dispersion of of the tar and fluids which may have originally plugged them up.

In the Atlantic and other oceans the minimum temperature can only be reached at much greater depths than 200 or 300 fathoms.

There is a limit therefore to the minimum depth of a cable for obtaining this improvement of insulation resulting from decrease of temperature by the increasing risks resulting from an increase of the ocean pressure, under the increasing depths, upon masked faults or defects,—arguing, as I do, that as yet no cable of a great length can be insured as in a perfect state of freedom from the consequences of such pressure upon masked defects and faults (as that alone seems to me to be the sound and proper principle of arguing and acting in the interests of fair speculation in submarine cables), until the Gutta Percha Company—in whose hands, in my opinion, the question now fairly lies—can insure that it is so by a proper guarantee of durability, and for a time not limited to weeks but years. For it seems to me also that the enormous proportion in which a cable improves in insulation by its contraction under a diminution of temperature, and, as it would seem, the shutting up of its minute pores under the decreasing temperature of the upper waters, is an indication of what are the risks arising from the greatly increasing compressing power of the waters upon them after passing those upper portions,—especially of the great depths, where it amounts to thousands of pounds upon the square inch. For although pressure has been shown to improve small portions of specially prepared pieces of gutta percha, which are therefore sound, this sound condition has never yet been attainable in any cable of great length. All the cables have had defects or have failed that have been laid in the great depths, either immediately or subsequently. The risks are obvious, if not the exact cause. It is not, however, the effect of a crushing of the gutta percha, as some have imagined to be the result when reaching and reposing on hard ground in those deeps, but that of a pressure on all parts of the cable by the fluid surrounding it, according to the common law of fluids and like the result of the pressure of the atmosphere upon our bodies,—namely, the penetration into every pore where a denser substance or fluid is not met with to resist it. And thus, although the tar and fluids in the pores of gutta percha may be compressed at first by it, and are in their nature antagonistic elements, it would seem that they must become finally absorbed and dissipated by the highly pressed but yet highly fluid water that surrounds the cable, particularly as gutta percha is of a lighter specific gravity than such water.

Now, as the testing of a cable for the pressure of depths of 100 to 200 fathoms on shore before laying it is to about 200lbs. and 400lbs. to the square inch, about the limit of what is practicable in short lengths, these are naturally suggestive depths as the limit of pressure in which to risk a cable; such depths being also in most seas, as I have shown, those at which the greatest benefit from temperature will almost always be obtained. Indeed it will always be sufficient to effect a very great improvement in a newly laid cable, without increasing the counteracting risks from pressure upon small and imperceptible faults in it.

Then, in order to obtain the advantages of a permanent minimum

temperature and a uniformly soft bed for the better preservation of the external wires, as well as the easy recovering of it, the best depths for the cable, as a general principle, are, in my opinion, when the detour to obtain such conditions is not too great, between 100 and 300, instead of under 100 fathoms. For, in the latter, in many places it will be on hard ground and exposed to rapid waste of the wire by such exposure, as well as probable chafe when spanning a hollow between ridges or steep banks, or some natural rent in the bottom. All these evils are evidently more likely to occur in shallow water than in the deeper. Moreover, the preparatory examination of ground before laying a cable in such depths is not required to be so minute as when laid in the average depths of 40 and 50 fathoms.

Again, since animal organisation of all kinds will load the exposed parts of a cable lying on bare ground in shallow water as soon as the tar is soaked out of it, the recovery of it will be more difficult from the additional weight accumulated between the corroded and weak parts; and where, if it be not broken in dragging for it with the necessarily heavy grapnel that must be used in creeping for a cable on hard ground, it will assuredly be broken by the effort to lift the strained and now weakened part, and all that will be recovered will be simply a fragment of some few hundred yards or more in length on either side of the place where it was hooked.

This is what seems to me to be the true explanation of the occurrence of so many broken parts in the efforts to recover both the Atlantic and Red Sea cables after they had been some time in the bed of the sea. For although the former was easily hooked in depths over 100 fathoms, yet as it was a straight cable, the strain upon the part held by the grapnel in being drawn up to the surface even in that depth, caused the nearest weak and corroded part to break; and thus, as separation after separation followed, the futility of attempting its entire recovery became evident, and the cable was abandoned in consequence, to avoid further expense. Such will, I fear, be the result of many of the cables hitherto laid as soon as serious repairs are necessary, and as a consequence most of them will have to be renewed entirely.

The report of Mr. Varley on the Atlantic cable is thus very important, as also those of Messrs. Webb and Mayne on the Cagliari and Red Sea cables, as they show that the recovery of any great lengths of cable, after being long laid down, in the manner hitherto adopted is almost impracticable. They must be either totally abandoned or totally renewed, especially those which have been laid with so little slack as to necessitate the lifting of a tight portion whenever desirable for repair or examination, as is the case with nearly all cables hitherto laid.

The opinions stated by Mr. Webb in his examination are likewise so truly practical and generally confirmed by my experience, that I cannot help adding how apposite they are to the question of laying cables, and how worthy they are of attention from those interested in electric cable speculations.

Now it is obvious that the practicability of picking up a cable at all times in attainable depths for the purpose of repair is an important point to be considered in the question of its future maintenance. Even if a cable be laid with five or six per cent. of slack, I believe that this would not materially assist the lifting of it, except in very shallow water, so that to avoid over straining or breaking in such depths a light deep sea cable should never be laid.

From my own experience I do not believe that so much slack as that is often given out with any, especially a light one, when laid in moderate depths and run out at high speeds of six knots or more over the ground, since the tension of it with that speed will not allow it to follow all the irregularities of the bottom in very shallow water. Therefore it must then span many of its depressions and hollows. Besides, there can be no doubt that a ship passes over more ground by yawing off her course than is reckoned and given in the hourly courses and distances assigned by the log and even laid down upon a chart; her position obtained by this *reckoning* will be different from that obtained from bearings of land or observations: so that in truth, instead of a provision of slack, a slight tension of the cable is often the really correct result, and particularly so when the presumed or calculated slack amounts to one or two per cent. only, for this is indeed much too finely splitting the measurements and calculations to be depended on.

The bed of the sea in depths between 70 and 100 fathoms is often very coarse and hard. It is in such depths that the nodular and nullo-pore coral is most prolific. Here they become matted together into a hard superficial crust dangerous to the dredge when upon it, and of course not easy to grapple a cable on from the difficulty of knowing when it is caught.

The difficulty, and indeed impracticability, of effecting an equable distribution of slack of one to two or three per cent. over a long line of cable when laid at night as well as day is thus evident, for the exact position of the ship cannot even be determined by the best observers in day time from observations with the sea horizon within one or two and sometimes three miles. Thus the system of paying out a presumed slack, as hitherto adopted, with the object of facilitating its recovery in reachable depths, is, in my humble judgment, an error of principle, being generally quite inadequate to secure that object. The cable will still lie too straight and tight on the bottom to allow a portion to be lifted, except in very shallow water. This presumed slack I verily believe is exhausted often in the excess of actual length required by the inequality of ground or deviation of track from the general course not capable of being allowed for.

Lastly, as depths over 100 fathoms have almost always a soft bottom, it will not be very material whether the depths in which the cable lies vary from 100 to 300 and even 500 fathoms, provided it is all soft bottom and the position of zig-zag slack is made in the shallowest of those depths to facilitate its recovery by the grapnel. Hence a minute examination is not so much required before laying a

cable in those depths as it must be when limited to the often narrow sea margin of 100 fathoms and under, along irregular coasts and broken uneven bottom. Much expense and loss of time would consequently be saved. For it must be evident that the submarine plateaus between 100 and 300 fathoms are more easy to follow and more uniform than the littoral range at 100 fathoms depth, independent of the disadvantages it possesses of having more inequalities, being more generally a hard bottom, and also being prolific with organic life. All of this, experience has long shown to be disadvantageous, and that to avoid the 100 fathoms edge it will often occur that the cable must be laid in damaging shallows, not suited for deep sea cables. Again, in the depths between 100 and 300 fathoms a straighter course can be pursued than when following out the sinuosities of an irregular coast to maintain the equal depth of 100 fathoms. Thus even a considerable amount of cable, in a long section, might be saved, thereby affecting its first cost and future maintenance. Fifty miles, at least, might have been saved in the western half of the Malta and Alexandria cable had these reasons and opinions been adopted.

These remarks are, however, intended merely to point out mistaken views in laying submarine cables: they refer particularly to the mistake of high speed and shallow water, and where the supposed slack is hardly so appreciable as that of a presumed slack of one or two per cent. only. Therefore, as the maintenance of all cables in future should form an important part in the first considerations connected with the enterprise, the plan suggested, of laying a sufficient slack on zig-zag courses at certain intervals, is that which most materially affects it, by allowing the cable to be picked up at those intervals of twenty or twenty-five miles apart, when laid coast-wise for the preservation of moderate depths. Even less distances might sometimes be desirable, since this sacrifice of slack would only amount to four or five per cent. at most, and would be well expended thus to insure the recovery of the cable at those intervals; so that, in case of a serious fault, the short intermediate lengths only would require to be renewed, in the event of underrunning to the fault being found impracticable without seriously injuring the cable. Such will, I fear, be the case with all cables after having been some time laid and corrosion has here and there destroyed their outer covering, rendering it necessary, in all probability, to renew almost an entire section of them as defective, which have already proved to be so, and laid upon the plan of distributing a presumed slack of two and three per cent. only throughout the whole line. This, again, I believe in truth is often obtained by slight stretching instead.

However, these views, founded on some practical experience with submarine cables and the ground on which they are to be laid, had no consideration in laying a recent cable of great cost and importance, the zig-zag reserves of slack having been once only adopted, and thereby, as I believe, a jeopardising shallow water line obliged to be followed over considerable parts, instead of the beneficial depths of

100 fathoms and upwards I so strongly advocated, involving also thereby a greater expenditure of cable to follow such depths in all their detours. Most of the Archipelago cables with which I have assisted were laid in those depths now three years since, and as they are still in perfect working this may be received as a proof of the soundness of my argument. And again, as deep sea cables have been hitherto laid in 1,000 fathoms and upwards when ordered by Government Companies, why should the very opposite extreme of the question be now adopted? A limit to 100 fathoms is apparently an unintelligible reversal of the system,—splitting, in fact, the thin end of the straw; and, in my opinion, instead of an advantage, will be found a positive evil founded in error.

Therefore, as the successful laying of this submarine telegraph will be likely to give a new interest to such enterprises, and probably renew the confidence in their prospective success and remunerative powers, when laid in depths that are free from great pressure, private speculation may benefit by these opinions. At any rate they may be worthy of consideration to prevent cables from being jeopardised. And, finally, much as the commercial and political public desire deep sea cables of great length, although gutta percha may be shown to be almost impermeable to sea water under the pressure it will have to support, yet, as I fear it is almost impracticable to make 500 miles of cable without having so few as five small defects in it before laid—such as imperfect adhesion and minute perforations in some parts where air has been extracted under the exhaust tank;—and considering the number of splices, with their chances of accident before laying, and that even as one or two such would be sufficient in a short time seriously to injure the cable, independent of all chemical or electrical effects, and when so injured that it is not recoverable for repair, that the risks consequent on deep sea pressure on untested cables should not even now be too lightly treated,—I am induced to repeat what I have asserted for the last three years, that deep sea cables of great lengths are not yet safe speculations. Submarine telegraphy should still be confined to the moderate depths of 500 fathoms and under: to which I am sure none will more readily subscribe than the scientific electricians on whose mathematical skill, inductive reasoning, and ingenious and delicate instruments, we depend and are indebted to for the knowledge and control of their secret powers. And not only for these, but the varied influences and effects upon the subtle fluid which constitutes the spirit of a cable, and which, like the stethoscope in the hands of the skilful and professed physician, enables him to understand the diseased condition of the body, to point to its locality, and to prognosticate the probable amount of vitality still remaining in the body, and who therefore should occupy no secondary position in connection with the responsibilities of laying submarine cables.

Overcharged currents of electricity may no doubt have hastened the destruction of some of the cables that have failed, in trying to get sufficient results out of them *when faulty* and failing in insula-

tion, just as a cracked globe or bottle will be broken when water made too hot, or in too large a quantity is poured into it; but which, had there been no crack, would have borne both without injury and retained the fluid. So with electric cables. Had there been no defects, no minute pores for the escape of the electric currents applied—so to require greater force or tension, and thus giving a locus for the production of the mechanical or chemical effects that further developed the evil, there is no doubt that in most, if not in nearly all the cables of final failure from electrical burnings, the cables would have done their work with perfect success, and most of these cables might have been still working. Original defect, then, from the great difficulty of ensuring perfection in the manufacture of so delicate a thread, has, in my humble opinion, been, and still is, the great source of evil in all submarine cables.

It is no longer right to deny it, and to attribute failures to the many other sources which have been referred to in succession as each cable has failed; all of which are of secondary effect, if any: many only affecting the mere wire covering, and not the core. Make the insulation perfect, if it be practicable, and cables will live their day, since with due care they can be laid perfect. But how long that day will be for those laid in the great deeps and spanning ocean breadths is still a question of doubt and uncertainty; whilst the corresponding tests to which they will be subject when there cannot be properly and fully applied.

I believe, therefore, that if submarine cables are confined to depths under 500 fathoms they will be durable; but that a depth under 300 fathoms would be best, because the cable would be more easily recoverable for repair under the plan I have suggested, and be in general upon soft bottom, and because both the minimum and permanent temperatures are obtainable throughout all seasons:—also because the amount of pressure of the water in those depths is as much as it is reasonable to hope from which any permanent improvement will result to the gutta percha, and that beyond them we enter into the region of risks from searching effect on any minute pores or defects that might exist and otherwise remain undetected.

The proofs of my argument lie in the time that the following lines have lasted, namely—the Varna and Constantinople; Spezzia and Sardinia; Crete and Scio; Scio and Syra; Syra and Athens; as well as the Scio and Dardanelles: all of which are working still,—the latter having been down three years and the former seven years, and all in depths between 100 and 400 fathoms; whilst all laid in deeper water have failed in the course of time.

Therefore, as sufficient experience has been gained to show that the Gutta Percha Company can make cables that will stand the conditions of those depths, in future, submarine telegraphy should be confined to these until the Gutta Percha Company, or the contractor, guarantee the durability of the cable made for any greater depth for at least the shortest period of this experience, namely three years.

For the question of failure evidently rests with them, either from faulty manufacture or from subsequent injury during covering or laying, and not with the electricians, unless such injuries or defects previously existed.

I believe also that cables should still have a covering of wire when laid in those depths, so to preserve the saturation of tar and wax the longer within the lump covering and to protect the gutta percha from submarine rangers, such as large dog-fish or shark, which I believe do range in some localities in those depths for their food; and where, if simply an uncovered gutta percha cable was laid, and especially after it had been sufficiently long at the bottom to become softened externally by the water—and being then also freed of its repugnant fluids and flavour,—would, I believe, be liable to tempt one of these voracious creatures to give it a bite or temporary mumbing between its rows of lancet teeth. Thus the insulation would be destroyed in an instant, or so injured as to become so at no very distant period. And my reasons are founded on the fact that large spotted dog-fish and small sharks are caught by trots laid in between 200. and 300 fathoms, off the islands of Gozo and Malta, for the supply of the market, these fish being used as food by the poor.

And as cables laid in depths under 100 fathoms will in general only partially repose on soft ground, but for the most part on hard, and when tightly laid, as is the usual practice, will be liable to span hollows and rents more than in the deeps,—that the risks, the jeopardising wear and tear upon these shallows are almost as much to be avoided as the evils of the deeps above 1,000 fathoms, unless very heavy and costly cables are laid in them.

I am induced to add that, in my opinion, the best cables for the great depths, when gutta percha or any other insulator can be insured to stand, so as to combine sufficient strength and be sufficiently heavy to insure sinking into the soft mud at the bottom, would be those made on the "Allen" plan, namely, a strand of copper covered with a single coat of gutta percha over Chatterton's or May's mixture, and then a covering of thin steel wire, and finally inclosing the whole in at least four coverings of gutta percha: and thus laid without any external coating of hemp or wire, or at most merely a common serving of hemp yarn. For the rapid oxidation of iron in the great depths was indicated by an experiment which I made in 2,200 fathoms in 1856. An iron rod nearly two feet long was let down to that depth, and with its lower half previously covered with tallow, but the upper portion left bright and clean. When it was hauled back to the surface, after 2½ hours' labour, its tube was filled for two inches with the soft bright yellow clay usual in those depths. But the whole of the greased part was tinged of a deep rusty red, from the stream of oxidised water passing over it from off the upper portion of the rod during the time it was on the bottom or being hauled back to the surface. It is clear that such result could not occur during the descent. Thus it may be inferred that the fine iron wires, which alone

could be used as an outer covering to a cable, would not be very durable in the deep sea, and therefore useless. But it is nevertheless desirable to have the cable sufficiently heavy to insure its submersion in the soft mud or ooze at the bottom of the sea in those depths.

In respect to the question of the practicability of stretching a cable, a great many experiments have been made by Messrs. Gisborne and Forde, which seem to prove that the effect is inappreciable. But as the movements of the scale showing the amount stretched under the experiment were apparently only registered when half a ton strain was applied, it does not appear to me to fully exemplify the conditions and results of paying out a cable from a ship into the sea, with the facts that a shrinking of the gutta percha takes place immediately it has dropped a few fathoms into the water, and that its tension when being dragged out at five and six knots speed is such as to force a large part of the tar out of its hempen cover also before leaving the ship, so that its internal bulk—its heart, in fact—is undoubtedly diminished under the operation. Again, since when lying in coils in the hold of the ship the wires are sufficiently open to admit of a knife or nail being introduced anywhere, it seem to me—under all deference, however, to other opinions—that some stretching of the cable must follow, and which cannot be shown by any dry *experiments* ashore, such as those referred to and occupying so large a place in the blue book, as it *seems they only indicate the results after half a ton of strain had been applied*. Thus, if so, it is only the strength of the spiral wire itself that was being chiefly tested, not the result previous to these wires being brought into close contact.

As every mite of experience on these important questions in aid of submarine telegraphy is, I believe, at this moment of some value, I am induced to give mine, and thus to add the opinions I have derived from it;—but with all deference, and with the pure desire of having them either confirmed or confuted. For it is by the promulgation of opinions founded on experience that such great and important questions are best advanced for the ends desired—namely, ultimate success; and as this is my hope, it is also my apology for venturing them.

[It is just reported, in remarkable confirmation of the argument maintained in this paper, that the Candia and Scio cable, which dips into 400 and 700 fathoms in two places (instead of lying uniformly in depths under 300 fathoms), has just failed, after being down about two years and a half.—ED.]

VOYAGE OF H.M.S. "CYCLOPS" FROM ENGLAND TO THE CAPE.—
Captain W. J. S. Pullen.

On the morning of the 25th of October, 1857, we left Spithead with a mail for the Cape of Good Hope, passing to the westward through the Solent passage with a fresh S.E. breeze and heavy showers of rain. On nearing the Needles the weather improved; passed over the Bridge, and as we drew off the land the wind became moderate from S.W., veering occasionally to West, when it freshened, continuing so until noon of the 28th, when it came from W.N.W.

Shortly before noon of the 29th, with a moderate breeze from W.b.N., and steering W.½ N. by compass, we passed to the southward, about half a mile of the northernmost position assigned to the Devil Rock, in lat. 46° 40' N. and long. 12° 50' W., reported in 1766, without detecting any sign of break or ripple to indicate the presence of any danger in our vicinity, notwithstanding there was sufficient sea on to show over any such at two or three fathoms below the surface.

As from our noon observations, lat. 46° 38' N., long. 12° 53' W., the course before steering would take us to the southward of these positions between lat. 46° 36' N. and 46° 35' N., long. 13° 18' W. and 13° 1' W., we hauled more to the northward, and at 1h. 45m. p.m., rounded to a little North of those in lat. 46° 35' 30", and 46° 35' N., long. 13° 7' and 13° 10' W., and tried for bottom.

The first attempt was with the smallest sounding twine, and with a weight of 38lbs. as a sinker; it was dropped over the quarter, and eight hundred fathoms were reeled off. At four hundred fathoms, the intervals first appeared irregular, and continuing so, it was difficult to decide whether the line was carried away or the sinker on the bottom. Moreover, there was too much sea on for so small a line, and it was evident that over the quarter was not the place to sound from, for it was impossible to keep the ship up to the position where the sinker was let go, so that it might take the line down in a vertical direction from her. But this was our first attempt at deep sea sounding. As much of the line was therefore hauled in as possible, and prepared for a cast with one of the larger lines.

Fathoms.	Times.	Intervals.	Remarks.
0	h. m. s.	Let go.	Twine. Weight 38lbs.
100	2 45 0	m. s.	
200	2 45 50	0 50	
300	2 47 1	1 11	
400	2 48 19	1 18	
500	2 49 44	1 25	
600	2 51 9	1 25	
700	2 52 48	1 39	
800	2 54 25	1 37	
	2 57 5	2 40		[ fathoms. Line carried away after recovering 50

Taking the line from the port reel, one of the 80lbs. detaching weights (Brookes' plan) was bent on, and one of Massey's sounding machines, No. 1290, with Mr. Mayes the master's improvements, attached to the rod, making altogether a weight of 96lbs. as sinker, when at 2h. p.m., in lat. $46^{\circ} 36' N.$, long. $13^{\circ} 8' W.$, it was dropped over the bows, and intervals were noted as shown in the following table.

Fathoms.	Times.	Intervals.	Remarks.
0	h. m. s.	Let go.	Common deep sea line, marked every 100 fathoms. Eighty pounds detaching weight used. One of Massey's sounding machines, No. 1,290.
100	3 21 55	m. s.	
200	Missed.		
300	3 25 22		
400	3 27 41	2 19	
500	3 29 50	2 9	
600	3 32 0	2 10	
700	3 34 16	2 16	
800	3 36 29	2 13	
900	3 38 41	2 12	
1000	3 41 22	2 41	
1100	3 43 53	2 31	
1200	3 46 25	2 32	
1300	3 49 8	2 43	
1400	3 51 49	2 41	
1500	3 54 20	2 31	
1600	3 57 2	2 42	
	3 59 30	2 28	Massey registered 1,820 fathoms.

Sixteen hundred fathoms were reeled off with nothing in the intervals to denote that the weight had reached the bottom. The irregularity in them was caused by the difficulty of keeping the ship well in position with so much sea on as we had. However, it may be called a fair cast, for the vessel was never any very great distance from where the sinker was let go; and allowing one hundred fathoms, I consider that we shall not be far from the perpendicular depth in calling it 1,500 fathoms; and also getting no bottom with such a length of line out, that no Devil Rock could be in the vicinity of this position. There was much risk too attending the line, for both wind and sea were getting up. It was therefore reeled in, finally bringing the weight to the surface all safe, no bottom having been reached, but we lost the weight and only recovered Massey's sounding machine, which registered eighteen hundred fathoms, thus showing a difference of three hundred in excess of what I have called the perpendicular depth by line. We hope to get index error when calm still water admits the experiments to be made.

These operations occupied us nearly three hours, even with the advantage of steam not only to keep the ship in position but to run the

line in. The main topsail and boom mainsail were also necessary, without which we certainly should have lost the line in the state of wind and sea: for the after sail is necessary to get and keep the ship up to the point where the weight is let go. The helm alone is not sufficient, for the ship does not answer it until she has good way on. In fact, like all paddle steamers, and even with this after sail the ship is ahead of the spot we wish to bring her to before she begins to turn up. Hence the advantage of a screw vessel, for the quickness with which they answer the helms, before even getting headway is notorious.

Considering that while we were on the ground, and fitted for deep sea sounding, there could be no better opportunity for determining the existence of such a rock, for by the sounding already got we have only shown that it is not there, we kept under easy sail for the night, if possible to get two more deep casts in other positions assigned to it, viz., those of lat. $42^{\circ} 22'$ and $42^{\circ} 24' N.$, long. $13^{\circ} 10'$ and $13^{\circ} 13' W.$, and where H.M.S. *Brisk* placed it in August, 1842, in lat. $46^{\circ} 11' 45'' N.$, and long. $13^{\circ} 3' 35'' W.$

About an hour and a half after making sail from where we sounded with 1,500 fathoms, we passed a little to the westward of another position given the rock in lat $46^{\circ} 35' N.$, long. $13^{\circ} 7' W.$, without detecting any indication of it.

On the morning of the 30th, the wind was fresh from westward, 5 to 6 in strength, with a dark and gloomy appearance, and a heavy sea on, not at all favourable for deep sea sounding. By the dead reckoning at eight o'clock we were to the eastward of the middle position, viz., those between lat. $46^{\circ} 22'$ and $46^{\circ} 24' N.$, long. $13^{\circ} 10'$ and $13^{\circ} 13' W.$; but I hoped by noon to get near enough to sound, and the sea might possibly go down. In that, however, we were disappointed, for it had rather increased; and our observations placing us at noon to the southward and westward of those positions, besides the probability of losing the line, the intention of getting a cast there was abandoned, and we bore away for the position given by the *Brisk* in 1842.

At 1h. 55m. p.m., having run the distance, the ship was rounded to on the exact spot, and the lead dropped over, taking off the reel 2,200 fathoms without any satisfactory proof from the intervals of time that it had reached the bottom.

The irregularity in the intervals may be attributed to the difficulty in keeping the ship directly over the position where the weight was let go, from the heavy sea. And making every allowance, the vertical depth is considered as 1,800 fathoms, but whether the sinker had reached the bottom it was impossible to say; the strain was heavy on coming in, and finally the line carried away, thereby losing 2,000 fathoms of it, and all the apparatus.

[It was on this authority that the Devil Rock, an old *vigia*, was removed from the chart. The reasoning is properly stated by Captain Pullen.—Ed.]

Fathoms.	Times.	Intervals.	Remarks.
0	h. m. s.	Let go.	Deep sea line with detaching weight of 80lbs.
100	2 20 42	m. s.	
200	2 21 44	1 2	
300	2 23 5	1 21	
400	2 25 7	2 2	
500	2 27 18	2 6	
600	2 29 26	2 18	
700	2 31 55	2 29	
800	2 34 32	2 37	
900	2 37 27	2 55	
1000	2 40 23	2 56	
1100	2 43 30	3 7	
1200	2 46 30	3 0	
1300	2 49 45	3 15	
1400	2 53 0	3 15	
1500	2 55 50	2 50	
1600	2 58 51	3 1	
1700	3 2 11	3 20	
1800	3 5 5	2 54	
1900	3 7 51	2 46	
2000	3 10 54	3 3	
2100	3 13 45	2 51	
2200	3 16 34	2 49	
	3 19 26	2 52	No bottom.

The distance of these two casts apart is not more than twenty-four miles, and either of them is not more than thirteen miles from any other of the positions given for the Devil Rock,—that a thirteen miles' radius from it will sweep round the positions East and West and North of it. And the same radius, with the *Brisk's* position as a centre, where the second cast was got, sweeps round all the others. And as it is fair to suppose that a rock rising from such a depth would have a proportional base, and be detected by a less quantity of line than payed out by us, and such a sea as we had the second day, anything like rock or shoal, with a depth less than five fathoms on it, would have shown some indications of its whereabouts from the mast-head, where I had occasionally good and reliable officers. It is therefore concluded that this rock does not exist.

Towards evening the wind became light from the westward, and weather fine; but as the wind was veering gradually to S.W., and the ship making but little progress under sail alone, recourse was had to our steam power again.

On Sunday morning it was almost calm; rain came on at midnight, and did not cease until the morning of the 2nd, with a westerly wind, which veering gradually to N.W., blew a fresh breeze; steam therefore was dispensed with, and all plain sail made. Towards noon the wind drew more to the northward, and increased gradually to a stiff gale, with a heavy following sea.

With the hope that this wind would run us past Madeira and into the N.E. Trade, all idea of going there was given up, the quantity of coal remaining on board being deemed sufficient to carry us through the calms. Moreover the smallpox had broken out amongst the crew, and although in a very mild form, it would most probably put us in quarantine at Funchal, and we should not be allowed to land for observations for the chronometers.

From between N.b.W. and N.b.E. the breeze was the strongest, 9 being the maximum power, when on the morning of the 4th it began gradually to fall, finally at noon settling at W.N.W., squally occasionally, and light rain, the sea very much gone down.

For the next two days the wind was light and variable from between N.W. and E.N.E.

Temperature, lat. 32° 13' N., long. 19° 5' W.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 363	Surface.	70		1026 at 70	A 363, the therm. in use for trying surface temp. A 16 was sent down in water bottle; and A 764 the hydrometer with which density was tried.
A 16	400 fms.	68	51·5	1031 at 70	

This is the first sounding we have yet taken for temperature, and making it under sail we did not go very deep. The thermomer A 16 in the water bottle was placed in the surface water before going down, to start with that temperature, compared also with A 363, the thermometer on deck for general use for surface temperature, and found them to agree; A 16 ought therefore to have shown the same on the maximum tube on its return, at least the telltale; but as it did not, I conclude that the instrument is defective. How far the telltale of the minimum temperature has altered, it is impossible to say, perhaps as much as the other. A 764 is the hydrometer in general use for trying the density.

On the morning of the 7th it was perfectly calm, when the fires were lit and all sail furled. Shortly after getting steam, a bottle was passed, and as it might contain a notice thrown overboard from some ship, a boat was lowered to pick it up. It proved, however, to be empty, although corked, and from the thick coating of barnacles covering it, had been overboard some time. A small hawk-billed turtle was picked up at the same time. In the evening a light air sprung up from the S.W., veered gradually to West, and on the morning of the 8th was at N.W., bringing with it light showers of rain. By noon the wind had got to N.E., blowing a steady breeze, which I concluded to be the N.E. Trade. The fires were therefore drawn, and all sail made on the ship.

In this conjecture I was mistaken, for at noon this day the ship had

barely steerage way, Steam was again got up, in two boilers only, and taking advantage of the fine weather, I got soundings for temperature.

Fathoms	Times.	Intervals.	Remarks.
0	h. m. s.	Let go.	Therm. A16 attached with No. 2,289 Massey's sounding machine of 3000 fathoms. A 15 attached. Weight used 38lbs. and deep sea line.
60	2 55 35	m. s. 2 50	
160	3 2 14	3 49	
260	3 6 50	4 36	
360		Let go.	Heavy head swell.
460	3 20 25		
560	3 25 20	4 55	
660	3 29 30	4 10	
760	3 33 25	3 55	
800	3 34 0	3 35	
			No. 2,289 came in registering 642 fa.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 363	Surface.	72		1026at 72	This therm. in the max. has evidently altered from what it was at starting.
A 15	500 fms.	69	50	1027,, 72·5	
A 16	800 fms.	72·2	44·5	1026,, 71	

Massey's sounding machine, and one altered by Mr. Mayes, sent down only registered 642 fathoms, 158 fathoms in error, or less than the line: whereas, in the trial of the 30th, the one sent down returned registered greater than the line showed. However, they were not the same, and this latter one had been altered.

The current was also tried but none detected, agreeing therefore with the reckoning. This operation was performed by Mr. Mayes in a boat far away from the ship, the boat riding by a deep sea lead of 38 lbs., let down to a depth of 100 fathoms, and a large log ship with very light line made use of.

Finding our progress so slow with only the two boilers, and no saving of fuel, another was brought into requisition, the fourth being at present out of order, its feed pipe choked so that the water would not run in.

At 5h. 35m. a light air came up from S.W., and at midnight a light southerly swell. From this quarter the wind gradually increased to 5 and 6, and continued steady all the 10th until the evening, when the wind came light from North and N.E.

On the 10th the ship was steered round and observations taken on the principal points for deviation. The variation was taken from the observation on the S.S.W. point, which is assumed to be the no deviation point, as it was when last swung in Portsmouth Harbour, also

on other occasions. viz., three times in England. and once in Newfoundland.

Ship's Head by Standard.	Deviation of Standard.
	0 0'
North	4 25W.
N.E.	0 14 "
East	1 6 "
S.E.	3 45 "
South.	0 20 "
S.W.	0 10E.
West.	5 0W.
N.W.	8 24 "

This table was computed from the observations for sun's bearing on each fourth point of the compass, and correcting each bearing for sun's change of azimuth in the interval of time. The variation determined on the S.S.W. point assumed as having no deviation was $19^{\circ} 16' W.$

On the morning of the 11th, the wind was more southerly, with a long northerly swell, and a short sea as well from southward, and with no prospect of change of wind the fires were banked, paddles disconnected, and all sail made on the ship. Towards the afternoon the long northerly swell had apparently overcome the short sea from South, and towards evening the wind got more to S.W., very light, and a heavy bank of clouds rising to the North, with lightning.

On the 12th and great part of the 13th the wind still was light from South, and S.S.W., with the long northerly swell, when it began to veer to S.W. and W.S.W., and on the morning of the 14th it was light from N.N.E. At the latter point the wind kept steady, and I concluded we had now really got the N.E. Trade. Of course all sail was made on the ship, but in such light weather it has but little effect, and were our passage to the Red Sea dependent on canvas, it would indeed be a long one.

On the morning of the 16th we made the island of St. Antonio, one of the Cape de Verds, with a moderate breeze from E.N.E. and N.E.. Steam was got up, and at 10h. 40m. we steamed into the harbour of Porto Grande, securing to one of the mail steamers' buoys, for the greater convenience of coaling.

In this snug harbour there were many large vessels waiting to and discharging their cargoes of coal for the West India steamers, it being their port for replenishing to and from Rio, &c. Amongst these vessels were two chartered by Government, therefore we filled up from one, the *Alexander*. And from the circumstance of having to haul alongside the ship every morning, and off again every evening, by reason of the constant swell in the bay, it was not until the evening of the 20th that we completed, and waiting to get the second series of observations for time, in which unfortunately we were not successful, we did not leave until the morning of the 22nd.

Porto Grande is situated on the N.W. side of the island of St. Vincent, one of the group of the Cape de Verd, and under Portuguese

rule. This bay affords very snug anchorage, but although so well sheltered, there is generally a swell in it, and a great deal of surf around its shores. The landing, however, is good at the wharves run out from the town in the East part of the bay by Mr. Miller, the present consul, who is the chief proprietor of all the coals and stores, &c., built for the use of the mail steamers. The inhabitants are chiefly of the negro race, and are constantly employed, women as well as men, in keeping the supply ready for the ships as they arrive.

Not a particle of stock or fruit could be had, as most of the cattle, &c., had been swept off some short time ago by disease, and the few now remaining were kept to replenish, therefore none could be spared.

The wind is generally from N.E., except in the rainy season, when the South-easters prevail. It commences in July and ends in October. The anchorage in the bay is good towards the N.E., and water so clear that a clear spot might almost be picked out for the anchor. A vessel should moor by the stern, as from a strong set to N.E. and wind at night not steady, she may foul her anchor, and it comes down in strong gusts off the land.

Captain George Richards had been here in the *Plumper*, and finding that he had been observing, I got his results from Mr. Miller. We differ in the longitude a little more than half a mile. I made the longitude of the consul's office 1h. 40m. 4.44s. West of Greenwich, taking the mean of five chronometers. Captain Richards, 1h. 40m. 8s. W. My second series of sights were not very good, I therefore worked up the rates got from Portsmouth to my first set of equal altitudes here. I would therefore give the preference to Capt. Richards' results, presuming that he did not leave until he had got a sufficient number of good and reliable observations.

We steamed out of Porto Grande with a light S.S.E. wind, and it being so dead against us, although but light, no sail could be made to help us on our way. But towards the afternoon it backed to the South, then S.E., when fires were drawn and all sail made.

The next morning was dark and cloudy, and all round the horizon squalls getting up, and paying us frequent visits, keeping the watches throughout the day constantly on the alert, shortening and making sail, accompanied with a heavy downpour of rain. Once in the afternoon the wind came out from N.N.E., and I hoped it was the fore-runner of the N.E. Trade, but it did not continue, for we had hardly trimmed when the ship was taken aback with a squall from S.b.W., then again from N.W., sometimes blowing in these squalls a perfect gale. This last one I again thought might be the beginning of the Trade, but it gradually fell light, and at four the next morning chopped to the S.E., continuing a short time, then veered to West, light and steady, so until eight in the evening, when it fell calm.

On the morning of the 25th, still continuing calm, steam was got up, and shortly after a light air sprung up from S.S.E. Throughout the squally weather during the last two days, 23rd and 24th, there was a short confused sea, in fact every appearance of current, and our reck-

oning showed it too, giving twenty-six miles in the two days on a S. 55° W. course (true). But up to noon of the 25th, for the preceding twenty-four hours, there was a light drain of three miles to the N.E.

In 13½° N. and 26° 25' W., the ship was steered round to ascertain the deviation. Proceeding as before on the 10th, getting the variation on S.S.W. as the no deviation point. The variation was 15° 43' W., and the observation confirming those before taken, making the deviation all westerly.

Throughout the day the wind continued pretty steady from S.S.E., except for a short time between six and eight in the evening, when it was S.E., and partly calm; when towards midnight it drew to E.S.E., and early in the morning of the 26th, N.E., where it held steady although light, and I concluded it to be the N.E. Trade. It gradually increased, but all the sail we could pack on the ship could not move her more than five knots. Her average speed being about three without steam! If differently masted she might do better for at present she has not sail sufficient, and the spars are so light that we cannot press them much. There cannot be any doubt about our passage to Aden being other than a long one.

(To be continued.)

ROLLER SKIDS.

There are doubtless few persons that reside on or have visited our coasts who have not frequently watched with interest the picturesque groups of fishermen and other boatmen hauling up their boats, and observed the contrivances by which that often laborious operation is made more easy of accomplishment,—varying according to the size of the boat, the character of the beach, or mere local custom.

At one place, as at Deal or Hastings, with their steep shingle beaches, large boats, and numerous bodies of boatmen, will be seen the long row of powerful capstans, by the aid of which the large decked or half-decked smack, or hovelling boat, or trawler, is hauled up with comparative ease, yet seemingly reluctant to leave her native element, in which her weight is nothing, and in which she lives and moves; to hibernate, as it were for a time with suspended life and animation, motionless on the land. There, also, it will have been observed that long flat boards of hard wood, with their upper surface greased, are placed under the boats when hauled up or launching, so as to reduce as much as possible the friction as they are dragged along.

At another place, as at Great Yarmouth or Lowestoft, with a flatter and sandy shore, their long and graceful yawls and smaller craft are,

for the most part, hauled up by hand alone, the numerous boatmen being banded together in companies, and mutually assisting each other in the operation. Here the friction of hauling up is lessened by employing small portable machines consisting of a strong wooden frame with two or three iron rollers fixed in it, which is traversed by the boat's keel, she being held in an upright position by men at her sides.

Again, further north, on the still flatter sands of Northumberland, Durham, and Yorkshire, where the three-keeled and graceful coble abounds, the fishermen, often aided by their wives and daughters, will be seen lifting them on the little wooden trucks, on which they are wheeled along on the hard and level strand.

As the hauling up of a heavy boat is a laborious work, which men who have been many hours, perhaps all night, in their boats would be very glad to dispense with; and since, as implied above, their mode of performing it is sometimes rather the result of custom than of scientific appliance, we think that we may usefully circulate, for the information of boatmen to whom they are at present unknown, drawings of the "roller skids" used by the Norfolk and Suffolk boatmen in hauling up their larger boats, and which have been adopted by the Royal National Life-boat Institution, and found valuable auxiliaries in hauling up its lifeboats, saving much labour, trouble and expense.

There are three varieties of these skids used by the lifeboats of the Institution,—one is the simple wooden frame with either two or three rollers in it (Fig. 1), which is sufficient on hard ground, moveable short boards being placed under it transversely where the beach is soft. A second (Fig. 2) is similar, but having its sleepers attached to it beneath the rollers, which form is more convenient for placing under a boat whilst she is still in the water. Much labour is saved by hauling a heavy boat on the rollers whilst she is partly water-borne, and it is awkward to place a detached board under a skid under water, especially when the boat has much motion from the surf. A skid of this description can, by means of two short lines attached to it, as shown in the figure, be readily hauled under the stem, or sternpost of a boat by two men or lads, one dragging by each line. These lines should be of Manila rope, which will float and thus indicate the position of the skid when under water;—two-inch rope will be found a convenient size.

A third variety (Fig. 3) is a shorter skid, similar to the above, fitted to turn on a pivot-bolt fixed in a flat piece of wood, thus forming a portable turn-table, on which a boat, when hauled over it, can be turned round with very small power in any direction. The lifeboats of the Institution are supplied with one of these turn-tables, with two of the second variety, or water-skids, for use in the water, and with two of the plain skids with detached sleepers. A less number would, however, be sufficient for ordinary use, unless for very large and heavy boats; and we strongly recommend them to the attention of the boatmen on those parts of the coast where they are not already employed.—*The Life-boat.*

Fig. 1.

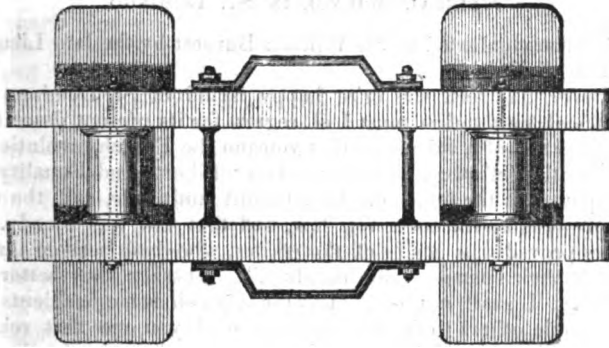


Fig. 2.

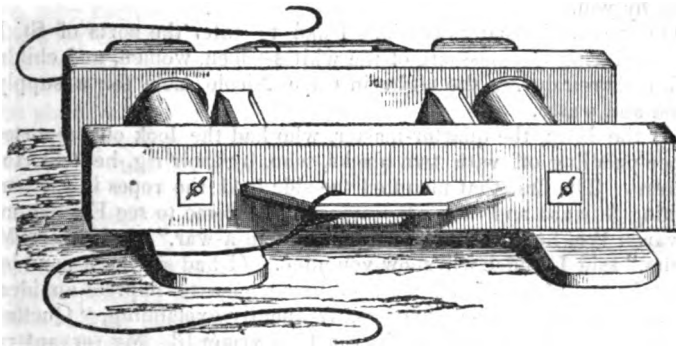
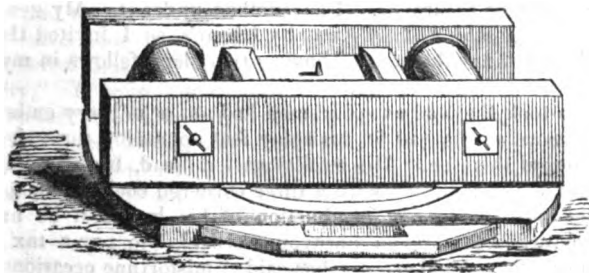


Fig. 3.



MEDICAL SCIENCE IN ST. DOMINGO.

A fact communicated to Sir William Burnett by the late Lieutenant M. Fitton, R.N.

Whoever has seen the once happy island of St. Domingo in its state of high cultivation, must feel regret for its present desolation,—the mere scoria of a volcano,—that volcano the French revolution, that prolific mother of mischief, which, when “Liberty and Equality” had placed power in the hands of the ignorant multitude, and the will of the many became the sovereign law, and that law was bloody. The Negroes proved true copies of the whites, who had boasted that they had made their enemies “bite the dust.” Whether they bettered the instruction, I shall not say. I could furnish some incidents which would enable others to decide, and now send you one that relates to your profession, in which your eminent abilities have justly placed you at its head. It will show a nearer way, a *shorter cut*, to professional eminence than what is known even to yourself, certainly never practised by you.

On one of the many occasions I had to enter the ports of St. Domingo, during the massacre of the whites—men, women, and children,—I anchored during the night in Cape Nicolo mole for a supply of wood and water.

At the dawn, the quarter-master, who had the look out, reported a canoe paddling off with two blacks, who, by their rig, he took to be officers. The first that mounted the side held the ropes in his hands, looking forward and then aft, saying, “We come to see English man-a-war. We hear much of English man-a-war.” “Entrez, Messieurs,” said I, and I will show you mine. (I had six three-pounders.) They looked about with an air of importance to impress an idea of their knowledge in such matters, frequently exclaiming, “Quelle superbe batiment. Comme qu’il eet bien armée!” My servant came and very foolishly said, “Your breakfast is ready, sir.” On hearing this they turned quickly round, and said, “We have not breakfasted; we’ll take breakfast with you, captain.” I was fairly taken aback with their indomitable assurance. I succumbed under it. My genius was rebuked as it is said Antony’s was by Cæsar’s, so I invited them, although by no means desirous of having two black fellows in my cabin, and the weather steaming hot.

He who took the lead as spokesman had on a military embroidered coat, his boots were a bad fit, his splay feet appearing through slits he had cut to get them on. His woolly matted head, bound with a bandana kerchief, surmounted with a three cornered cocked hat, *à la Napoleon*, enough to occasion combustion of his brains if he had any. I was compelled to pass an unsavoury ordeal,—to pay a tax for my wood and water. Shakespeare has said, “misfortune occasions a man strange bedfellows.” I say, war seats a man in a queer breakfast party.

My servant, Tom, seeing how matters were arranged, and having a critical eye on the dimensions of my guests, quickly cut some junks from a shark that was hanging over the stern to drain, and frying them with fat salt pork, he made a heavy addition to my spare diet of coffee and turtle eggs. My guests fed like *boa constrictas*, giving employment to their chemical laboratories for a week to come. Permit me, messieurs, said I, to ask who I have the honour to entertain?—what rank, what grade you hold in the service?—“*Moi, monsieur le capitaine! je suis Chirurgon Major,*” and he bridled up. I expressed my surprise, saying, “I was not aware they had any college or any institution for the due instruction of the medical profession.” To which he replied, “*Bah, we do not regard those sort of things, cette chose n'est pas nécessaire avec nous.*” Then permit me to ask by what other way you attained the high rank of *Chirurgon Major*? “*Par mon mérite,*” he replied, and again bridled up. I placed my hand on my breast and bowing low said, “I hoped to rise in my profession by the same honourable means.” “*Attendez, Capitaine, and I will tell you how it happened. You know General Le Clerc, who commanded au Cap Francois, he that was beau frère to Bonaparte; ce blanc coquin had great occasion for a place of security for his sick and wounded. He chose the little island of Tortue, that is opposite Port au Paix; he built his hospital and thought all secure,—but mark!—me and my compatriots paddled over in the night, surprised the guard, and killed them.*” I nodded my head and said, “*Good!*” “*And me, monsieur le Capitaine, it was me that had the good fortune to rencontre with the Chirurgon Major, and I killed him.*” “*Good,*” said I (something I must say). He rose up and said, “*Voilà son habit, n'est pas bien brodée, mon Capitaine?*”—and he looked on his finery with gloating exultation. I then said, “I think I begin to perceive the nature of your medical merit; you killed the doctor and wear his coat.” “*Oui, oui, c'est moi qui l'a tué.*”

I then inquired what became of the sick and wounded, how they were provided for after killing the doctor? “*Oh, why we killed them also.*” “*What, the devil!*” I exclaimed; “*Did you kill the sick and wounded?*” “*Oui, oui, tous, pas un n'est sauvé, pas un.*”

I rose and went on deck. I could sit there no longer. I thought I could have stood anything, but they had me at the top of my bent. Now I confess that if I had not been restrained by orders of “*strict neutrality,*” of “*non intervention,*” no tender considerate feeling, no sympathy for “*our sable brethren on the other side of the Atlantic,*” “*our fellow men,*” would have prevented me from seizing “*the doctor*” and his “*mate*” and giving them both a d——d good flogging. No disparagement to the medical profession.

CYCLONES AND SAXBY'S WEATHER SYSTEM.

Sir,—The chairman of the "Nautical Club," the proceedings of which are so usefully and amusingly recorded in the *Nautical Magazine*, has raised the question "whether there was really any faith to be placed in weather prophecy?"

Very many are anxiously asking the same question, and although a member of the club did me the honour of saying, in your December number, that he had found reason to be satisfied with my "prophecies," some of your readers may not be aware that I have during the last two years issued nearly a hundred such predictions in the *Nautical*, months beforehand, and that in *no one case* have they failed. Now, I will challenge any man living to predict weather from any other means twelve times in succession for three days in advance of the periods, and arrive at so satisfactory a result I have never boasted, nor am I guilty of any selfish motive in the course I pursued. So far as I have felt justified, I have placed all my views at the service of the public and the nautical profession, and have specially endeavoured to avoid all mystery for their sakes. The only use I have made of anonymous abuse has been the strengthening of my position in case of open attack, for which I was, and am now, certainly well prepared.

In the *Nautical* for November last you kindly published my letter (*written in October*), wherein, at page 624, I particularly cautioned your readers against "the cyclonic periods of November 14th and 15th and December 11th," while I also warned against the periods of 2nd to 6th November and 1st to 3rd December. That I was strictly right in doing so the following will prove:—

We had a furious gale on the 2nd November; a terrible cyclone on the 14th and 15th November; a very heavy gale on the 1st December; and a terrible cyclone reached the western coast of England on the 11th of December, and was two days travelling across our island. Other points in my theory were also verified by these occurrences, such as the one mentioned in the *Nautical* at page 623, line 12, (November).

But it would not be just to leave the opinion so generously expressed by my (stranger) friend of the Nautical Club unsupported by the best means in my power. Allow me then to state that being in London on the 13th November (the day before my predicted cyclone was "due" at the British Isles), on referring to my aneroid at daybreak of 13th, I saw enough in the "premonitory wave" to satisfy me. Accordingly, at 10h. 30m., I proceeded to the Underwriters' Room at Lloyd's, both to convince them of the sincerity of my convictions and in person to prepare them for the coming hurricane of the next day. That which your correspondent states did occur there in my presence, at Lloyd's, during the day: and while, in answer to questions, I was explaining my theory to some underwriters, one remarked that the barometer had already begun to fall rapidly. There were, however,

two formidable difficulties in my way, for, in the first place, the wind on the 13th (Wednesday) was, and had been, steady from E.N.E., with a very cool temperature; and, on the other hand, the official announcement affixed in the room for that period—and which was in several cases quoted against me—suggested a probability of *moderate* weather till the Friday. As the day wore on, telegrams were, to my knowledge, sent by shipowners to warn ships in the Downs, &c. And the gale *did* come on the same evening, and spent its fury over London, &c., early in the morning of the 14th, as I had predicted.

These indisputable facts I beg to offer in justification of the remark of your facetious correspondent Rodmond.

At the special request of several of the underwriters I have written a small book (Longman and Co.) for their further information.

But allow me to remark (and I never state publicly as facts what I am not prepared to fully prove) that the theory opens up a vast field for research, and it of course takes me longer to verify and to confirm than it does those who have access to records and facts stored as public property. Nevertheless, I think I foresee one startling result in the application of this theory,—one startling explanation of certain phenomena, which, although it would be imprudent to publish in a crude state, shall, if permitted, be first announced in the pages of the *Nautical*, always open, as it is, to what may concern the seaman and the man of science;—and I trust that the large circulation which the *Nautical* has among the mercantile as well as the royal navy will have conveyed to them during the past two years the means of safety to persons and property.

Always ready to afford required assistance in explanation,

I have, &c.,

S. M. SAXBY, R.N.

To the Editor of the Nautical Magazine.

EVENINGS AT HOME AT THE NAUTICAL CLUB:—*The Chairman's Introduction of a New Member—Objects of the Club—The Loss Sustained by the Country in the Demise of the Late Prince Consort—The National Life-boat Institution—The American Difficulty: the Whole Case; the American Senators; Mr. Seward's Sentiments—The Naval Reserve and the Officers of the Merchant Service.*

The Club-room was warm and snug, just as it should be at Christmas season, Albert and Rodmond, with the Secretary, were discussing the *pros* and *cons* concerning the American difficulty, when the Chairman, with a friend under his arm, was ushered in.

Here we are, gentlemen, I have brought you a volunteer of the right sort.

Naval? asked Rodmond.

Nautical or naval, whichever you like, returned the Chairman,—eh? Commodore (presenting him). No matter, we shall know more of that by and bye. Yes, gentlemen, a volunteer, an aspirant for a share in the pleasures of our “evenings at home.”

The new member was cordially received, and the Chairman proceeded to initiate him into the mysteries of Club management.

Here, Commodore, is our *sanctum*, he said,—here it is that we discuss the world and its doings,—here we contemplate the stream of time, the odds and ends of man’s designs as they float along to the shade of oblivion or to honour, conspicuous as it should be,—and here, too, as Pope says, we manage to—

“————— shoot folly as it flies”

And, added Rodmond—

“————— extol wisdom to the skies!”

Well said, continued the Chairman; very true, friend Rodmond, no bad idea, for that too is our duty. But I was going to say,—and having dealt with the great topics of the day, we get resolved into a “committee of ways and means,” as they do in another house, and set to with minor matters, those that mostly are on the road to oblivion,—happy state, free from the cavils, the jeers, the jealousies, the neglect—aye, the cold, freezing neglect of the ungrateful world. How correct is old Shakspeare when he says—

“Blow thou winter wind,
Thou art not so unkind
As man’s ingratitude.”

For you well know, gentlemen, that—

“Many a flower is born to blush unseen.”

because it is not worth transplanting from the wild imagination of its author. Our committee of ways and means, sir, sits with closed doors. Our ways are peculiar, as you will find, ministered to by our means, which had better be nameless. In fact, Commodore, we have all passed not a few Saturday nights at sea, when we have had each to look to our own flowing bowl under various difficulties. True, those difficulties vanish on shore, and the discomforts of a club are somewhat less than those of a creaking, rolling ship in a gale of wind, although, it is said, they surpass those of home, but I never thought so,—for “there’s no place like home.” But, sir, here harmony prevails (I do not mean to say that it is not the case elsewhere) and that is essential to business. Even our ways and means promote harmony, and although in our country all vulgar business is transacted before we dine, yet respectable business like ours is better done afterwards, a season when the world and its affairs move more smoothly than in any

other part of the day, and there is no crotchety subject to interrupt—

“The feast of reason and the flow of soul.”

as some one says. In fact, Commodore, it is then we revel in harmony, perhaps occasionally enlivened with poetic strain.

But I must stop. I fear that already I have forgotten the wholesome advice—

“*Vir sapiens est qui pauca loquitur,*”

and I am sure you will kindly remember, as Lord Palmerston told the Dover volunteers, all this is entirely in confidence—strict confidence; for were it known out of doors (they are closed now) the reputation of the Club would be gone—our name would at least be damaged, and a name—What’s in a name? Why, Sir, a name is capital itself, worth—but never mind, Shakspeare has already told us what, and I need not repeat it.

So much, continued the Chairman, for our small affairs. Our Secretary will inform you of our rules, and as to our proceedings, you will find them duly chronicled in his favourite work, the *Nautical*—the blue wrapper, Sir—thirty volumes of which stand there in his especial care, well known as the seaman’s friend in all parts of the “watery world.” It is a work, Sir, that we much prize, and our Secretary is vastly proud of it.

No wonder, said the Commodore. Sir, I have seen it quoted in French, Dutch, Spanish, aye, and in Russian works on navigation. Many a day have I benefited by it; indeed, it was the means of my hearing of your Club!

Glad of it, added the Secretary, no longer able to restrain his feelings,—glad of it, Sir. I could tell you a good deal about it another time.

Right, said the Chairman, so now we must to business—and sad business too. Gentlemen, the subject is one that I scarcely know how to approach. The whole British nation at this moment mourns the loss of its noble Prince Albert. Yes, gentlemen, it is too true. However abrupt it may seem, we must lay aside our little frolic, and again take heed to our ways. For the arch destroyer, ever abroad, has invaded the abode of our beloved Queen, and has snatched from her and from us the object of her dearest affections,—has left her a widow—her children fatherless. Yes, gentlemen, we may say now—

“As brightest sun of summer’s day
Has shrunk obscured, then passed away.”

So has the cheerful light of other days, and the present is one of bitterness to England. Our political horizon, too, has lowering clouds in the West; but, alas, that of our domestic one is sullied with those of the keenest affliction! We all knew, gentlemen, that Prince Albert had been indisposed. A few short bulletins announced his indisposition,—alarming ones followed, and then the final one, which said—

Windsor Castle, Saturday Night, December 14th,
His Royal Highness the Prince Consort became rapidly weaker during the evening, and expired without suffering at ten minutes before eleven o'clock.

JAMES CLARK, M.D.
HENRY HOLLAND, M.D.
THOMAS WATSON, M.D.
WILLIAM JENNER, M.D.

And thus has passed away from us a Prince whose whole conduct in public as in private life had gained for him the respect, the esteem of the people of this country; and of those whose privilege it was to know him the affectionate regard. Affable, kind, and considerate, he was ever the friend of progress, with eminent abilities to forward it and which he devoted to the noblest ends. He was at once the model for the husband,—the model for the father,—the very model for him who was to fill the peculiar position which he held, that of the consort of the Sovereign. Never have the sympathies of a nation been more deeply touched than on this sad occasion. We not only deplore the loss of a Prince whose pleasure it was to take advantage of his station to benefit the people, to lead the way in social and industrial progress, to connect his name with works of public utility,—but our sympathies are deeply touched for our beloved Queen in the midst of her sad bereavement—in the loss of him who was the patron of all works of useful progress. Most fully may we join in mourning this visitation of an inscrutable Providence, in tendering to our much loved Queen and her amiable children our warmest sympathy, along with our fervent prayers that the Almighty Disposer of all human events may comfort her wounded spirit,—may heal her broken heart and bear her up in her affliction,—may bestow on her that grace which this world has not to give.

Amen was the heartfelt response to this. On which the Chairman observed that the last sad duties were performed at Windsor on the 23rd of December, when the remains of the Prince were deposited in the royal vault. And thus in a few brief days from his first attack of illness a Prince, who by his estimable virtues and exemplary conduct in the high position which he occupied had secured the affection of the people of this country, has passed away from us; but he will be long remembered as the affectionate counsellor and guardian of the Sovereign, and the real friend of the people!

After a silent pause the Chairman called on the Secretary for a report on the proceedings of the National Lifeboat Institution, and the following was announced as having been received:—

The report stated that their late much lamented Prince Albert was one of the Vice-Patrons of the National Life-boat Institution, and

that their beloved Queen was an annual subscriber of £50 to it. His Royal Highness, on the renovation of the Life-boat Institution in 1850, was one of the first who appreciated its importance, and, on the application of its Committee, consented at once to become one of its Vice-Patrons. The report also added that at the last meeting of the Institution, Thomas Chapman, Esq., F.R.S., V.P., in the Chair, the following rewards were voted:—

£28 10s. to the crews of the Lowestoft and Pakefield lifeboats, which were in connection with the institution, for rescuing, during heavy gales of wind on the 10th and 14th ult., twenty-nine shipwrecked persons from the barque *Undaunted*, of Aberdeen, pilot-cutter *Whim*, and lugger *Saucy Lass*, of Lowestoft. The Lowestoft harbour steam-tug rendered important service to the lifeboat in saving the crews of the cutter and the lugger, and her crew of four men were paid £2 by the institution. It was said that, owing to the very dangerous position in which the cutter and lugger lay on the sands during the gale, if the slightest accident of any kind had happened, or anything had given way, to either the lifeboat or steamer, the two latter must, to all appearance, have instantly gone to pieces. Captain Joachim, R.N., had gone off in the Lowestoft lifeboat on each occasion, and the institution voted to him its third service clasp in admiration of his additional gallant services. Mr. J. Symons, chief-officer of the Coast Guard, was also thanked by the society for proceeding off in the boat.

A reward of £12 was also voted to the crew of the institution's lifeboat at Yarmouth, for saving the crew of ten men from the smack *Adventure*, of Harwich, which, in a heavy gale, had stranded off Yarmouth on the night of the 3rd ult.

A reward of £15 to the crew of the lifeboat of the society at Caistor, for rescuing, at great risk of life, in a gale of wind with sleet, the brig *Lively*, of Clay, Norfolk, and her crew of five men on the night of the 14th ult. This service was performed with great difficulty, and was ultimately only accomplished with the help of a steam-tug.

A reward of £5 10s. to the crew of the institution's lifeboat at Castletown, Isle of Man, for rescuing the crew of five men of the schooner *Eliza Ann*, of Dublin, which, during a heavy gale of wind and a high surf, was wrecked off Castletown on the 25th November. The waves on the occasion rolled in like mountains, enveloping the strand with their foam. Indeed, the gale raged with such violence that it was thought impossible for any human agency to render any succour to the distressed sailors. However, the lifeboat did reach the poor fellows, and rescued them just as they were about to commit themselves in their own boat to the boiling elements. This valuable lifeboat behaved admirably, having already been instrumental in rescuing twenty-three shipwrecked persons.

During the same hurricane the schooner *Eliza*, of Newry, was wrecked in Douglas Bay, when three of her crew unfortunately met with a watery grave during the night. There is no lifeboat at Douglas.

The local residents urgently requested that a lifeboat might be placed at Douglas, as they felt confident that on the fatal night in question she might probably have saved the three men from the lamentable death that awaited them.

Rewards amounting to £30 were likewise granted to the crews of the society's lifeboats at Holyhead, Brighton, Fleetwood, Buckie, and Bridlington, for either going off with the view of succouring distressed vessels, or assembling in stormy weather, in order to be ready for any emergency that might have arisen.

It was reported that during the last two years the lifeboats of the institution had been directly instrumental in rescuing 455 seamen from a watery grave. Many of these very men were now probably enrolled amongst our patriotic naval coast volunteers. In addition to the important services conferred on such a large number of our fellow creatures, probably 1,000 persons have been thus spared by these valuable lifeboat services from becoming widows and orphans. Altogether, upwards of 12,200 persons have been, since the establishment of the institution, saved from shipwreck by its lifeboats and other means, and for rescuing whom it has granted rewards.

The institution has now nearly 120 lifeboats under its management, and it is earnestly hoped the public will continue to strengthen its hands to keep up this large life-saving fleet, which can only be thus maintained in a state of efficiency.

A gratuity of £10 was voted in aid of a local subscription for the relief of the widow and orphans of a poor fisherman, named John Gerrard, of Burton Bradstock, near Bridport, who perished on the 22nd ult., while nobly engaged in saving the lives of his fellow-fishermen, whose boats had been capsized by a heavy ground swell.

The memorial silver medals of the institution, to be presented to the representatives of the late Lord C. Beauclerk, Mr. Wm. Tindall, and Mr. J. Ilee, were exhibited at the meeting. They were presented in testimony of the committee's appreciation of the intrepid and devoted exertions of the deceased gentlemen in attempting to save life off Scarborough, during a hurricane on the 2nd November last, on which occasion they unhappily, but nobly, perished, being swept away by a heavy surf.

It was reported that the collections in churches and chapels, and from benevolent persons in Ipswich, had realized nearly £500, the cost of two lifeboat stations, to be presented to the institution; and it was also stated that one or two of the principal towns in England were following the example of Ipswich, and were raising funds to present to the institution the cost of lifeboats to be called after such towns; and thus showing practically that although they could not be on the coast to help in saving life, yet they could provide the means whereby the great work can be efficiently accomplished.

Drawings of the lifeboat and transporting carriage of the institution had, on application, been sent to Constantinople, Hamburg, Marseilles, Bombay, and Santander (Spain), where lifeboat societies were about to be established.

The Dublin and Dundee lifeboat committees had decided to place their several lifeboat establishments under the control of the institution. At both places their four or five boats will require to be replaced by new ones.

Payments amounting to upwards of £1,000 having been made on various lifeboat establishments, the proceedings terminated.

Much satisfaction was expressed at the Club on the successful operations of the institution.

Our seamen, observed the Chairman, may be wanted sooner than is expected by some. This *Trent* affair has to be settled, eh, Commodore? What is your opinion of the whole case? Is it a toss up?

Almost, replied the Commodore. There are two main points of temptation for Jonathan: Canada is one, sir, and the opportunity which a war with us would afford for clearing himself of the South.

And bad they both are as pretexts for a war with England, added Albert. The South they never will have again; and although they may rush into Canada and do us abundance of mischief there, they will never hold it, Sir. Canada is true to England—true to a man,—but left, unhappily, exposed at every turn of the frontier, without the shadow of a navy on the lakes, or a sufficiency of troops to preserve her.

Yes, rejoined the Commodore, a navy there not allowed by treaty; while the Americans could collect all the materials for one, and by their railways throw them on the frontier whenever they pleased.

But the Americans in this country and France take another view, said the Chairman,—reported to be this—

It sometimes seems, to disinterested observers, that Providence is preparing a most tremendous thrashing for this country, just to beat out our arrogance and vanity. Look at those speeches at the Boston dinner. People talk of a “war with England” as though it were a kind of dessert after the substantial banquet we are giving our rebel brethren—a mere bagatelle amusement. War with England is the utter and irremediable ruin of our cause. It is the absolute and permanent independence of the Southern Confederacy. There can be no doubt of that. It is the destruction of our commerce, and perhaps the bombardment of New York and Boston, and other ports. It would be perfect insanity to put the English navy and purse into Jeff. Davis’s hands at the present time.

That’s a correct view, said the Commodore, in the long run; for no doubt while we should be driving them out of Canada in the spring, our navy would be giving a good account of their ships and their Atlantic frontier. It would be but a short war.

But that Boston dinner—

Oh, a little of the glorioso there, but the occasion you know, said the Commodore. On which the Secretary observed that he had thrown the events of the American difficulty, as it was called, into the shape

of a narrative, as the Chairman had desired him, and with permission he would read it.

Agreed, said the Chairman.

The Secretary stated that his story would commence with the escape of the Commissioners of the Seceding States, who were the original cause of the whole course of the events in question; and it was found in the public prints of the day. It ran thus:—

The commissioners having resolved to make the venture of running the blockade of Charleston, after mature consideration selected for the experiment the staunch and swift little steamer *Theodora*. The preparations having been completed, they embarked a little before midnight on Friday October 11th. The party of passengers who were starting on this very unusual and somewhat hazardous trip consisted of the following persons:—Hon. J. Mason, of Virginia; Mr. Macfarlane, Secretary to Mr. Mason; Hon. John Slidell, of Louisiana; Mrs. Slidell, Miss Mathilde Slidell, Miss Rosina Slidell: Mr. Eustis, Secretary to Mr. Slidell; Mrs. Eustis, who is a daughter of Mr. Corcoran, the Washington banker, now a prisoner in Fort Lafayette; Colonel Le Mat, of Louisiana, and several other gentlemen.

The night was pitch dark, and about midnight a light rain began to fall, which rendered the chances of being detected by the blockaders exceedingly slight. At one o'clock on Saturday morning the cables of the *Theodora* were loosened, and she glided down the harbour. As the steamer passed Fort Sumter every light on board was extinguished, and away she went, right through the fingers of the blockaders, far out to sea. On the evening of the 11th she reached Nassau in safety, where, had the opportunity been a favourable one, the commissioners would have disembarked; but on inquiring they ascertained that the English steamer connecting with that point touched at New York. However gratifying a sight of New York might have been under other circumstances, the commissioners determined in this instance to forego the pleasure, so the *Theodora* left Nassau and steamed away towards Cuba.

On the 16th she arrived at Cardenas, where the commissioners landed, and as it would appear proceeded to the Havana. They left Havana on board the *Trent* on the 7th of November. At noon on the 8th, as the *Trent* was approaching the narrow passage between the reefs opposite the Paradon Grande Lighthouse, Old Bahama Channel, a large war steamer was observed waiting ahead, and showing no colours. On coming nearer the *Trent* hoisted her ensign, which met with no response from the war vessel.

The whole of the proceedings of the capture, observed the Secretary, are so graphically given by Commander Williams, that he had had recourse to what he had so emphatically said at Plymouth on the occasion of his being welcomed at the Club there.

Commander Williams, after some preliminary remarks, said,—I will

endeavour to be as little egotistical as possible, but in the present instance it may be necessary that I should speak in some measure of myself, in consequence of what has been said about me in the New York papers, and which has been referred to by *Punch*. The New York papers have thought proper to allude to me in unwarranted language, and which I fear has been countenanced by Mr. Fairfax. I read in the press the opinions of the Americans—I mean the northern portion of the Union, the Federal States. In alluding to the attack on the *Trent*, it says:—"If the act itself is justifiable, the manner in which it was performed is unexceptionable." As to the manner in which it was performed. I was, at the time Captain Moir came to me to say that a suspicious vessel was ahead, on the main deck, with a pipe in my mouth, reading the *Essays and Reviews*. I did not then think for one moment that such an atrocious thing would have been done as that which was enacted by the gallant officers of the *San Jacinto* to take as prisoners of war, contrary and in violation of international law, the so-styled Commissioners from the Confederate States. The argument that appeared or presented itself to my mind—the argument of the moment—as a flash of lightning, was that if a slave, a fugitive slave, once succeeds in putting his foot in a free state—putting aside Great Britain—that that slave from that moment was free from his bondage.

The manner in which it was performed is "unexceptionable." Shortly after the *San Jacinto* was seen we hoisted our ensign. It was not responded to. As we approached the *San Jacinto*, a shot was fired across our bows. I appeal to you now—to you officers of the army and navy—is it usual for a neutral power, when wishing to speak with another vessel, to fire a shot across her bows to order her to heave to? (No, no, certainly not). We proceeded slowly. We put the helm a-starboard and approached her. We were not half a cable's length from her—I would say she stopped, except that she had steerage way—when a shell was fired across her bows, and that is the way which it has been thought proper to style as unexceptionable. I make them a present of that. Captain Wilkes says,—“In the process of arrest he was glad to say everything was conducted properly, and nothing occurred which did not do honour to the American navy.” I will not dilate upon that. If they think that honour, let them hug it to their souls; but God forbid that her Britannic Majesty's navy should hug as honour such an act to their souls.

Now, gentlemen, I approach a subject with great diffidence, for it personally affects my honour and my character. Before I say one word regarding the notes which I have before me, I will tell you the manner in which Mr. Fairfax and I parted. Mr. Fairfax came to me on the main deck, hat in hand, and said "Sir, I have had a painful duty to perform, and if in the excitement of the moment I have said aught that by possibility can be construed into a personal offence or an insult towards you, I most humbly beg your pardon, Sir, for I never meant it." I replied, "Mr. Fairfax, I have had a painful scene to witness—a scene of degradation to my country's flag; I do not

deny that my feelings have been greatly excited, but if by any gesture I have done ought to offend you, as a man, there is my hand, Sir, and I crave your forgiveness." I ask you now, gentlemen, that Mr. Fairfax—I do not say that he has said so—but I say he has countenanced it in the American papers, he has countenanced the expression, "Gasconader." He, Mr. Fairfax, says "that my manner was so violent he was compelled to request Captain Moir to remove me from the deck," and "that there was no union existing between Captain Moir and myself." Gentlemen, I utterly deny that there ever occurred one single instance of a want of unity between Captain Moir and myself; and I am proud to have this opportunity of saying that I can bear testimony to the high character of Captain Moir,—the most gallant sailor, the most urbane gentleman, with all the courtesies of life to endear him to those with whom he is associated, it has ever been my lot to meet in this world.

I confess that I have been advised to speak at no length on account of my health. But I cannot help it, let the consequences be what they may. I must explain to you what has never yet appeared in the public papers. It is said by the American papers that "Captain Wilkes could not have received instructions from his government at Washington, for that he was on his return from the western coast of Africa, wending his way through the Bahama Channel to New York." What do you think? I do not know whether it has come before your notice at all,—but what do you believe? How will you put trust in the veracity of men who will write such things, when on the 16th of October I saw the *San Jacinto* off St. Thomas. I cannot remember now whether it was on the night of the 16th or the morning of the 17th. I went on my way to Mexico, going to Havana, Vera Cruz, and Tampico. On my return to Havana, on the 6th November, I found that the *San Jacinto* had been to Havana from St. Thomas, that she had coaled there, and that two of her officers, passing themselves off as Southerners in their hearts, had lunched with Mr. Slidell and family, and extracted from them their intended movements.

I again say that I am going to approach a subject with great diffidence. I am going to speak of Mrs. Slidell and her daughters. I tell you, Sir, that Miss Slidell branded one of the officers to his face with his infamy, having been her father's guest not ten days before. No words of mine shall pass my lips on a political point. I have no political feelings: I do as I am ordered. Mr. Fairfax denied that the marines made a rush towards Miss Slidell at the charge, with fixed bayonets. I believe when I lay my hand on my heart and say it is true that they did so. Miss Slidell—and no girl in this world has been pained more at the mention of her name in the public papers than she has been by the manner in which some persons have alluded to it; not pained by their having stated the manner in which she acted, but some of the public papers described her as having slapped Mr. Fairfax's face. She did strike Mr. Fairfax, but she did not do it with the vulgarity of gesture which has been attributed to her. Miss Slidell was with her father in the cabin, with her arms encircling his

neck, and she wished to be taken to prison with her father. Mr. Fairfax attempted to get into the cabin,—I do not say forcibly, for I do not say a word against Mr. Fairfax, so far as his manner is concerned: he attempted to get her away by inducements. In her agony, then, she did strike him in the face three times. I wish that Miss Slidell's little knuckles had struck me in the face. I should like to have the mark for ever.

It has been argued in the public papers that if Captain Moir and I—I am not finding fault with the papers, I am finding fault with the letters which have appeared in the local papers; I am not finding fault with the feelings of the country, for the general voice of the country has thrown over me what you have done this night, as I said before, the mantle of your approbation, which is dear to me. It has been argued whether we should not have done our duty more clearly if we had refused a passage to these so-styled Commissioners from the Southern States. Now, on this point I have a very strong opinion. I know that there are at this table members of the legal profession, but I am not going to offer any opinion of my own. I am going to offer to your notice a fact of which I am perfectly cognisant, and which occurred in the year 1833—either at the latter end of the year 1833 or the beginning of the year 1834. At that time Donna Maria was on the throne of Portugal. In 1833 Don Miguel was expelled from that country, and yet a noted agent of Don Miguel applied to the Peninsular and Oriental Company for a passage to Lisbon in the *Tagus* steamer. The passage was refused. That agent prosecuted the company. I do not mean to say that this is decidedly a point in support, but *a fortiori* it strengthens my argument. He prosecuted the company for having refused him a passage, and after a long hearing the political agent was cast; but the only plea on which he was cast was the plea of the company that if they had not refused him they would have been refused admittance to the *Tagus*, and consequently have been subjected to a prosecution, collectively and individually, by passengers who had paid their money to be taken to Lisbon. *A fortiori* I say that it is a case in point. It shows that Captain Moir had no right or power whatever to refuse these so-styled Confederate Commissioners a passage to England.

Moreover, so far from any disunion between Captain Moir and myself, I should have had nothing to do officially with either accepting or refusing them as passengers. But I should have offered my advice most strenuously to Captain Moir that he would have been subjected to a prosecution if he should refuse to take them. But I hold myself personally responsible for everything that was done. If what was done was wrong, I am willing to bear it; if what was done was right, he and I acted together. The *Hampshire Advertiser* says that "I stepped out of my proper position, and presumed to make myself a diplomatic character"—that I was merely a deliverer of her Majesty's letters. Well, I am not ashamed to be a deliverer of her Majesty's letters. I have not shirked my duty to my country. I have served twenty-eight years under the pennant in my own service, and I am

too old to undergo the expense of commanding a ship, even if I had the interest to get the appointment to one. I accepted my present appointment in order to educate my orphan boy. (Nephew,—the young gentleman was sitting by his side, and the remark occasioned a continued outburst of applause.) I thank you for allowing him to be present and to sit by my side.

Well, I must speak of Mrs. Slidell. You may be aware that these ladies were under my charge for three weeks;—three weeks of close intercourse on board ship with ladies under your charge gives you a greater insight into their characters and their feelings than casual intimacy on shore. Whatever other people may say of Mrs. Slidell and her daughters, I assure you that, so far as my humble judgment goes, they were thoroughly well-bred ladies. Now, what will you think of this? When I landed I was sent up to London in a special train. I had previously recommended Mrs. Slidell and her daughters to an hotel in London, believing it to be a quiet hotel, and where they might get apartments *en suite*. Well, I was sent in a special train to report the circumstances to the government. On the day after I had arrived in London I dined with Mrs. Slidell; for on the day on which I did arrive in London I was engaged at the Foreign-office with Lord Palmerston and the Lords of the Admiralty until a late hour. I say then that on the day after I dined with Mrs. Slidell. I am somewhat diffident in telling you what took place. You will hardly believe that a gentleman of the Northern States—aye, a so-called gentleman—had called upon Mrs. Slidell that afternoon, and, as if their feelings were not harrowed enough by being separated from their father and protector, some demon must come to make the rankling in their hearts more bitter by telling them the decision of the law officers of the crown. He said he came to offer his condolence (!), and to inform them that the law officers of the crown had decided “that the seizure of her husband was not contrary to international law!” Gentlemen, I was enabled to tell Mrs. Slidell—and perhaps you will pardon me if I repeat the expression here—that it was a ——— infernal lie! for I had just come from the Foreign-office, where I had learnt the decision of the law officers of the Crown, and which was diametrically opposite to what the man had dared to say.

Now, gentlemen, I have only one more subject, that I know of, on which to speak,—the circumstances attending the gallant Federal marines rushing with the points of their bayonets at Miss Slidell. It was at this point that she screamed, for her father snatched himself away from her. I do not mean snatched himself rudely; but he snatched himself away from her to break the window of his cabin, through which he thrust his body out. But the hole was so small that I hardly thought it would admit the circumference of his waist. It was then the lady screamed. I am charged by Mr. Fairfax, “that my manner was so violent that he was compelled to request Captain Moir to remove me.” But when the marines rushed on at the point of their bayonets—and I believe that it is not necessary that I should make a solemn asseveration that it is true—when they rushed on at

the point of the bayonet I had just time to put my body between their bayonets and Miss Slidell, and I said to them—and if Henry of Exeter were here I would ask him for his absolution for it,—I said to them, “Back, you — cowardly poltroons.” I need not ask you, gentlemen, if I am acquitted of bullying. I bullied no one. I need not ask you whether you acquit me now. I beg once more to express my thanks to you for the mantle of your approbation which you have thrown over my shoulders.

Captain Williams then resumed his seat amidst repeated applause, but immediately rose again and said—Allow me one moment. It is sufficient for me that I have received such approbation, but it may be satisfactory to you to know that I have received the approbation of my government. Captain Williams then read a letter which he had received from his chief, Captain Patey, which, after referring to the circumstances of the case, concluded as follows:—“I am commanded by the Lords Commissioners of the Admiralty to convey to you their lordships’ approval of your conduct whilst acting as naval agent on board the *Trent* on the occasion in question; and also of the judicious steps you subsequently took for making the matter known to Lord Lyons and Vice-Admiral Milne, and other British authorities.”

Those shot of Captain Wilkes had better been left in his locker, observed the Commodore. Whoever heard of firing a second shot across the bows of a packet that was making no attempt to go away, and was come close down to a man-of-war as required.

But approved by Congress by a vote of thanks! observed the Chairman.

Yes, by the Senate and President himself. Who are these senators at present? asked the Commodore.

I can answer that question, said the Secretary. Here is the American Cabinet who are now discussing this *Trent* affair, along with our remonstrance:—

Secretary of State.—William H. Seward, of New York.

Secretary of the Treasury.—Salmon P. Chase of Ohio.

Secretary of the Interior.—Caleb B. Smith, of Indiana.

Secretary of War.—Simon Cameron, of Pennsylvania.

Secretary of the Navy.—Gideon Welles, of Connecticut.

Postmaster-General.—Montgomery Blair, of Maryland.

Attorney-General.—Edward Bates, of Missouri.

The following brief sketches of the members of the new cabinet may be of interest:—

William H. Seward, Secretary of State, is a native of New York, born in 1801, and is therefore sixty years old. He graduated at Union College in 1820; was elected to the New York Senate in 1830; was chosen Governor of New York in 1838; resumed his profession, the practice of the law, in 1843. In 1849 he entered the United States Senate, where he has since continued.

Salmon P. Chase, Secretary of the Treasury, is a native of New

Hampshire, born in 1808, and is therefore fifty-three years old. He completed his education at Dartmouth College, and studied law with the celebrated William Wirt, of Virginia. He was generally identified with the Democratic party, although he voted for Harrison in 1840, and subsequently became a free soiler. He was a United States Senator from 1849 to 1855. In the latter year he was elected Governor of Ohio, and re-elected in 1857. He was chosen to the new Senate, and would have taken his seat but for his selection for the Cabinet.

Caleb B. Smith, Secretary of the Interior, was born in Boston, Mass., in 1808, and is of the same age therefore with Mr. Chase. He was educated at the Cincinnati College, studied law, and went to Indiana. In 1822 he began editing a whig journal, and in the following and several subsequent years was a member of the State Legislature. He was a Representative in Congress from 1843 to 1849; was Presidential Elector in 1840 and 1856; and was a member of the Board for investigating Mexican claims, appointed by President Taylor.

Simon Cameron, Secretary of War, a native of Pennsylvania, was born in 1799, and is therefore sixty-two years of age. He was a printer in early life, and subsequently edited a Democratic journal. He engaged in several financial pursuits with success. He was elected U.S. Senator in 1845, served till 1849, and was re-elected in 1857.

Montgomery Blair is the son of Francis P. Blair, once the famous "Blair of the *Globe*," and the right-hand man of President Jackson. The new Postmaster-General received his education at West Point, and afterwards studied law. Originally a Democrat, he early identified himself with the fearless little bard of Maryland Republicans. He must be by many years the youngest member of the Cabinet.

Gideon Welles, Secretary of the Navy, was an old Jacksonian Democrat and the trusted personal friend of the "Hero of New Orleans." He has held several offices of responsibility, and was for many years connected with the press. He has always held a leading place in the politics of Connecticut, being recognised as the guiding genius of the Republican party of that state.

Edward Bates, Attorney-General, a native of Virginia, was born in 1793, and is therefore sixty-eight years old. In 1814 he went to Missouri, where he has since resided, and studied law. He became State's Attorney, and afterwards District Attorney for Missouri, and frequently served in the State Legislature. He was a member of the Lower House of Congress from 1827 to 1829, and acted with the Whig party. Since the formation of the Republican party in Missouri, he has been its leading member, and his name rallied much strength in the Chicago National Convention.

Then of Mr. Seward we have no very favourable accounts if we are to judge of one which appeared lately in one of our own papers.

Yes, the *Daily News*, added the Chairman, in which a Cambridge Master of Arts gave his reminiscences of him. He said:—

On the 8th of September, 1852, I chanced, during a tour in Canada, to be at Quebec, and was invited to an official dinner given by the Speaker of the Canadian House. Many of the members of the provincial parliament, including of course a considerable number of French Canadians, several Englishmen, the Governor-General's brother, and Governor Seward, of the State of New York, were among the guests. After dinner, and after "The Queen" and Lord Elgin's health had been drunk, "The President of America," with a handsome compliment to the distinguished American then present, was proposed. Mr. Seward's reply I shall never forget, nor the feeling of indignation it called forth. He said it was clear that the Anglo-Saxon must be dominant throughout the country (nearly all his hearers being French); that as yet Canada was "under the tutelage of England," that he hoped "the younger sister would follow the example of the elder in shaking off that tutelage." Finally he sat down proposing as a toast, "May the glories of England endure till her institutions are replaced by freer ones." This was what Mr. Seward thought it decent and becoming to reply in acknowledgment of the courtesy of the Canadian Speaker, in the presence of Englishmen and of Lord Elgin's brother.

No very flattering hopes are to be gathered there, observed the Chairman, for the favourable reception of our despatch in regard to preserving the peace. Now I have met with some very sensible observations, continued the Chairman, addressed to the *Daily News*, which are so good that I will read them to the Club;—they will then be on record among our papers, and will show the desire of this country that our amicable relations should not be broken.

Permit me to say a few words on the present position of affairs between England and America; my object being, if possible, to allay in some measure the apparently general apprehension of hostilities.

It appears to me that there are several reasons why we may confidently expect that the peaceable relations of the two countries will not be impaired, and I will, if you will allow me, as briefly as possible, submit them to the consideration of your readers.

I. We may now take for granted that the aggression on the part of Captain Wilkes was not the result of direct orders from the Washington cabinet. For this belief we have the assurance of General Scott, and the repeated declarations of the captain himself. It is also more likely to be so than otherwise from its conformity to general usage. In the States the commanders in both services have more independent authority than is ordinary in the army and navy of European countries, and on an emergency assume a responsibility which is usually unquestioned and endorsed, but which can be repudiated if convenient by the home government.

II. We may dismiss from our minds the idea that there is any desire on the part of the North to quarrel with us.

The utter insanity of provoking a war with England at the present

junction can only stamp with a traitorous singularity the unprincipled print which would endeavour to turn the current of popular feeling against us. Unless the whole nation is demented, in order to its destruction, the following reasons would be sufficient to deter it from provoking such an issue:—

1. The North would gain nothing by such a course. The idea that the chances of war might compensate in Canada their losses elsewhere is absurd; for the Americans well know that it would be as difficult to annex those provinces as to reconquer the South.

2. The South will never join the North upon such a basis. Apart from the fact that our quarrel is in the interest of the South, the Federals and Confederates are irreconcilable enemies. The South is fighting for the enjoyment of independence, and not for foreign conquest. Washington will be taken the first day that the army of the Potomac is called away to defend the New England States from invasion.

3. The North, on the other hand, has not the slightest idea at present of abandoning the subjugation of the South, and now when she has gained a footing in some of the rebellious states is she less likely than ever to take a course which would compel the abrupt termination of such a design.

4. It would be a most suicidal policy, and in its results disastrous to all the interests of the North.

The South would be at once recognised, the blockade broken and transferred to the North. Cotton would flow to Europe, thereby strengthening the sinews of her enemy, while all the sea board of the Federal States would be exposed to the operations of our navy. The Western States might also become discontented with the policy which ruined their commerce, and a further dislocation of the Union be endangered.

5. The expenses would occasion a dearth of money, and most likely involve a general bankruptcy. The present war has already worked enough ruin,—another with England would complete it.

The banks are already holding their purse-strings a little tighter, and it was only on the assurance of peaceable foreign relations that the last advance was forthcoming.

III. It appears to me that did an unthinking mob desire a war with England, it would have less power than heretofore to drive the government to hostilities. The real dictator will ere long be found to be the army, and so long as the army and government pull together the popular voice will have little real power.

IV. The Americans have already entertained the idea of giving up the commissioners, and this is halfway towards doing it. When therefore our demand reaches them, backed as it will be by the most irresistible arguments, we may expect that we shall receive a favourable reply.

V. Our course of proceeding will benefit the Americans more than any other nation, in establishing for the future a better code of legislation with regard to neutrals. They will, no doubt, therefore gladly

seize the opportunity of fixing our interpretation of the law as a basis for future guidance.

VI. Our action has been so prompt and decided as to yield them no other alternative; while at the same time our demand is couched in such terms as to enable them to comply with a good grace. Our overwhelming force and the determination of England to vindicate the honour of her flag will so completely take them aback that they will perceive that the time for trifling is over and yield at once.

VII. The attitude assumed by France, and the universal condemnation of her conduct by all the French press, will convince the North that it is vain to expect assistance or sympathy in that direction.

Did the finances of the empire permit her to indulge in foreign war, it is plainly indicated that we should find her on our side in the struggle. Were the idea, therefore, ever entertained that France would profit by our emergency, and take the opportunity of our being engaged in a transatlantic war to attack us at home, this must have for ever been sent to the winds. The voice of Europe with one consent declares that we have the right on our side, and America dare not, if she would, disregard it.

There seems to be much good reasoning in the foregoing, observed the Chairman: I am not one of the "Peace-at-any-price-men," but I cordially concur in the following sensible remarks:—

A war between America and this country would be the greatest calamity to the cause of human freedom and progress that could possibly happen. It would be the most terrible blow that could be inflicted on those principles of civil, commercial, and religious liberty with which both nations are identified. England and America are the two great nations that enjoy full political freedom, and that purer form of religious faith that is known as Protestantism. A war between these Powers would produce a reaction in favour of tyranny and superstition throughout the entire world. Already the crowned and mitred enemies of liberty and truth are secretly exulting at the prospect of such an outbreak, and if it comes they will enjoy a malignant triumph. Such a war would inevitably give a new lease of life, a new term of power to every form of oppression and wrong that curses the civilized world. The war, under existing circumstances, would in fact be a crime so enormous, that its commission ought to be impossible. We believe it may be averted, nor shall we cease to assert this until the contrary is proved. Those who at the present moment indulge in loose and violent assertions about the war being inevitable are deeply culpable. Such idle assertions are, in fact, sheer treason against those principles, religious and political, which we profess as a people to accept and believe. If we really hold the doctrines we profess, we are bound to believe, as a first duty, in the possibility of peace.

We will now lay by the question of the American difficulty for our next meeting, trusting that when again opened it will be that the blessings of peace may prevail.

It is somewhat remarkable, observed Albert, that at such a critical juncture of public affairs as involving the possibility of a war with the United or Disunited States, that our regulations should be completed by which the country will have the benefit of the services of that important body of men the Commanders and Mates of our merchant service. These are the regulations just published from the Admiralty, and it is gratifying to find that they meet with the full approval of the officers whom they concern.

The Secretary reads:—

Notice to Masters and Mates in the Merchant Service.

The following regulations have been established in pursuance of the Act 24 and 25 Vict. cap. 129, relating to the enrolment of officers in the Royal Naval Reserve:—

Any master and mate of the merchant service who is desirous of becoming an officer of the Royal Naval Reserve, should apply by letter to the Registrar-General of Seamen, No. 6, Adelaide Place, London Bridge, E.C., for a form on which his application for a commission in the Royal Naval Reserve is to be made, and should state distinctly, in such letter, his name and the address to which the form is to be sent. A form of application will then be sent to the address indicated, with full instructions as to the mode in which it is to be filled up.

A pattern of the uniform may be seen at the office of the Registrar-General of Seamen.

Royal Naval Reserve.

By the Commissioners for executing the office of Lord High Admiral of the United Kingdom of Great Britain and Ireland, &c.

Whereas by the Act 24 and 25 Vict. cap. 129, provision is made to enable her Majesty to avail herself of the services of a certain number of officers of the merchant service of the United Kingdom, and of the colonies and dependencies of Great Britain, as officers of reserve to the royal navy: and whereas her Majesty has been pleased, by her Order in Council of the 20th instant, to direct that the following regulations be established for carrying into effect the provisions of the said Act: We hereby desire and direct that the regulations in question be promulgated for the information and guidance of officers of the merchant service, who, in conformity with her Majesty's gracious intentions, are desirous of enrolling themselves as officers of the Royal Naval Reserve, under the conditions specified.

1. *Number, Class, and Rank.*

The officers of the Royal Naval Reserve shall not exceed the total number of 400, and shall consist of two classes:—

1. Lieutenants of Naval Reserve, whose number shall not exceed 130; and who will rank with, but after, Lieutenants of the Royal Navy.

2. Sub-Lieutenants of Naval Reserve, whose number shall not exceed 270; and will rank with, but after, Sub-Lieutenants of the Royal Navy.

2. *Appointment.*

Officers of both classes will receive their appointments from us, but applications for appointments should be made through the Board of Trade, London.

3. *Qualifications.*

Masters of merchant vessels, who hold certificates of competency under the "Mercantile Marine Act of 1850," or the "Merchant Shipping Act, 1854," and who have commanded vessels of not less than 500 tons burden for not less than two years, shall be eligible for appointment as Lieutenants or Sub-Lieutenants of the Royal Naval Reserve.

Chief Mates of merchant vessels who hold masters or chief mates' certificates of competency under the "Mercantile Marine Act of 1850," or the "Merchant Shipping Act, 1854," and who have sailed as masters, or as chief mates, in vessels of not less than 500 tons burthen for not less than two years, shall be eligible for the appointment of Sub-Lieutenant of the Royal Naval Reserve. Masters with extra certificates will, as a general rule, have the preference.

Qualification for the first class will include qualification for the second class.

No master or mate will be enrolled as lieutenant or sub-lieutenant whose age exceeds 45. This limit will subsequently be altered to 35, at the discretion of the Lords Commissioners of the Admiralty.

Masters of merchant vessels who are actually afloat and in command, though they may be above the age of 45 years, may be enrolled as Honorary Lieutenants of the Royal Naval Reserve on the recommendation of the Board of Trade.

The number of Honorary Lieutenants is not to exceed 100 in addition to the numbers above specified. They will not be required to undergo drill or be called out for service.

4. *Promotions.*

Officers of the second class will, if qualified, be eligible for promotion to the first class, at our discretion.

Officers who, when in actual service, may, by the character or length of service, obtain our special approbation, will be eligible to receive commissions as officers in the Royal Navy, of the same grade as that with which they may rank at the time. They will then be considered in all respects as officers on the permanent strength of the navy.

Officers who, whilst on actual service, shall have distinguished themselves in action with the enemy, or by the character and length of their services, will be eligible, at the conclusion of their service in

the navy, for promotion to the higher honorary ranks of Commander and Captain of the Naval Reserve, at our discretion.

5. *Uniform.*

Officers to wear the same uniform as officers of corresponding rank in the Royal Navy, with the following exceptions, viz. :—

Lieutenants.

Instead of the stripe of half-inch lace round the sleeves of the coats, there is to be a stripe formed of two waved lines of quarter-inch gold braid, intersecting each other, so as to form a band half an inch wide, the blue cloth to show between the curves.

Sub-Lieutenants.

To have one such waved line of the same braid.

The buttons of both classes to be of the Royal Navy pattern, with the letters "R.N.R." in old English character, surmounted by a crown.

Instead of the anchor on the epaulettes and shoulder-straps respectively, there is to be a badge consisting of a silver anchor in the centre, surrounded with the words "Royal Naval Reserve" embroidered in gold.

Instead of the bullion loop on the cocked hats, the loop to be formed of two gold braids twisted the same as for coat sleeves.

The badge for the caps to consist of a device similar to that on the epaulettes embroidered on blue cloth, end surmounted by a crown.

The plate for the sword-belt to be the same as for officers of the Royal Navy, substituting the letters "R.N.R." for the anchor in the centre.

6. *Drill.*

Officers will be required to undergo in each year a course of 28 days' drill and gunnery instruction on board the district or drill ship at the ports in their respective vicinity, viz. :—London, Shields, Sunderland, Hull, Southampton, Falmouth, Bristol, Liverpool, Leith, Greenock, Dublin, or Queenstown.

7. *Messing.*

Officers, whilst on drill, will live on shore, and receive the following subsistence allowance, viz. :—

Lieutenants	10s. a day
Sub-Lieutenants.	7s. a day.

When called out for service they will mess with their respective ranks.

8. *Discipline.*

Officers will be subject to naval discipline when attending drill, and when called out for actual service; and will be liable to lose their

commissions for offences against the rules, discipline, or character of her Majesty's service, in the same manner as officers of the Royal Navy.

9. *Service Afloat.*

Officers of the Royal Naval Reserve will be called out for actual service by royal proclamation; and they will be liable to serve during the continuance of any national emergency, or until they may be regularly discharged by our direction.

10. *Pay and Allowances, and Pensions to Widows.*

Officers will, whilst called out for actual service, receive the pay of their corresponding ranks in the Royal Navy.

Officers who may receive hurts or wounds whilst on service, will receive the same pensions, and allowances, to which officers in the navy would be entitled under similar circumstances.

Widows of officers who, whilst in actual service, may be killed in action, or die from accident resulting from the performance of their duty, will receive the same pensions as the widows of naval officers of corresponding rank would be entitled to under similar circumstances.

Given under our hands this 29th day of November, 1861.

SOMERSET.

FREDERICK WILLIAM GREY.

CHARLES EDEN.

CHARLES FREDERICK.

JAMES ROBERT DRUMMOND.

SAMUEL WHITBREAD.

By command of their Lordships,

CLARENCE PAGET.

The best feature of all this, said the Chairman, on the reading being concluded, was the hearty response of welcome with which it had been at once received by those to whom it was addressed. A large meeting had taken place, at which the great shipowner, Mr. Green had presided as chairman. The sentiments expressed at that meeting did honour to all present and to their country. But he would first ask the Secretary to read the resolutions: the names of proposers and seconders were omitted as unnecessary, for all thought alike:—

“That this meeting being convened in consequence of the promulgation of the regulations for officers of the merchant service desirous of enrolling themselves as officers for the Royal Naval Reserve, the commanders and officers present cordially accept the same, and pledge themselves heartily to co-operate with the government.”

“That the commanders and officers now present desire to assure her Majesty of their attachment to her person, and their devoted loyalty to the British crown; and that they will at all times be prepared to co-operate with her Majesty's navy whenever their services

may be required to man the national defences, or uphold the honour of the British flag."

"That the thanks of this meeting be tendered to the Lords of the Admiralty for the opportunity they have now given the officers of the mercantile marine to co-operate with the royal navy, and especial thanks are due to Lord Clarence Paget for the support he has always given to the officers of the merchant service."

"That this meeting is unwilling to separate without tendering to her Majesty the expression of its sincere condolence on her Majesty's recent heavy bereavement, together with the hope that it may please Almighty God to assuage her grief and long to spare her Majesty and her royal house to direct the affairs of this great country, and to reign over a loyal, contented, and devoted people." The proposer remarked that this was a sorrow too deep for words, and simply moved the resolution.

How truly, observed the Chairman, alas, how truly, is this said,—a "sorrow too deep for words" to express. But he would keep to the subject before them, and first he would notice the judicious observations of the chairman, Mr. Richard Green. He had most truly said of the object of the present meeting it "would let her Majesty see how ready were the officers and seamen of the mercantile marine to rally round the crown in defence of the British flag."

Quite true, said the Commodore. The blue jackets, whether of the royal or mercantile navy, would always interest the Queen of England, now as in the days of the armada.

Then the remarks of Mr. Green on the uniform were most appropriate:—"He hoped the common sense of our merchant captains would prevent them wearing their fine clothes too much in common. They might wear them on board their own ships, but they must wear them on duty, and so they should take care and not wear them out too soon."

Well, I think an appropriate, inexpensive uniform has a good effect, observed the Commodore. Not such as was given once to our officers of the packet service, with the epaulettes difficult to distinguish from the navy; but something neat and not gaudy.

It adds to a respectable appearance and that goes far, said the Chairman; and it assists the desire of appearing respectable and as a British officer in the eyes of foreigners. In fact, Sir, a uniform commands respect in itself.

True, observed Albert, and contributes to a respectable course of conduct in the wearer, as well as to gain respect for him. A good uniform will contribute to good manners.

Agreed, said the Chairman. A uniform they should have, as well as their mates; not only when called out, but at all times. Something was said by Mr. Green about being called out. It was to be only when the country was in the extreme of danger that the naval reserve would be called on, but not until then. There was no fear of the naval reserve being called out except in time of the greatest peril.

The scale of pay, pension, and allowances would be precisely the same as in the royal navy. So that a merchant captain need not expect to be called out of his own ship with his crew unless he could not go to sea without being captured; and then what could he do better than take up his country's cause, for which he would be paid the same as a naval officer.

Nothing can be fairer, said the Commodore, and depend on it, Sir, if that day should ever come, they will verify what was said of them at that meeting. Their services in the Russian war were acknowledged as they should be, and, as was truly said,—“when they co-operated so efficiently with the royal navy, and transported not only our own troops, but the French, Italian, and Turkish armies to the scene of action. They all knew how the work was done, not a soldier, he believed, having been lost at sea, although hundreds of transport officers and men left their bones on the shores of the Bosphorus.”

Bravo, Commodore. There is nothing like “a strong pull” and “a pull altogether.” When British tars, naval and mercantile, pull together, England will be safe enough.

One word more on the subject, continued the Chairman, before we dismiss it, this commencement of an amalgamation (as he considered it) between the two services. He observed that it had been said at that meeting, the resolutions of which we have before us, much was due to Mr. Lindsay and to their chairman, Mr. Green, for the proportions which the movement had attained. They owed a great deal also to Lord Clarence Paget and to the Lords of the Admiralty, who he was glad to see so well appreciated the value of merchant seamen.

Very true, added the Commodore. In all this I fully concur. In the glorious mercantile marine of this country, Sir, chequered as it may be in officers and men with the lights and shades of human life, England has a safeguard on which she may rely in her hour of need. Her navy may be scattered far and wide—fine noble fellows as they are who compose the materials of that right arm of her power; they may have enough on their hands when dealing with all the world besides, as she has done. She has now a glorious prospect before her, come what may. She has now in her island home her merchant seamen to guarantee her safety. I propose, Sir, in all cordiality, that we mark this era in her maritime history by emptying our glasses to the successful union of the Mercantile and Royal Navies of Great Britain, and with that glorious event may the names of Richard Green, William S. Lindsay, and Allen Young ever be remembered, with the Admiralty which has brought it about,—wisely remembering that although the Navy protects the Merchant Service, the Merchant Service contributes to make the Navy, while both make England.

The cordiality and unanimous hilarity which prevailed in the Club were only broken by those small hours that steal on us unawares.

ON THE DEFECTIVE EXPLANATION AS GIVEN IN THE NAUTICAL ALMANAC FOR 1864. *By James Gordon, M.A.*

Two articles have been inserted in the *Nautical Magazine* with the above title, the first in the July number and the second in the December number. In the latter, the new method for correcting the sun's declination, as given in the *Nautical Almanac*, was discussed; but we omitted to mention the method given by Lieutenant Raper, R.N., in his *Epitome*.

Raper's Method.

Raper directs to take the declination from the *N. A.* for four successive days, commencing with the given day. Take the sum of the 1st and 4th declinations, also the sum of the 2nd and 3rd; then subtract the second sum from the first, and half the remainder will be the mean of the second differences.

The declination is then corrected in the usual way by the daily difference, and a table is given to facilitate the finding of the correction for second differences.

That the above rule is correct may be proved as follows:—

Let D = declination, d_1 = 1st difference, and d_2 = 2nd difference: when we shall have for the four declinations the following—

1st D	1st d_1	1st d_2
2nd D	2nd d_1	2nd d_2
3rd D	3rd d_1	
4th D		

$$\text{Now, } 1st\ d_1 = 2nd\ D - 1st\ D$$

$$2nd\ d_1 = 3rd\ D - 2nd\ D$$

$$3rd\ d_1 = 4th\ D - 3rd\ D$$

$$\text{Also, } 1st\ d_2 = 2nd\ d_1 - 1st\ d_1$$

$$\text{And } 2nd\ d_2 = 3rd\ d_1 - 2nd\ d_1$$

$$\text{Hence, } 2nd\ d_1 = 1st\ d_2 + 1st\ d_1$$

$$\text{And } 3rd\ d_1 = 2nd\ d_2 + 2nd\ d_1 = 1st\ d_1 + 1st\ d_2 + 2nd\ d_1$$

$$\text{Also, } 2nd\ D = 1st\ D + 1st\ d_1$$

$$3rd\ D = 2nd\ D + 2nd\ d_1 = 1st\ D + 1st\ d_1 + 2nd\ d_1$$

$$= 1st\ D + 2 \cdot 1st\ d_1 + 1st\ d_2$$

$$4th\ D = 3rd\ D + 3rd\ d_1 = 1st\ D + 2 \cdot 1st\ d_1 + 1st\ d_2 +$$

$$1st\ d_1 + 1st\ d_2 + 2nd\ d_2$$

$$= 1st\ D + 3 \cdot 1st\ d_1 + 2 \cdot 1st\ d_2 + 2nd\ d_2$$

$$\text{Therefore, } 1st\ D + 4th\ D = 2 \cdot 1st\ D + 3 \cdot 1st\ d_1 + 2 \cdot 1st\ d_2 + 2nd\ d_2$$

$$\text{And } 2nd\ D + 3rd\ D = 2 \cdot 1st\ D + 3 \cdot 1st\ d_1 + 1st\ d_2$$

And by subtracting the second of these from the first we obtain $1st\ d_2 + 2nd\ d_2$: the half of which is the mean of the second differences.

Erratum.—In the December number of the *Nautical Magazine* we have given the time as 21h. 54m., instead of 21h. 36m.

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THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

FEBRUARY, 1862.

SINGAPORE TO MELBOURNE: *Extracts from a Journal of H.M.S. "Niger" while on the Australian Station, under the Command of Captain P. Cracroft, R.N.*

"Nullam numen abest si sit Prudentia."

On the 23rd of April, 1859, Captain Cracroft resigned the command of H.M.S. *Retribution* to Commodore Harry Edgell, at Singapore. We had arrived there on the 20th from Hong Kong, in seven days and a half, by the western passage, sighting the coast of Cochin China; having experienced light easterly winds during the greater part of the distance, and steaming on the second and third grades of expansion, with all sail set, we made nearly two hundred miles, with a consumption of fuel of thirty tons, a day.

Left Singapore, as a passenger, in the *Retribution* on the 3rd of May, and arrived at Trincomalee on the 14th. It was calm in the Straits of Malacca, but after clearing Acheen Head we met the S.W. monsoon blowing fresh, with a heavy sea, and a current against us averaging nearly thirty miles a day.

Foul Point is destitute of a landmark,* but the approach to Trincomalee is distinguished by the flagstaff on Fort Frederick, which is a prominent object. The entrance of the harbour is not easy to find, owing to the want of a good leading mark, the narrow passage into

* A lighthouse has been commenced since this was written: not before it was wanted.

it being concealed by thick jungle and trees, and Fort Osterberg, although perched on the summit of a hill, not being visible till the ship is very near Elephant Island,—in short, to a stranger, it is a perfectly blind harbour at present.

Its capabilities need not be enlarged upon, as they are too well known. The naval yard is situated on a strip of ground scarped from the side of the hill under Fort Osterberg. It is a hot, unhealthy place, has no dock, contains only a few store houses and coal sheds, also a well, with a floating tank for supplying ships; the store-keeper's house is full two miles and a half off! The town at the head of the harbour is a beggarly collection of mat sheds, the few Europeans stationed here living in mean bungalows. The coloured inhabitants—a rare mixed race, consisting of native Cingalese, Moormen, Portuguese, Malays, and Africans (Ethiopians), seem to exist entirely by the government establishments; for, with the exception of a few loads of timber cut in the primeval forest and floated hither, there is no trade worthy of notice; nor is it possible that there can be, as there are no roads by which produce could find its way here from the interior.

There is however a jungle path to Kandy, which the "tapals" or post-office runners traverse in about two days, that is, when not stopped by the torrents, for there are no bridges across the nullahs, a state of things not very creditable to the colony. But the very existence of this magnificent harbour appears to be ignored and the important interests involved sacrificed in favour of Colombo; even the electric telegraph from India to Galle, which passes within sixty miles, has not been brought here yet.

A word on the defences. They are contemptible. One battery has only twelve-pounders, not even on platforms. A good screw frigate would shell the old tumble-down forts to pieces in a couple of hours.

Monday, June 13th.—H.M.S. *Niger* arrived to day from Bombay. Resumed the command. On the 18th sailed for Galle, conveying Captain Colvile, who returns to the *Camilla*,* and some officers and men for the *Chesapeake*, who are to proceed in the next P. and O. steamer to China.

We got away with a fresh land breeze, which we lost at noon, and then had the S.W. monsoon, blowing very fresh during the following night, with a very heavy cross sea, probably occasioned by the tides; the ship strained a good deal in consequence, and leaked very badly in the waterways, notwithstanding that thirty caulkers were at work on the deck during the whole time she was at Trincomalee.

We rounded those dangerous rocks, the Basses, on the 19th, and at 10h. a.m. on the 20th arrived at Point de Galle. Anchored in 5½ fathoms, and as, owing to the foul ground, no hemp cable would have lasted twelve hours, took in a coir ten-inch astern (supplied by the

* H.M. brig *Camilla* is supposed to have foundered with all hands in a typhoon on the coast of Japan, in October, 1859.

harbour-master) to keep the ship end on to the swell, which we found setting in very heavily. For this accommodation had to pay nine shillings a day, with £1 extra, owing to the cable having stranded close to the end in a heavy squall from the N.W.

On the 22nd the *Pekin* arrived from Bombay, and got away with our passengers in the evening, all the buoys being lit up. This is a wild anchorage, very little better than an open roadstead, and we dropped the small bower under foot on the evening of the 21st as an additional security.

On the 25th received mails on board for Melbourne and Sydney, and at 9h. a.m. wayed anchor, and was thankful to get away without any casualty. These few days experience of Galle "Harbour" more confirms my opinion, long entertained, as to the necessity for establishing some other station as a place of call for our mail steamers (see *Nautical Magazine* for January, 1858). In this opinion Captain Burne, of the *Pekin*, a thorough seaman and scientific officer, fully concurs, as well as Captain Cooper, of the *Simla*, and many other able and experienced men.

At 9h. 35m. discharged our pilot, and stood S.S.E. under sail and steam, three boilers, till 1h. 30m. p.m., when, having a good offing, lifted the propeller and proceeded under sail. Unbent cables. We carried the S.W. monsoon nearly to the line, which we crossed on the evening of the 29th, having commenced steaming with three boilers at noon, at an average speed of six knots, burning 17 cwt. an hour.

At noon on the 2nd of July there were evident indications that we were near the S.E. Trade. Glad we were to get away from the calms and doldrums quickly on account of the debilitated state of the ship's company, the effects of constant exposure to the sun in the early part of the commission, with a marvellous indifference to the consequences quite beyond my comprehension. It is this that keeps our sick-list up full fifty per cent. beyond what it ought to be, although not so high as it used to average in China.

10th.—Threw overboard a bottle paper. The Trade wind, which at first was pleasant enough, soon freshened into a gale, accompanied by a nasty sea, bringing our craft to close-reefed topsails and courses; but the worst is now over, and the rising of the barometer shows that we are approaching the southern limit of a cyclone.

On the 12th we crossed the tropic, and the cape pigeons and hens made their appearance, as well as an albatross. The wind gradually declined till the 17th, when it fell calm for a short time, and on the 18th a breeze sprang up from the northward and settled eventually in the N.W.; so we have our long wished for fair wind at last and can commence to make our easting, after being driven into 67°.

On the 20th we were about 150 miles from Amsterdam Island, and had the misfortune to lose a man overboard about 3h. p.m. We had been busy all day setting up hawsers as additional topmast backstays, and the men employed in the chains were strictly forbidden to go outside without bowline knots. Unfortunately, Henry Quartermaine, A.B., threw his off, and a heavy sea striking the main chains shortly

after, knocked him overboard. We rounded to and let go the life-buoy, which the poor fellow never reached; but to lower a boat was impossible, and with heavy hearts the helm was put up, and thus a fine young man, in the prime of life and beloved for his many good qualities, was taken suddenly from us, owing to his own forgetfulness. The event cast a gloom over the ship!

During the next ten days we had strong winds, with a very heavy swell from the S.W. On the 30th we were in the longitude of Cape Leeuwin, about 350 miles to the southward, and a wicked sea on.

August 1st.—Since crossing the line we have not seen anything except H.M.S. *Pelorus*, which was to have sailed from Trincomalee two days before us, also bound for Australia, and we have already exchanged colours twice, viz., on the 6th and 21st of July. An immense flock of whale-birds passed the ship yesterday. This morning the wind changed to the N.E., bringing fog; which, however, did not last long, and was succeeded by a heavy gale from the northward, veering to West, when it gradually subsided. The barometer gave timely warning: it commenced falling at 8h. a.m. on the 1st, and continued gradually going down till about midnight of the 2nd, when Adie, 286, stood at 29.40, its lowest point. Shortly after daylight on the morning of the 3rd, in a heavy scend, a sea filled the galley, which was hoisted up astern, and one of the keel bolts breaking, she speedily disappeared.

The breeze died away to a calm on the evening of the 5th, bar. 30.40, when it began to fall steadily, and as it fell the wind rose, till at midnight of the 7th it blew furiously from the northward. At 6h. a.m. of the 8th the gale was at its height, bar. 29.40 as before; in fact, the intervals of time in these two gales, during the alterations of the force of wind as well as the alteration of the barometer, corresponded exactly.

The pipe of the surface cock of the starboard boiler has worked loose and been the cause of a leak, which increased to seven inches an hour and occasioned some anxiety before it was discovered. We tried to stop it by driving a fir plug from the outside, but the scheme failed, as the wood round it was rotten; so steam was got up in one boiler for the donkey to keep the ship free, and fill up our water, which was getting low, at the same time. As if we had not enough on our hands, the rudder must begin to give trouble, and the carpenter reports the upper pintle broken from the way the head works. This will have to be looked to at Sydney.

Shortly after noon on the 9th we sighted King Island; but as the wind came dead on end for our port, commenced steaming at 2h. 30m. p.m. with three boilers. Passed Cape Otway soon after sunset without seeing the revolving light; and proceeded easy, sounding at 10h., midnight, and 2h. a.m., in 45 to 41 fathoms. About 2h. 30m. a.m. on the 10th the light recently established on Cape Schank, a beautiful fixed and flash light was visible bearing E.N.E.; and shortly afterwards those on Port Phillip Heads, Shortland Bluff, bearing N.E.½N. At daylight we took a pilot on board from a

schooner stationed off the heads (two cutters are also employed on this service) and stood in.

There is a strong ripple in the narrow channel between the heads, caused by the irregular bottom, which renders the passage rather difficult, if not dangerous, with an ebb tide running against a breeze in; we took the flood and were soon across it, and now a magnificent sheet of water opened before us. The harbour of Port Phillip, the most magnificent in the world, is little short of a hundred miles in circumference—quite an inland sea, with good anchorage everywhere, excepting on certain shoals near the entrance, which are well buoyed and lighted, so that vessels of almost any size can navigate it at all hours, day and night; and it may be here noted that all the buoys, beacons, light-vessels,—everything, in short, in the harbour-master's department, appear to be in admirable order, reflecting the greatest credit upon this officer.

We left Shortland Bluff on the port hand. Close to the upper light-house is a flagstaff, to which we made our number, on demand, and it was doubtless flashed off immediately to Melbourne, as the electric telegraph is laid down from thence, and communicates even with Sydney. Here most of the pilots live, together with the health officer, who came off and gave us pratique; and a very pretty little town has sprung up, called Queencliffe, which in summer attracts numerous visitors for sea bathing. On the opposite side a sandy dune extends for miles, and there the quarantine establishment is situated. The buildings make a grand show, and it was said they were perfect in a sanitary point of view, no expense having been spared,—certainly money seems to be no object here.

At 7h. 30m. a.m. we passed the Heads, from whence Hobson Bay, the port of Melbourne, is distant thirty-three miles, and from the inner light ship twenty-one miles, N.b.E.; which course we steered, leaving Geelong, situated at the end of a long inlet, on our port hand, but too far off to be visible. As we drew up to the bay the scenery became interesting: the Macedon Hills were prominent in the distant outline; to the right were the picturesque watering-places of Brighton and St. Kilda, connected by railway with the capital,—we could see the trains running, vividly reminding us of Old England; right ahead was a forest of shipping, with the spires of this new commercial emporium, this Liverpool of the southern hemisphere, looming behind it. We passed a fleet of coasters, chiefly colliers of the North country type, bringing supplies of the black diamond from another "Newcastle," and a little before noon anchored in four fathoms, close to a jetty outside the government pier at Williamstown.

In the afternoon proceeded to Melbourne by the Sandridge Railway, two miles and a half long, from the jetty, alongside of which vessels of the largest size can lie afloat. It was a busy scene at the landing-place. Stevadores contract to unload the cargoes, bring their little American engine down abreast the ship, and in an incredibly short time clear her out. The goods are landed on the rail, and taken away as fast as the trucks are filled with marvellous despatch,—but every

thing progresses at railway pace here. A small steamer in connection with the Sandridge Railway crosses the bay to Williamstown on the arrival of every train; so that place has two railways uniting it with the capital, the trains running every quarter of an hour throughout the day.

The Sandridge Railway, which includes the Brighton and St. Kilda branch, crosses the Yarra Yarra a few yards below the handsome stone bridge which, when built, was considered a wonder for this hemisphere; now it is not half large enough for the traffic, and, owing to the numerous accidents that take place from furious driving, vehicles are forbidden to travel faster than a walk across it. The terminus is on the banks of the river, a short distance above the dam which stops the navigation above that point; vessels drawing twelve feet, and even more, at extraordinary high tides can come up to it, and the quay was lined with craft, chiefly coasting steamers.

Melbourne is a wonderful place. Its rapid growth, unequalled even in America, is almost enough to turn the heads of the people, and certainly has fostered a spirit of pride, which may one day, if the gold fields fail in their supply, have a fall. At present everything is advancing by rapid strides indeed, the modest houses first erected are giving way to magnificent edifices which may vie with those of London and Paris. Palaces for the legislature, public offices, a treasury, public library, and museum already built or building upon the grandest scale, attest the wealth of the government; while the churches—that of the Wesleyans especially, the banks, and huge warehouses are proofs of the opulence of the inhabitants. The first stone of a post-office, which will make that in St. Martin's le Grand look very mean indeed, was laid during our stay.

Hiring a cab, not unlike an Irish car, we drove to Toorak, about four miles (the fare was £1 sterling), to report arrival to H.E. Sir Henry Barkly, the Governor, who resides there. The government house is about the same calibre as that of an English squire of £5,000 a year, but costs the government that sum for rent alone! An excellent road leads to it, past the new barracks (not yet half built), by pretty suburban villas, which appear as if they would one day be swallowed up by the huge city, which is extending in all directions. A large tract of land has fortunately been reserved for a park, and a beautiful ride—a Rotten Row—extends beside it for a considerable distance. To the right is Emerald Hill, the site of an embryo city, which already boasts its municipality. Ten years ago not a house existed there; now it has a railway, gas, a well organised police (not before it was wanted); the swampy ground also which surrounded it on nearly every side, is fast disappearing, and in a few years more, even at the present ratio of increase in the population, this quondam wilderness will become another hive of industry.

12th.—It was my intention to start for Sydney to-morrow morning, when a communication from the Governor sent me in the opposite direction. Intelligence had been received by the telegraph that a coasting steamer, called the *Admella*, on her way here from Adelaide,

had run upon a reef about twenty-five miles to the N.W. of Cape Northumberland, and that the crew and passengers were exposed to a lingering death from starvation, having been seen for upwards of five days clinging to the wreck, which no boat could approach, and no communication could be effected with them without the aid of rockets, owing to the tremendous surf. His Excellency, therefore, at the request of a deputation from all the merchants and traders of Melbourne, called upon me—"for the cause of humanity," the requisition stated—to proceed immediately to the assistance of these unfortunate people.

Although it was my opinion that, owing to our distance, nearly 300 miles, from the locality and the length of time that had already elapsed since the wreck took place, any assistance in my power to offer would only arrive too late, the appeal was not to be disregarded. Accordingly, availing myself of the proposal of a Captain Lawrence, an old experienced navigator in these seas, to act as pilot, thirty tons of coal and a whale-boat belonging to Sandridge were taken on board, and we started before midnight on the expedition, picking up the life-boat stationed at Shortland Bluff *en passant*. By daylight we were outside the Heads, but a delay took place, owing to the impossibility of towing the life-boat astern, and we had to hoist her in, which was no easy job, and occupied a considerable time.

Besides Captain Lawrence, several other gentlemen, relatives of the unfortunate passengers in the *Admella* were with us. They stated that the details which had come almost hourly by telegraph from Mount Gambier were frightful,—though, as it turned out, they fell far short of the reality,—and that the excitement in Melbourne had been worked up to the highest pitch—in fact, all business had been suspended. During the day the wind freshened continually from S.W., right in our teeth, and with all four boilers, burning coal at the rate of fifty tons in twenty-four hours, we made but slow progress. At 4h. p.m. we rounded Cape Otway, wind and sea steadily increasing, speed reduced to four knots. At sunset spoke the *Havilah* (s.s.), from Adelaide to Melbourne: she had not been to the wreck.

Sunday, 14th.—The land was in sight at daylight, and we stood in for Portland Bay, some fifty miles short of the locality of the wreck, which is just to the westward of the Carpenter Rocks, directly opposite Lake Bonny,—intending to get the life-boat out in the smooth water, as it would have been impossible to do it with the heavy sea running outside, and tow her the rest of the way. There is a remarkable rock or islet at the western extreme of the bay, called Lawrence Rock, which makes like a castle or fortified tower, and the scenery after passing it reminded me of Torbay.

At noon we fired a gun off the settlement, which brought out the harbour-master, Mr. Fawthrop, and from him we learnt that the remnant of the *Admella's* crew and passengers, numbering twenty-four, out of a total of eighty-six, had been rescued (mainly by his own exertions, though he did not mention this) yesterday morning,

and were now being landed from the steamer *Lady Bird*, which went to the wreck with the life-boat belonging to this place.

The fate of those lost was dreadful, and the accounts given by the survivors too shocking to dwell upon, as will be evident from the case of one poor fellow, the son of one of my passengers, who in a fit of delirium, brought on by drinking salt water, threw himself overboard, and was speedily devoured by the sharks which swarmed round the wreck. *Ab uno disce omnes.*

Let go the anchor in seven fathoms about three-quarters of a mile from the beach, and landed, with Dr. Patrick, the Surgeon, in order to render all the assistance we could. Our services, however, were not required. Everything had been done already by the Good Samaritans of this flourishing little place to alleviate the misery that had been brought to their doors. The owner of the *Lady Bird* asked me, however, for a supply of coal, about ten tons,—a requisition which was immediately complied with. At 6h. 30m. p.m. we started, under sail only, on our return to Melbourne.

Before leaving Portland Bay rambled through the town with Mr. Henty, the richest proprietor and oldest inhabitant. He pointed out with no little pride the first house built in the colony of Victoria; built and occupied by himself before Melbourne was thought of or Port Phillip even discovered. In those days, some five and twenty years ago, this was a mere whaling station; now it is an important commercial mart, exporting a large quantity of wool and agricultural produce, both annually increasing. It was painful to find that much apprehension existed relative to the security of the town in the event of a war, and not without reason. There is nothing at present to hinder any privateer from sacking the place, and the contents of the banks alone, of which there are several, would be a rich booty.

We had a fine fair wind and plenty of it, and averaged fully eleven knots all night. Passed Lady Julia Percy Island, the eastern limit of Portland Bay, at 8h. p.m.; rounded Cape Otway at 4h. a.m.; but the wind fell light as we drew up to the Heads, and, being anxious to save the tide, the propeller was lowered, and at 1h. p.m. we proceeded under steam and sail, anchoring in Hobson Bay at 4h. 45m. p.m., a little over twenty-two hours from Portland.

Returned the life and whale boats to the authorities, who would not hear of paying for the thirty tons of coal we had taken on board, and would not have grudged ten times the quantity, or anything necessary to any amount, such had been the extraordinary excitement.

And now, before dismissing the subject of this dismal wreck, let it not be forgotten, and it is here duly recorded, that there can be no doubt the *Admella's* loss was owing to some unusual current setting from S.W. to N.E. The usual courses had been steered from the time of her leaving Adelaide, precisely the same as had been done ever since the vessel first plied on the station, so that at the time she struck she should have been fully fifteen miles off the land, or even further, as she was kept out for an hour to secure one of the race-horses on board, which got adrift. But what is confirmatory of the

existence of this current is the narrow escape of the P. and O. Co's. steamer *Bombay*, the night after the *Admella* struck, which ought to be considered sufficient; and that it was a narrow one the following statement, made by more than one of the survivors, amply proves:—

“On Saturday night, between seven and eight o'clock, it being then dark, the forty or fifty people then on the wreck observed the three lights of a steamer bearing down towards them, and in about five minutes afterwards the large black hull of the mail steamer *Bombay* so close, that everyone cried out, ‘Oh! here's another vessel on the reef!’”

The story of the *Admella's* loss and this dear-bought experience ought therefore to satisfy everyone navigating this coast that, under certain conditions, fifteen miles is not a sufficient offing for even a fast full-powered steamer.

After taking leave of Sir Henry Barkly, returned to Williamstown by the government railway, the main line of which goes to Sandhurst, Ballarat, Mount Alexander, and other “diggings,” with a branch to Geelong, about forty miles in length. When the government pier and breakwater are finished, this will be a formidable rival to the little Sandridge line, as vessels of the largest size may be unloaded alongside the pier, with perfect shelter from all winds and from a heavy ground swell which sets into the bay occasionally. The government boat-building establishment or dockyard is here, and there is a patent slip close by which will take up a vessel of a thousand tons.

We obtained our supplies of fresh beef from the government contractor, Mr. Bayes, the contract price being 3½d. per lb.

IN-SHORE CURRENTS OF THE BAY OF BENGAL:—*Remarks by Lieutenant J. A. Heathcote, I.R.N.*

[The following judicious remarks on the inshore currents of the Bay of Bengal in the S.W. monsoon, by Lieutenant Heathcote, of the Indian Navy, will be appreciated by seamen: to whom the experience of this officer in East India navigation will give them additional recommendation.—ED.]

Enfield, N., 7th January, 1862.

Sir,—The traffic of the Bay of Bengal, embracing as it does some of the chief places of trade in the East, is greater and more important than that of any other portion of the eastern seas. The numerous vessels of all kinds engaged in this traffic have long suffered from a want of information on the currents prevailing in this sea. The subject has not hitherto received the particular attention it requires. Horsburgh has given some general account of the currents, and physical geographers of later date have adopted his statements; but these,

in some instances, were not based on actual experience, and have not always proved correct. They have, however, served to excite a thirst for further information; for they tell that currents do prevail of such force, but especially during the S.W. monsoon, as to be a source of great danger or of great advantage, according as a knowledge of their limits and direction will enable the navigator to avoid or make use of them.

Any information on this subject will therefore, I am sure, be gladly received; and as I have been for some time engaged in gathering from reliable sources a collection of facts and observations which may tend to a more exact knowledge of the currents of the S.W. monsoon, I trust that a few remarks thereon may not be out of place in the *Nautical Magazine*. They may anticipate but cannot supersede the chart which I have reason to believe will shortly be published by the Admiralty Hydrographical Office.

The "northerly and north-easterly movement," which has been described as setting generally over the entire surface of the Bay of Bengal, during the S.W. monsoon has many modifications. From False Point to lat. 18° N., and nearly to Vizagapatam, within thirty miles of the coast the current sets with considerable force to the southward from $\frac{3}{4}$ to $1\frac{1}{2}$ knot per hour; outside this line it turns gradually to the E.N.E. until it approaches the coast of Arakan, when its direction is more to the northward until, in the immediate vicinity of the land, it sets strongly along the coast to the N.N.W., sometimes as much as 2 knots an hour. This is a dangerous current for vessels making the port of Akyab, especially for those heaving to to the southward of the port during the night; in which case it will be necessary to be very careful that the vessel be not drifted too near to the Rocky Patch and Oyster Reef.

There is an important current, the limits and varying direction of which it is difficult to describe properly without a chart, which begins in lat. 18° N. and long. 90° E. and sets to the S.E. and S.S.E. from $\frac{3}{4}$ to $1\frac{1}{2}$ knots per hour as far as the channels North and South of Preparis Island, where it turns to the eastward. From the eastern edge of this current the waters turn off to the eastward and north-eastward until, as they approach the coast of Pegu, they become governed by the contour of the land, and take its direction to the North and N.N.W., joining eventually the current already described on the coast of Arakan. In the South Preparis Channel it is met by a current which, from long. 85° E., is carried across the bay in the parallel of 14° N., and then sets strongly towards the Gulf of Martaban. This current may be of great advantage to vessels from Calcutta to Rangoon or Moulmein, or to Penang and the Straits of Malacca, as it will materially help them to the southward against the wind. Its eastern extreme should, however, be avoided, as a vessel may there be diverted from her right course.

To the East of the Great Andaman there is a northerly current of from $\frac{1}{2}$ to 1 knot per hour, but this does not extend more than fifty miles from the island; and to the eastward of it, again, the currents

are found to be very irregular, with high riplings. This irregularity is probably the result of the flow of the currents round the North and South extremes of the islands, which, meeting here, cause eddies such as are always observable where water in motion meets an obstruction such as is here presented by the Andaman Islands.

Through the Mergui Archipelago and for forty to fifty miles to the westward of the islands the current sets to the South and S.E.

Between the Andamans and the Mergui Archipelago, in the middle of the sea, there is a north-easterly current of $\frac{1}{2}$ to $1\frac{1}{2}$ knot.

From long. 95° E. and lat. 10° N. a south-easterly current sets at the rate of $\frac{1}{2}$ to $1\frac{1}{2}$ knots per hour to the entrance of the Straits of Malacca.

Off the North coast of Sumatra the S.W. monsoon current sets W.N.W. and West, following the line of coast.

Between the Great Nicobar and Acheen Head there is a current setting S.W. and W.S.W., in the teeth of the monsoon, at the rate of $\frac{1}{2}$ to $1\frac{1}{2}$ knots per hour. This current extends almost to 92° E., and as far South as lat. 5° N. It has hitherto been but little known, but will prove of great advantage to vessels going westward during the S.W. monsoon. On its northern edge, where it meets the ordinary N.E. current, strong riplings are observed.

On the Coromandel coast, from Point Calymere to lat. 15° N., the current of the S.W. monsoon in the vicinity of the land sets to the northward; from lat. 15° N. it sets to the north-eastward as far as Gordemare Point, whence it trends in an easterly, and afterwards a north-easterly, direction across the bay. About thirty miles off the coast the northerly current turns to the north-eastward.

From the S.W. coast of the Indian Peninsula the current of the S.W. monsoon runs to the S.S.E. and S.E. as far as the S.W. corner of Ceylon; but on the line from Cape Comorin to Point de Galle it turns to the N.E. and North into the Gulf of Manaar and must be avoided.

Off the South coast of Ceylon it runs strongly to the eastward, sometimes as much as 2 knots an hour; but to the South of the parallel of 5° N. it takes an E.S.E. direction, which it keeps as far as $90\frac{1}{2}^{\circ}$ E., when it takes a still more southerly course.

The statement of Keith Johnson, following Horsburgh, that during the S.W. monsoon the current flows North along the East coast of Ceylon is erroneous, for a strong current is there experienced to the S.S.E., taking more or less the direction of the coast. It is felt as far as thirty-five to forty miles off the land, and runs sometimes from thirty-six to forty miles in twenty-four hours, at other times as little as twelve to fifteen miles. This current is another which, when known, may be made useful to vessels proceeding to the southward at the most unfavourable season of the year. The set from the eastern edge of this current turns again to the N.E.,—as does also from the Basses the general set of the waters across the bay. Between the parallels of 5° and 6° N. the direction is, however, less northerly, or

E.b.N. and E.N.E., as far as 92° E. ; and to the South of the parallel of 5° N. it is E.S.E., and as before mentioned.

I am well aware that no written description of the extent and direction of currents can convey so correct or satisfactory an idea of them as a representation on a chart. I trust, however, that these few notes, though incomplete, will not be without their practical utility.

I am, &c.,

J. A. HEATHCOTE, *H.M. Indian Navy.*

To the Editor of the Nautical Magazine.

AN OUTLINE OF SOME PRINCIPAL POINTS OF INTERNATIONAL LAW.

By H. C. Becher, Esq., Q. C.

[Some observations on the subject of international law at the present moment may not be out of season, when an appeal has so recently been made to those customs and usages on which it is founded in reference to the late affair of the Royal Mail Steam-Packet Company's ship *Trent*. The subject has been taken up at London, in Canada West, by a gentleman of the bar in that country, and not very far from Lake Erie. We therefore preserve the following remarks, which he made in the course of his lecture.—ED.]

International Law was defined as the customary law which determines the rights and regulates the intercourse of independent states in peace and in war, as founded on custom and implied compact,—the unwritten law, in fact, established by the consent of nations. Its repositories were history, treaties, proclamations, marine ordinances, and decisions of prize courts; its subjects were sovereign states. The objection urged against it as law is that it can be no law, because there is no common superior authority acknowledged between nations. But the means of enforcing the law were found, and independent of such means there was the law. The lecturer alluded to the various writers upon the law and its origin and perfection. Grotius, a writer born in the sixteenth century, was specially mentioned. He then treated his subject under two heads—the pacific, and the belligerent rights of nations.

The first of these formed the right of security, independence, equality, and property—all of which were defined and dilated on. As incidental to the first, the doctrine of intervention was explained, and allusion was made to the system known as the "balance of power."

International pacific rights, those of legation and negotiation, were explained. The learned lecturer then proceeded to the consideration of the belligerent rights of nations. To redress their injuries, nations had recourse to reprisals or to war. The former were defined at length: a positive reprisal consisted in seizing persons and effects be-

longing to another nation in order to compel them to give satisfaction. The contemplated course of England with regard to Mexico seemed to partake of this character. War, he said, "was defined by Vattel as "that state in which we prosecute our rights by force." Various definitions of war were given, perfect and imperfect, civil and national, offensive and defensive. Civil war, it was observed, was a public war as far as the existing government were concerned, but a private one on the part of the insurgents. The sovereign power alone could make war, and civil war was an exception from this.

The custom of declaring war went far back into antiquity: the Romans practised it, and it was long continued; but the present practice was for the State with whom the war commences to publish a manifesto within its own territories, stating the existence of hostilities and the reasons for them.

The seizure of persons and confiscation of enemy's property within its own territory was a clear belligerent right. Modern usage had, however, modified this. All trade between belligerent nations, unless authorised by their governments, was prohibited. The law prohibited all cruelty not absolutely necessary for the ends of war, which were to protect nations in the enjoyment of their just rights. The employment of Indians had been much decried; but the Indians of the present time had been subjected to civilising influences; they were employed by the government in 1837, during the occupation of Navy Island, and from three weeks' observation of them then, he (the lecturer) could bear testimony to their order and good behaviour. Should a war unhappily occur between England and the United States, he had no doubt they would be employed on both sides.

The laws of war were then discussed. The lecturer alluded then to privateering; it had been carried further by the Americans than any other nation. During the last war with Great Britain, the State of New York passed an act constituting every association of five persons desiring to embark in the trade of privateering a body corporate. In the late war with Russia there were no privateers. The law prohibits certain modes of warfare: such as poisoning, assassination, and, according to Martens, the loading of cannon with pieces of iron, nails, &c. To this latter treatment the inhabitants of Amherstburgh, on the Detroit River, had been subjected in 1837, by the pirate schooner *Anne*. He next referred to the treatment of prisoners of war: exchanges, of releases on parole, and the penalty of death attaching to a prisoner taken as a spy; and here he made feeling allusion to the case of Major André, reading the English account of it, and also that given by Washington Irving.

As to warfare at sea and on land, Mr. Becher observed there was a wide distinction. In maritime warfare, the object was the destruction of the enemy's commerce and navigation. This was only attainable by capture and confiscation of private property, while the object of war by land was conquest or the acquisition of territory. As to the enemy's property, in the rigour of international law, to capture or destroy this is lawful. But this has been much modified by the humane

usages of nations. The distinction, however, between land and sea operations was not to be forgotten.

Laying waste an enemy's country was only justifiable when necessary for the success of military operations; a departure from these usages was sometimes justifiable under the *lex talionis*, or law of retaliation, which was considered of much influence in restraining excesses in modern warfare. The case of Captain Asgill in the American Revolutionary war; the drawing lots among the Federal prisoners lately as to who should be put to death in the event of the sentence being carried into effect against the Southern privateersmen convicted of piracy, and the burning of the summer palace of the Emperor of China, were cited as instances.

As to the title to property captured, possession for twenty-four hours seems essential to its transfer to the captors. In the case of ships and goods, however, taken at sea, the title does not pass until the validity of the capture has been confirmed by a competent prize court of the captors' government, sitting in its own country. Time, Mr. Becher said, prevented him touching upon the law of embargo, of licences to trade, of recognition, extradition, and other topics, and he could but shortly notice the law of blockade. Blockade was defined as "a sort of circumvallation round a place, by which all foreign connexions and correspondence were, as far as human force could effect it, entirely cut off." In order that the law should apply, it was necessary the blockade should be actual. To enter or quit a blockaded port, with a cargo laden after the commencement of the blockade, was punishable with confiscation of the ship and cargo. This brought him to the consideration of the rights of war regarding neutral nations. These nations were those who in time of war remained the friends of both belligerents without favoring the arms of either. Hostilities could not be lawfully exercised within the territory, land or water, of a neutral state. There was an exception to this rule, however, laid down by writers on the subject: and it was well exemplified by the circumstances which led to the capture of the steamer *Caroline*, at Port Schlosser, in 1837. He then read this case from Phillimore's *Law of Nations*, page 189. He next referred to the duties of neutrals not to permit the arming and equipment of ships or troops within their territory. With us this was forbidden by the Foreign Enlistment Act, the Imperial Act 59 Geo. III. cap. 69. He referred to the case of Colonel Rankin, and supposed that that case was not proceeded with because the 9th section of the Act provided only for the trial of offences committed against it out of the United Kingdom, before the court of Queen's Bench at Westminster.

As to the commerce of neutrals with the enemy, they had a right to carry on their general commerce, and even to carry the enemy's goods from the enemy's country to their own, without subjecting the ship or any neutral goods on board to confiscation.

A belligerent was entitled to seize an enemy's goods on board a neutral vessel. It had been, however, frequent in commercial treaties, to stipulate that *free ships should make free goods*, and thus this prin-

principle, like many others of international unwritten law, had been modified by convention. The principle of free ships making free goods was recognised in 1854 by England, and adopted by France and Russia. France renounced her right of confiscating neutral property on board Russian ships, and England that of confiscating Russian property on board of neutral ships. This liberal doctrine would, perhaps, be entirely adopted, and govern belligerents in future wars. He would refer to the order in council as to our part of this matter presently.

But this freedom of commerce did not extend to *contraband* of war, such as warlike stores, *anything auxiliary* to warlike purposes. There was a long catalogue of contraband, which he would not go into; articles of food, if going to the enemy's forces, had been adjudged contraband. He then quoted the following from Polson's *Law of Nations*, appendix, 63:—

“Despatches.—To convey to the *enemy's possessions* an official communication of an official person in the service of the enemy, is an act that will expose the neutral carrier to the consequences of engaging in a contraband trade, although if the owner of the cargo, at the time of the shipment, be ignorant the ship is about to engage in such an undertaking, the cargo will be saved harmless. To carry despatches from the enemy to his ambassador, or to his consul in a *neutral country*, is no ground of condemnation.”

The *Caroline*, 6 Rob. 465; the *Susan*, 6 Rob. 461; the *Madison*, Edw. 224, were quoted in support of this.

“*Carrying military* persons subjects the vessel to condemnation.” See the *Friendship*, 6 Rob. 420. This case he would refer to presently. All contrabands were subject to seizure, and, under certain circumstances, carrying them confiscated the vessel. Mr. Becher then read from Levi's *Commercial Law*, p. 87, the order in council of the 15th of April, 1854, respecting the trade of neutrals and British subjects, to which he had before referred, and they would now better understand its bearing.

“To preserve the commerce of neutrals from all unnecessary obstruction, her Majesty is willing, for the present, to waive a part of the belligerent rights appertaining to her by the law of nations.

“It is impossible for her Majesty to forego the exercise of her right of seizing articles contraband of war, and of preventing neutrals from bearing the enemy's despatches; and she must maintain the right of a belligerent to prevent neutrals from breaking any effective blockade which may be established with an adequate force against the enemy's forts, harbours, or coasts.

“But her Majesty will waive the right of seizing enemy's property laden on board a neutral vessel, unless it be contraband of war.

“It is not her Majesty's intention to claim the confiscation of neutral property, not being contraband of war, found on board enemy's ships; and her Majesty further declares, that being anxious to lessen

as much as possible the evils of war, and to restrict its operations to the regularly organized forces of the country, it is not her present intention to issue *letters of marque* for the commissioning of privateers."

The lecturer then illustrated the mode of proceeding in Prize Courts. He took the case of the *Friendship*, above cited, because there was something in that case that was of interest at present.

The case came on in the High Court of Admiralty in 1807, before Sir William Scott, afterwards Lord Stowell.

She was an American ship, bound from Baltimore and Annapolis to Bordeaux, with a very small cargo of fustic and staves, and with ninety passengers, eighty-four of whom were French soldiers.

She was captured by a British cruiser, and her condemnation was sought on the ground that, in point of fact, she was a transport carrying these soldiers to France.

Her owner, a Frenchman by birth, but a subject of the United States, claimed her, and alleged the innocence of her trade, denying she was a transport, or engaged in that service, alleging the soldiers were chance passengers.

Sir William Scott condemned her. The following part of his lordship's judgment will be received with interest:—Under these circumstances, I am of opinion that this vessel is to be considered as a French transport. It would be a very different case if a vessel appeared to be carrying only a few individual invalided soldiers, or discharged sailors, taken on board by chance, and at their own charge. Looking at the description of the men on board, I am satisfied that they are still as effective members of the French marine as any can be. Shall it be said, then, that this is an innoxious trade, or that it is an innocent occupation of the vessel? It is asked, Will you lay down a principle that may be carried to the length of preventing a military officer in the service of the enemy from finding his way home in a neutral vessel from America to Europe? If he was going merely as an ordinary passenger or as other passengers do, and at his own expense, the question would present itself in a very different form. Neither this Court nor any other British tribunal, has ever laid down the principle to that extent. This is a case differently composed. It is the case of a vessel letting herself out in a distinct manner, under a contract with the enemy's government to convey a number of persons, described as being in the service of the enemy with their military character. I do with perfect satisfaction of mind pronounce this to be a case of a ship engaged in a course of trade which cannot be considered to be permitted to neutral vessels, and without hesitation pronounce this vessel subject to condemnation."

The fustic and staves were condemned also.

Next came the right of visit and search, This, said Mr. Becher, in time of war was a most undoubted right on the part of the lawfully commissioned cruisers of the belligerent states. They could lawfully stop and search all neutral private vessels for the purpose of seeing whether or not they were employed in the enemy's service.

So clear was this right, that resisting it by force subjected the resisting vessel and her cargo to condemnation.

The ships of war or public vessels of neutrals were not, however, subject to this right.

Public law prescribed that neutral vessels must in time of war be subject to this inconvenience, and it was sometimes hardship, but oftentimes neutral carrying ships wilfully broke the law, and so were justly amenable to it.

He had read in an American history that the United States, between the years of 1803 and 1811, had lost no less than nine hundred ships taken as prizes, he supposed chiefly by Great Britain, and no doubt for running blockades or carrying contrabands, as the United States were then at peace.

Phillimore was next quoted (vol. iii. p. 320) to show the mode of summoning the neutral ship to undergo visitation, by the firing of a shot on the part of a belligerent.

Mr. Becher next spoke of the difference of opinion that had arisen between England and the United States on the subject of the right of search. Those connected with the slave trade had been settled by treaty.

The right which England, in the time of her great peril, had asserted as a belligerent to search all public and private vessels suspected of harbouring deserters from her army and navy, and which was said to have been one of the causes of the last American war, had been incidentally discussed in 1842 between Lord Ashburton and Mr. Webster, in the correspondence relating to the boundary line of Maine, but no conclusion, as to it, seemed arrived at.

Mr. Becher then concluded thus:—What I have now said was intended by me as bearing upon the general principles and outline of the subject I have selected, not as applying to any particular case; but I am sure there would be disappointment if I said nothing about the case of the *Trent*, which is now occupying so much public attention, and which may, though God forbid it, involve two great nations in war. What is this case?

It is this: the *Trent*, a British mail steamer, protected from molestation by a treaty between England and the United States, carrying mails and passengers, as I understand it, between the ports of Havana and St. Thomas in the West Indies, both neutral ports, is stopped in the Great Bahama Channel by the United States ship *San Jacinto*, and two Americans (Southerners), Messrs. Slidell and Mason, two of her passengers, who were, without metaphor, under the protection of the British flag, are by force taken out of her. If we stop here this is enough for the law of the case. But then in a popular view it is made worse.

Captain Wilkes, of the *San Jacinto*, is lauded for taking these parties prisoners in a way that would make one suppose he had done an act of the most wonderful heroism, instead of (supposing he was right) a mere act of police. Why is this, and am I uncharitable in attributing it all to the fact that he took his prisoners by force out of

a British ship? What I am saying on this subject is not for the purpose of creating excitement on the topic,—*I would rather allay it.* The matter is not in our hands, it is in those of British lawyers and statesmen, in whose wisdom, justice, deliberate judgment and patriotism we all have the fullest confidence.

We know they will exercise these qualities in dealing with it, and that the honour of Old England is safe in their hands.

Whatever the result may be,—God grant it may be peace! we shall abide by it. We owe allegiance by duty, and we give it with all our hearts to our Queen; to that glorious old country from which we all spring; that country which we know to be the noblest, the freest, the greatest on earth; to that country whose “flag has for a thousand years braved the battle and the breeze,” upon whose dominion the sun never sets; and if war there must be, if those who ought to be our friends will be our enemies, Canada will rise as one man to take part in the struggle, and prove herself no unworthy portion of the British Empire.

We find the foregoing in a Toronto paper, being a mere sketch of the principal points of the lecture, one the reception of which was gratifying both to the lecturer and his hearers, according to the remarks made on it as it was delivered. The concluding observations have been since well justified by the organization of a force of 70,000 Canadian Volunteers, showing that Canada, as was observed, is true to the core as to her allegiance to the British Crown. The occasion, however, which gave rise to this demonstration is happily passed over; it was justified by that occasion which is now gone by, and happily that peace which has been enjoyed for many years is not to be disturbed,—*sit perpetua.*

THE COMPETITIVE TRIAL OF CHRONOMETERS—*at the Royal Observatory.*

The annual trial of skill among the makers of chronometers commenced with the year 1821, continues as usual, having been attended by the results that were anticipated. It has been the means of gaining a thorough insight to the best practical construction of the chronometer, the evils to which its derangement is most to be attributed, and the best mode of guarding against them. In the early days of these trials, when the chronometer was scarce and its makers few, the reward for improvement was considerable in amount. When the best chronometer gained a price little short of a hundred pounds, even although its performance then was not equal (speaking generally) to what it is at present, the premium of £300 was considerable,—but perhaps not greater than was justified by the then condition of the

art along with its importance. In those days there were two prizes, one of £300 and another of £200. In eight years, or in 1829, these two sums were divided into three prizes,—one of £200, a second of £170, and a third of £130; the excellence then attained not being confined to one or two chronometers, but participated in so nearly as to render the chronometer that was only a tenth of a second perhaps short of the second premium, as good a chronometer for real service as its successful rival. But that a certain degree of perfection had been gained, or that it was not to be surpassed, was shown in a few years, and with the trial of 1835 the premiums were discontinued, but competition went on; the government required chronometers for the use of our navy, the *annual trial* at the Royal Observatory went on, and the higher the merit of a chronometer the higher was the price it obtained for its maker.

Still, although continuing to purchase chronometers on this principle of merit and fair competition, the distinction gained by the best chronometer is seen to be more deserving of an honorary character than it had hitherto gained. The merit of the chronometer in a good or bad trial was always acknowledged,—but whether the good trial had found its winner, or whether that winner had surpassed those of former years, remained unknown. And looking on the subject in all its importance to the sciences, it seemed to be the part of the first maritime power of the day not only to keep alive the spirit of competition in the art, but to mark the successful efforts towards surpassing the perfection already attained in it by an honorary acknowledgment of that perfection in the offer of a corresponding price for the purchase of the chronometer which had gained it. Thus PROGRESS in the art would be indicated, while at the same time it would receive its reward—and not only this, but the state of the art for any year would be at once apparent by the prices awarded by the government in that year. This will at once be evident when it is considered that there will be four leading points for guidance. 1. That no honorary price has been gained. 2. That *one* honorary price only has been gained. 3. That the *two* honorary prices have been gained; and 4. That the differences in relative merit have been so small as to justify *three* honorary prices. Hence, besides the consideration that the first honorary price may be considerable on account of preeminent merit in any year, there are these steps to decide the character of the art in that year. It may be so low that no honorary price has been awarded; again, it may be an ordinary year in which one or two honorary prices have been given; or again, it may be an extraordinary year, in which the chronometers have gone so well as to claim three honorary prices. Thus *progress* in the art will be encouraged,—thus the persevering painstaking maker will be rewarded, and thus the public service will be benefited and the public served by the improvement of the art.

Under these considerations, the following notice has been sent to about 150 chronometer makers of the kingdom, including all who have desired to place their chronometers on the trial, and from which no chronometer maker is excluded. Thus the competitive trial is really

now again established by the annexed notice on a fair and liberal foundation of obtaining *public* favour by the actual merits of the chronometer which proves the best practical skill of its maker.

Notice to Chronometer Makers.

It is the intention of the Lords Commissioners of the Admiralty at the conclusion of each of the annual competitive trials of chronometers at the Royal Observatory, in future, to offer honorary prices for the two chronometers which may stand first in the order of merit, provided that their performance during the trial be not below the standard of merit established in former years. But as that standard of merit may not always be obtained by chronometers on trial, their lordships in such cases reserve to themselves the power of withholding the honorary prices for that trial; and in other cases of repeated excellence of the chronometers on trial, they may extend those prices to the three best. The prices offered on all occasions will be determined by the absolute merits of the chronometers.

2. Chronometers intended for the annual competitive trial which is always to commence in January and terminate about the following August of each year, will be received at the Royal Observatory on the first Monday of the year, or on any day of the preceding week, by the usual mode of letter from the hydrographer, between the hours of 9 a.m. and 2 p.m. But no chronometers will be received for the competitive trial later than that day on any account whatever.

3. Chronometer makers are at liberty to annex a price to their chronometers when placing them on the competitive trial.

We annex in conclusion the first purchases of chronometers made from the last three annual trials.

1859.	.....	A 1	.....	£63
	.....	C 1	.....	45
1860.	.....	C 1	.....	45
		More of equal merit—low.		
1861.	.....	B 1	.....	50
	.....	C 1	.....	45
		More of equal merit.		

It thus appears that 1859 produced a superior chronometer to either 1860 or 1861, while the former of these had no chronometer of particular merit.

A NIGHT ON THE GOODWIN SANDS.

“Heaven have mercy on the poor fellows at sea!” Household words these in English homes, however far inland they may be said, and although near them the blue sea may have no better representative than a sedge-choked river or canal along which slow barges drag

on a lazy way. When the storm darkens the sky and fresh gales are abroad, seaward are the sympathies of English hearts, and the prayer is uttered with perhaps a special reference to some loved and absent sailor. It is those, however, who live on the sea coast, and watch the struggle going on in all its terrible reality,—now welcoming ashore, as snatched from death, some weather worn sailor,—now mourning over those who have found a sudden grave almost within call of land,—that learn truly to realise the fearfulness of the strife, and to find an answer to the moanings of the gale in the prayer, “The Lord have mercy on the poor fellows at sea!”

This lesson is perhaps more fully learnt at Ramsgate than at any other part of the coast. Four fifths of the whole shipping trade of London pass within two or three miles of that place; between fifty and a hundred sail are often in sight at once,—pretty picture enough on a sunny day, or when a good wholesome breeze is bowling them along; but anxious withal when the clouds are gathering and you see the fleet making the best of its way to find shelter in the Downs, and a south-westerly gale moans up, and the last of this fine weather fleet are caught by it, and have to anchor in exposed places near the Goodwin Sands.

Let us look back a short period, and select the events of that night for consideration, because, perhaps, never before or since did men and boat live through such perils as the Ramsgate lifeboat crew then encountered; and because, moreover, they seem to illustrate well the danger connected with the lifeboat service on the Goodwin Sands.

The day in question had been very threatening throughout; it was blowing very fresh with occasional squalls, from the E.N.E., and a heavy sea running. The boatmen had been on the look out all day, but there were no signs of their services being required. Still they hung about the pier till long after dark. At last most of them were straggling home, leaving only those who were to watch during the night, when suddenly some thought they saw a flash of light. A few seconds of doubt and the boom of the gun decided the point. At once there was a rush for the Northumberland lifeboat, which was moored in the stream about thirty yards from the pier. In a few minutes she was alongside, her crew being already more than made up. She was overmanned, and the two last on board had to turn out. The cork jackets, in accordance with the regulations of the National Life-Boat Institution, were on each man in the lifeboat, the men were in their places, and all ready for a start in a comparatively few minutes. They had not been less active in the steamer the *Aid*, which was to tow the lifeboat out, and in less than half an hour from the firing of the gun she steamed gallantly out of the harbour with the lifeboat in tow.

Off they went, ploughing their way through a heavy cross sea, which often swept completely over the boat. The tide was running strongly, and the wind in their teeth; it was hard work breasting both sea and wind in such a tide and gale; but they bravely set to their work, and gradually made headway. They steered for the Goodwin, and having got as near to the breakers as they dared take

the steamer, worked their way through a heavy head sea along the edge of the sands, on the look out for the vessel in distress. At last they made her out in the darkness, when the steamer slipped the hawser of the lifeboat, and anchored almost abreast of the vessel with about sixty fathoms of chain out. There was a heavy rolling sea, but much less than there had been, as the tide had gone down considerably. The lifeboat made in for the brig, carried on through the surf and breakers; and when within about forty fathoms of the vessel, lowered her sails, dropped her anchor, and veered alongside. She proved to be a brig belonging to Lisbon.

On reaching the brig they found the Broadstairs small lifeboat under her lee, and her crew of five men on board the vessel. The officers and crew of the ship would not leave her, at first, although it was evident she could not be saved, the lifeboats remained by her until 2h. 30m. a.m., when she filled and began to break up. The Broadstairs lifeboat being damaged and disabled, her crew, together with that of the brig, numbering eighteen in all, were taken into the Ramsgate lifeboat, which, with her load of thirty-one persons including her own crew, and with the small damaged lifeboat in tow, made sail through the broken water across the sands in the direction of Ramsgate, having failed to discover the steamer, which had been for hours cruising up and down the edge of the sands, vainly searching for the boat. Striking heavily on the sands the lifeboat came in contact with the Broadstairs small boat and completed her destruction; but driving safely over the shoals herself, she finally arrived, together with her living freight, safe and sound in Ramsgate Harbour. The master of the steam tug, Daniel Reading, having lost all trace of the lifeboat, lay to until daybreak, under some anxiety for her safety, when he returned to the harbour, where, to his great joy, he found them all safe and right.

The captain of the lifeboat, James Hogben, was chosen for that position for his fortitude and daring; and well he sustained his character that night, never for one moment losing his presence of mind, and doing his utmost to cheer on his men. They consisted of hardy daring fellows, ready to face any danger, to go out in any storm, and to do battle with the wildest waves; but that night was almost too much for their iron nerves. The fierce freezing wind, the darkness, the terrible surf, and breaking waves, and the men unable to do anything for their safety,—the boat almost hurled by the force of the waves from sandridge to sandridge, and apparently breaking up beneath them each time she lifted on the surf and crushed down again on the sand, besides the danger of her getting foul of any of the old wrecks, when she would have gone to pieces at once,—how all this was survived seems miraculous. Time after time there was a cry, "Now she breaks,—she can't stand this,—all over at last,—another such a thump and she's done for!" and all this lasted for more than two hours as almost yard by yard for about two miles they beat over the sands.

Hogben, who was a fine stalwart man, standing six feet high, has been completely disabled by his fearful and daring services as cox-

swain of the Ramsgate lifeboat. Has England no Victoria Cross, no pension, for men who have thus sacrificed their health in saving in lifeboats scores of their fellow creatures from the jaws of death?

This narrative will do its intended work if it teaches any one to realize to himself the dangerous nature of the lifeboat service, and to give a deeper meaning to the prayer which one is tempted to utter as the storm moans and howls over his head. "Heaven help the poor fellows at sea!" Its object will be gained if it finds the reader with the consolation while perhaps enjoying a warm and safe bed listening to the storms, that he has even a part in the work that may then be going on where one of the lifeboats of the National Life-Boat Institution is busy on some part of the coast. It will serve its end if, while he imagines the wrecked vessels, the drowning crews, and will fancy the lifeboat manned by our brave fellows, battling out to sea in the storm and darkness, speeding upon her errand of mercy, and can feel that it is owing to his or her exertions, in conjunction with other contributors to the National Life-boat Institution that even foreign sailors can bear testimony to the deeds of our countrymen, which the captain of a foreign vessel once did bear, when he said, "Ah, we may always know whether it is on the English coast that we are wrecked by the efforts that are made for our rescue."

The Ramsgate lifeboat is the property of the Ramsgate Royal Harbour Commissioners. She was built by Messrs. Beeching and Sons, of Great Yarmouth, from their model which gained the prize of £100 given in 1851 by Vice-Admiral the Duke of Northumberland, President of the Royal National Life-Boat Institution. She has since 1852, been instrumental in rescuing the lives of nearly two hundred persons from various shipwrecks on the Goodwin Sands and elsewhere.

We are indebted to the distinguished marine painter, E. W. Cooke, Esq., A.R.A., for the accompanying spirited sketch of the scene in which the Ramsgate lifeboat took her part on this particular occasion. Mr. Cooke having for several years past taken considerable interest in the success of the humane objects of the National Life-Boat Institution.

VOYAGE OF H.M.S. "CYCLOPS" FROM ENGLAND TO THE CAPE.—
Captain W. J. S. Pullen.

(Continued from page 27.)

As we should not be going far out of our way by passing near the shoal marked on the chart as discovered by the brig *Hannah*, in June, 1824, it was steered for, so as to obtain a deep sounding. Afterwards, finding its position given in the *Atlantic Memoir* $10^{\circ} 7' N.$, and 27°

32' W., with the probability of this longitude being very much out, and fifteen fathoms stated as marked on the shoal, the course was steered direct for it on the morning of the 27th.

A good look-out was kept from either mast-head for weed or any discolouration in the water, the former being mentioned as plainly seen. But we could discover nothing when, at five o'clock, the reckoning placed the ship just in the position given by the chart; and she was accordingly rounded to, and a cutter lowered for the purpose of sounding.

Fathoms.	Times.			Intervals.	Diff.	Remarks.
	h.	m.	s.			
0	5	12	30	Let go.	°	Boat sounding, with mackerel line. Kept in position by the oars.
100	5	13	40	1 10		
200	5	15	10	1 30	20	
300	5	17	10	2 0	30	
400	5	19	27	2 17	17	
500	5	22	0	2 33	16	
600	5	24	48	2 48	15	
700	5	27	48	3 0	12	
800	5	31	2	3 14	14	
900	5	34	23	3 21	7	
1000	5	37	55	3 32	11	
1100	5	41	31	3 36	4	
1200	5	45	13	3 42	6	
1300	5	48	55	3 42	0	
1400	5	52	48	3 53	11	
1500	5	56	45	3 57	4	
1600	6	0	40	3 55	2	
1700	6	4	37	3 57	2	
1800	6	8	35	3 58	1	
1900	6	12	44	4 9	11	
2000	6	16	55	4 11	2	No bottom. Line carried away.

The weather being fine, although not much time before dark, and steam not being up, one of the mackerel lines, with the cutter, was used. The weight, a common deep sea lead of 40lbs., was attached. The boat was kept in position with the oars. It took four minutes over the hour to get this quantity of line out, and Mr. Mayes, the Master, who conducted the operation, felt satisfied that the intervals of time gave no indication of the weight being on the bottom. Darkness coming on, he stopped and commenced hauling in, but very little line was recovered. From this sounding I can only conclude that the shoal does not exist, or else is very much further East or West of this spot, and I only regret that we could not spare time to search further.

The ship in the meantime had drifted W.S.W., true, rather better than a mile, showing how little dependence can be placed on any sounding made from her without the use of her steam-power; in fact, from a sailing vessel at all, unless there is no current or wind to act

on the ship, so as not to force her away from the position where the weight was let go, that it may descend in a vertical line, not only to insure the true sounding but the safety of the line. For, in the latter instance, as the ship drifts away from where the weight was let go, the line assumes, more or less, a curve, and there are consequently two sources of friction on it, that caused by the descent in following the weight and by this curve, greatest on the concave or under surface of line, particularly in hauling in, and finally, in deep soundings, its parts.

On the morning of the 28th the wind was light from eastward, inclining to calm. Towards noon squalls were threatening from the southward, and wind still on the decrease. However, in the evening it freshened up from the eastward.

At two o'clock next morning the squalls were very fierce, accompanied with regular tropical rain, for until eight o'clock it poured down in a complete deluge, with occasional very vivid lightning; the wind in the mean time was gradually falling and very variable. By this I concluded we were losing the N.E. Trade and entering the calm belt between it and the S.E. The sky throughout the day was covered with dark heavy clouds. In the evening it was quite calm; steam was therefore got up, and we proceeded.

In the evening the wind came from S.E., a moderate breeze, and, continuing steady till noon of the next day, supposed it to be the S.E. Trade, the sky and weather altogether appearing to confirm it. In the evening, the wind veering to S.S.E. and freshening up, the fires were banked and all sail made.

Observations were got in the forenoon for deviation, and by the position at noon found the current for the last three days gave us fifty-six miles on a S. 27° W. course.

The morning of the 1st December was fine, and there being less sea on, I decided on getting the temperature, as well as a cast of the lead. At eight o'clock steam was got up and paddle-wheels connected. One of the cutters was lowered for the purpose.

In this sounding the weight was made up to sixty pounds, and the last interval is evidence of its being at the bottom. The line was helped off the reel, the largest of the crank wheels having been taken off to lessen the friction, and it passed through a small block on an outrigger over the bows, the boat kept over the weight by cars in the usual way. The wind at the time moderate from S.S.E.

The sounding for temperature was carried on from the ship, over the bows, as it would be for bottom alone. The line was drawn from the reel amidships, assisting the weight in its descent by lighting off. The line passed through a metal gin attached to a small iron davit, with sufficient curve to allow the weight when suspended to hang vertically over the bows before the cathead, and clear of everything.

The thermometers sent down are Sykes' Self-Registering, fitted in a copper cylinder (water bottle) with a valve at either end, so that in the descent these valves, by the pressure of water, are kept open, and the water passes through; on the ascent these valves close, and the

Fathoms.	Times.			Intervals.		Diff.	Remarks.
	h.	m.	s.	m.	s.		
0	11	20	0	Let go.			Boat sounding, with mackerel line and a weight of 60lbs. Short sea and swell from S.E. Wind moderate from S.S.E.
100	11	21	12	1	12		
200	11	22	21	1	19	7	
300	11	24	35	2	4	45	
400	11	26	32	1	57	53	
500	11	28	43	2	11	14	
600	11	31	8	2	25	14	
700	11	33	42	2	34	9	
800	11	36	28	2	46	12	
900	11	39	27	2	59	13	
1000	11	42	32	3	5	6	
1100	11	45	46	3	14	9	
1200	11	49	10	3	24	10	
1300	11	52	32	3	22	2	
1400	11	56	10	3	38	16	
1500	11	59	46	3	36	2	
1600	12	3	30	3	44	8	
1700	12	7	17	3	47	3	
1800	12	11	5	3	48	1	
1900	12	15	0	3	55	7	
2000	12	19	7	4	7	12	
2100	12	23	20	4	13	6	Down.
2200	12	28	30	5	10	57	

water in the bottle, from the depth the instrument has reached, is brought to the surface. Admiral Fitzroy says:—

“These thermometers are made by Messrs. Negretti and Zambra, and the long bulb filled with spirits of wine is so delicate, that under great pressure of ocean it is more or less compressed, and drives the spirit against the mercury; which is thus acted on, not only by temperature, but by the mechanical pressure of sea water.

“With a view to obviate this failing, the makers undertook to make a case for the weak bulb, which should transmit temperature but resist pressure. Accordingly, a tube of thick glass is sealed outside the delicate bulb, between which and the casing is a space all round, which is *nearly* filled with mercury. The small space not so filled is a vacuum, into which the mercury can be expanded or forced by heat or mechanical compression without doing injury to, or even compressing, the inner and much more delicate bulb.

“This provision is meant to guard against possible compression of even the *outer* glass, strong as it is.

“One may ask,—Why not strengthen the inner tube, the bulb, at once, so as to be equal in power of resistance to the outer casing? Mr. Glaisher and makers say, No, the bulb will yield a little on account of its length, be it even as strong as the outer case.”

These thermometers before sending down are kept a sufficient time in the surface water to get its temperature, and compared with the deck thermometer in use for the purpose. Their indices set, and se-

cured to line, as shown in table. Directly they return they are read off, the density and temperature of water brought up tried, and all tabulated, as shown in the following tables. But I have generally perceived that in almost every case, to this time, the tell-tale of the maximum tube shows less than what it did on starting, viz, the surface temperature. This ought not to be, and is a subject for consideration.

Fathoms.	Times.	Intervals.	Diff.	Remarks.
0	h. m. s.	m. s.	s.	
0	9 52 0	Let go.		Thermometer A 15, in water bottle, attached close to weight. The line, deep sea, with a weight of 40lbs.
100	9 52 15	2 15		
200	9 56 50	2 35	20	
300	9 59 25	2 35	0	
400	10 2 17	2 52	17	
500	10 5 45	3 28	36	Thermometer A 16, in water bottle, attached.
	10 7 30	Let go.		
600	10 10 15	2 45		
700	10 13 45	3 30	45	
800	10 17 15	3 30	0	
900	10 20 47	3 32	2	
1000	10 24 23	3 36	4	
1100	10 28 20	3 57	21	
1200	10 32 50	4 30	33	
1300	10 36 50	4 0	30	
1400	10 41 5	4 25	25	
1500	10 45 10	4 35	10	

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 363	Surface.	80		1024 at 80	
A 16	1000 fms.	76.5	42.5	1025 at 76	
A 15	1500 „	79	39.4	1025 at 79	This therm. returned with max. temp. very nearly agreeing with what it started.

From the moderate breeze and little sea on, this experiment was carried on without any difficulty in keeping the ship well over the weight throughout the operation; and the line was reeled in by the engine in one hour.

2nd.—The morning was fine, but sky clouded over, with a light southerly wind, and the water very smooth, at least a swell up from S.E., but not sufficient to cause any difficulty in sounding, having steam power. The main topsail and spanker were therefore set, and, requiring only sufficient power to keep in position and get the line in, the fires under the two after boilers were banked.

Fathoms.	Times.	Intervals.	Diff.	Remarks.
0	h. m. s.	m. s.	s.	
100	11 42 54	Let go.		Deep sea line and detaching weight of 80lbs. Ther. A 16 in water bottle.
200	11 43 45	0 51		
300	11 45 0	1 15	24	
400	11 46 36	1 36	21	
500	11 48 19	1 43	7	Ther. A 15 in water bottle attached.
600	11 49 30	Let go.		
700	11 51 27	1 57		Swell from S.E. Wind moderate from S.S.E.
800	11 53 33	2 6	9	
900	11 55 42	2 9	3	
1000	11 58 9	2 27	18	
1100	12 0 49	2 40	13	
1200	12 3 41	2 42	2	
	12 6 31	3 0	18	Down at 1,080 fathoms.
	12 10 35	4 5	65	

The weight was 23m. 26s. from time it was let go to the time it reached the bottom, including stoppages.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 363	Surface.	80		1025 at 80	Neither of the thers. gave the same max. temp. with which they started.
A 15	680 fms.	66	46·2	1025 at 75	
A 16	1080 fms.	72	38·5	1024 at 74	

From the interval between the 1,000 and 1,100 I find the increase sufficient to warrant a conclusion that the weight has reached the bottom between these lengths, and the next being so much greater, I fix on 1,080 fathoms as the depth. The line came in with greater facility than if any weight had been on it, showing that it had reached the bottom. The valve only reached the surface, bringing in a good portion of the bottom, a fine light greyish sand, which I should say is a component part of a great quicksand.

Approaching now so near the equator, and the winds still light and variable, I decided on pushing on with the steam to the true Trade, and, if possible, get a cast directly on the line; also the temperature as low as I could get a weight down. Mr. Mayes having lately made some alterations in the tackling, with reason to suppose that the small line (mackerel line) would bring back the weight, together with a specimen of the bottom, I arranged for him to take a boat, whilst I carried on the experiment for temperature from the ship.

The morning of the 3rd December was fine, with a light air from S.E. In the morning the ship was swung, or steered round, for deviation, observing on the eight principal points, taking, as before, the S.W. point as the no deviation point. The variation observed on this point was 13° 6' W.

In the afternoon, with the steam in the two boilers, all sail furled but maintopsail and boom mainsail, the ship was stopped for sounding.

Fathoms.	Times.			Intervals.	Diff.	Remarks.
	h.	m.	s.			
0	6	5	35	Let go.		Boat sounding : mackerel line, with weight of 60lb.
100	6	6	30	0 55		
200	6	7	48	1 18	23	S.E. swell and a moderate breeze from same quarter.
300	6	9	23	1 35	17	
400	6	11	20	1 57	22	
500	6	13	38	2 8	21	
600	6	15	50	2 20	2	
700	6	18	28	2 30	10	
800	6	20	58	2 30	0	Down. Call it 1,080 fathoms. The slack line paid out to prove.
900	6	23	44	2 46	16	
1000	6	26	30	2 46	0	
1100	6	29	35	3 5	19	
1200	6	33	10	3 35	30	

The time of line running out was 23m. 55s. The current was tried, and found setting half a knot per hour on a N. 65° W., true, course.

Fathoms.	Times.			Intervals.	Diff.	Remarks.
	h.	m.	s.			
0	4	23	15	Let go.		Deep sea line, with Skead's apparatus and 68lb. shot. Ther. A 16 attached.
100	4	24	25	1 10		
200	4	26	10	1 45	35	Ther. A 15 attached.
300	4	28	30	2 20	35	
400	4	31	8	2 38	18	Let go.
500	4	32	15	2 30		
600	4	37	45	3 0	30	Probably down at 800 fathoms, but not agreeing with boat sounding, reject it altogether.
700	4	40	50	3 5	5	
800	4	43	55	3 5	0	
900	4	47	30	3 35	30	
1000	4	50	50	3 20	15	
1100	4	54	30	3 40	20	
1200	4	57	33	3 23	17	
1300	5	1	20	3 27	14	
1400	5	4	57	3 27	4	
1500	5	8	20	3 23	10	
1600	5	11	58	3 38	14	Carried away coming in : 1,150 fathoms lost and two thermometers, A 15 and 16.
1700	5	15	33	3 35	15	
1800	5	19	3	3 30	8	

In this sounding for temperature I used Mr. Skead's detaching apparatus, with the deep sea line, and a 68lb. shot for sinker. The two thermometers were detached, as shown in table,—that at the 400 fa-

thoms by stopping the line as it went out, which I think very objectionable in sounding for bottom, as it and for temperature ought to be separate observations and experiments.

After letting go the weight the line trended so much on the bow, and so much difficulty was experienced in getting the ship up to the point, from drift, besides westerly current, as our reckoning had shown us, that, after paying out 300 fathoms, I had it reeled in again.

On letting go again there was the same difficulty, and the intervals showed so irregular that I saw how uncertain it became to decide when it reached the bottom (Mr. Mayes had not got his sounding then); when, at length, finding there was no dependance at all to be placed in the work, and having run out 1,800 fathoms of line, I stopped and commenced reeling in. From the way in which the line came in, with a heavy strain, and lying across the forefoot (rather than up and down or on the port bow), appearing as if a heavy drag was on it below, greater than ship's drift from surface current, I began to imagine that this was the under-current spoken of by Maury, or surging force on the bight of line, and doubted very much the recovery of the whole, if any portion of it. I was not long in doubt, for after heaving in 600 fathoms it parted, thereby losing not only 1,150 fathoms of line, but two of the thermometers.

It was after this experiment from the ship that Mr. Mayes returned and reported that he had got bottom at 1,080 fathoms, as well as found a current setting N.W. half a mile an hour. On looking over the intervals again in this temperature cast, I see that the first considerable change of interval was from 800 to 900 fathoms; from which it may be concluded the weight was down at the first depth, and all the slack line drifting with current across the bows; hence the difficulty in getting it in. But Mr. Mayes getting the 1,080 fathoms not more than a quarter of a mile from the ship seems to show the improbability of the weight being down at 800 fathoms,—so much difference in so short a distance. But yet it may be possible that both leads have shown true by being on one spur, &c., of the chain of submarine mountains said to exist between the nearest points of the two continents,—or, again, it may be the base of what forms St. Paul Island. At all events, the sounding got from the ship has given me a lesson, and one pretty plainly saying that sounding for bottom and temperature must not be combined to arrive at true results.

I have before noticed that the intervals in getting temperatures with more than one thermometer have been irregular, but never thoroughly considered the cause, or the results likely to follow from the increased weight on the lines. For although the addition of the thermometer (in its water bottle the weight about 6lbs.) gives rapidity to the descent of the sounding weight, its bulk offers great resistance on coming in, consequently the line is more liable to part. And when it is intended to send down more than one instrument the line must be stopped to attach, which at once checks the rapidity of descent; the line has then to be lighted off the reel with more force, impossible to apply equably,

and the intervals become so irregular that all certainty of when the sinker is down is gone, and you feel at a loss when to stop.

These experiments ought, therefore, to be made separately, but at the same time, or rather, for temperature, after the bottom is got, when you have a guide of how many instruments to send and at what distance on the line to attach them. And the line ought to be stouter than the usual sounding one and specially appropriated for the purpose; the thermometer, too, to remain down sufficiently long to get the temperature of the depth it has reached. If the thermometer and its water bottle were made less bulky I think it would be a great improvement, and fully answer all purposes better than those in present use.

Under these circumstances, and having on board a spare piece of whale line, 800 fathoms in length, to which was tailed on some common h.l. rope of $1\frac{1}{2}$ in., I got a line 1,300 fathoms in length, tapering from 2 in., the inner part of the whale line, to $1\frac{1}{2}$ in. at the end, to be used exclusively for temperatures. And the reel being 20 fathoms from the water's edge, over the bows, there is a clear depth of 1,280 fathoms.

From these soundings I think we may draw conclusions respecting other rocks or shoals we have sounded for. First, for instance, the Devil Rock. In the first cast of 1,500 fathoms the ship was not more than two miles from three of the assigned positions, and thirty miles from the most distant, yet the weight does not reach the bottom. In the second cast, when the ship is rounded to where H.M.S. *Brisk* places the rock, she is not more than thirty miles from the most distant and nine miles from the nearest position. I call the vertical depth we get by line 1,800 fathoms, for, from intervals, no indication of weight being on bottom can be detected (unfortunately, the line was carried away coming in). Then of the Hannah Shoal, with 2,000 fathoms of line we get no indication of bottom over the position given it in our charts and the *Atlantic Memoir*.

Now at the first cast on nearing St. Paul Island, 202 miles off, we get bottom with 2,100 fathoms of line; the second, at ninety miles, 1,080 fathoms; and the third, at sixty five miles, 1,080 fathoms again. May we not conclude from this that neither the Devil Rock nor Hannah Shoal exist.

The wind still continuing light from S.E.b.S., and now getting the full force of the current to the N.W., I still kept the steam, but only two boilers, close throttled; for the ship under canvas alone would have most probably been driven far to the westward before crossing it, and into the Guayana Current, setting N.W. By our reckoning to-day at noon, it was N. 50° W. (true), eighteen miles, for the last twenty-four hours.

(To be continued.)

EVENINGS AT HOME AT THE NAUTICAL CLUB:—*Rodmond's Soliloquy*—*The Season and its Fuel*—*Address of the Chairman*—*Prince Albert's Memorial*—*Banca Strait Survey*—*The Batavian and Atlantic Submarine Cables*—*The American Question: Passages of our Steamers with Troops; the Guards at Sea; Landing at Bic; Testimonials; True American Courtesy to British Wants; the New Brunswick Route; the Halifax and Quebec Railway; American Opinion of British Cousins*—*The National Life-boat Institution.*

Frozen up—snowed up—then loosed again, to baulk the skaters, by the “sweet influence”—no, not of “the Pleiades” of holy writ, but by that of our own health-giving south-western sea breezes; and all this within the third week of January. Yes, released, not from the “bands of Orion,” but from the cold, penetrating claws of Jackey Frost in the N.E. wind, here we are again breathing a health-giving air. Fortunate island! Happy Cockneys! complain not of your twilight noons or murky fogs of winter, ye are blessed above many other mortals of Christendom; so rejoice, and be content even with that changeable but invigorating, healthy climate that has been awarded to you. Talk of the riches of the earth, are they not at your door when you want them? What are all the gold fields to your own coal fields?—those rich *parterres* of black diamonds which strengthen the right hand of your country and cheer the multitude when dark wintry blasts, with all the chilling host of fog, sleet, snow, frost, and ice predominate and load the atmosphere. Yes, rejoice, O Cockney town, even in your smoky breezes, while you can renovate the system of the outer and inner man with warmth and good cheer.

No bad idea that of yours, friend Rodmond, that terminated your soliloquy, observed Albert, as he thus broke in on him, and cut short his meditations.

What, Albert! Yes, I have been cogitating, ruminating, and come to the same conclusion as many have done before me,—that many people don't know when they are well off. But what a sad business has been that colliery accident at Hartley—215 poor souls buried alive, doomed to a lingering death from starvation, foul air, and all the miseries of a mine some 600 feet beneath the surface!

Badly managed, Rodmond. There should have been more than one shaft for communication. This being blocked up by an accident, the rest was inevitable.

Yes. Perhaps this will be looked to in future. It's our way you know. But, Albert, the coals for which the lives of those unfortunate countrymen of ours have been sacrificed (as they might have been, and often are, in a wreck at sea), those coals always light up a train of reflections in my mind as to their origin,—whence they came—how old they are—and a hundred other questions I could ask about them.

Look at that puffing bit of coal, blowing out the gas as hard as it can. Was all the coal of our globe the work of a day? So says Scripture, "the evening and the morning were the third day," you know.

Floundering, Rodmond, floundering on the mode of reading Scripture, only to be cast high and dry on the difficulties of the carboniferous period! Are you one of those who think you have a right to read Scripture as you please? If so, short will be your insight to it. If a man should borrow another's brains and think he has unravelled a passage, who is there that has brought to bear on Holy Writ all the knowledge which all the world possesses? Depend, Sir, that even a little knowledge is a dangerous thing in reading the Scriptures,—they require all the knowledge in the world to read and understand them. They are open, it is true, to all, but how few there be that can unravel all the dark passages they contain. Why, Sir, those days the works of which are recorded as taking place from "evening to morning," a period of night and darkness, if you will please to observe are considered now to be neither more nor less than periods of time,—who shall say how long, for we are told that with the Almighty Creator a thousand years are but as a night and it is past!

But to answer your question rationally, Rodmond, I should say that coal came from Sunderland. How it got there, and in what condition, is another matter. From what distance of time it was lodged there, by what means—whether by a great convulsion of Nature, by which the remains of tropical quadrupeds are now found in polar regions, or by the gradual system of perpetual change, I shall leave for another discussion. But you will find that science is as essential to read Scripture as it is other subjects. I have read somewhere—There is no doubt that the Bible frequently makes allusion to the laws of Nature. But these allusions are often so wrapped in the folds of the peculiar and graceful drapery with which its language is occasionally clothed, that the meaning, though apparent through its thin covering, yet lies, in some sense, concealed until it can be read with lights and revelations of science: then only is the real meaning and beauty of it seen. As our knowledge of nature and her laws has increased, so has our understanding of many passages in the Bible been improved. The Psalmist, for instance, called the earth "the round world," and yet for ages it was the most outrageous heresy for Christian men to say the world was round. But navigation soon proved the Bible to be right, and saved Christian men of science from the stake.

But organic remains of warm climate animals found, as they are, in the ice of polar regions, undoubtedly tell of some huge cataclysm—some tremendous displacement of the crust of our globe, even anterior to the Noachim deluge, by which the objects of the Almighty Creator were accomplished—and all for what? To render this earth fit for the habitation of man,—ungrateful, presumptuous man;—that atom of creation who, with his finite imagination, presumes to imagine that he ought to comprehend *infinity*. What should *we* do without coal, Rodmond? Depend on it that Young was right when he said—

“ Not deeply to discern, not much to know,
Mankind was born to wonder and adore.”

This discussion might have run on till the hundred queries of Rodmond had been proposed and answered, but was broken off by “Chair, chair,” and the worthy Chairman of the Club was summoning his friends to business.

We parted from our last meeting, he observed, in the gloomy atmosphere of adversity. We were deploring, as we always must do, the great national loss which the country has sustained in our noble Prince Consort, the beloved partner of our revered Queen. We had before us the probability of war arising from the affair of the *Trent*, and not all the consolation we could derive from the establishment of our Naval Reserve was sufficient to do more than give life to our meeting. Another of our “evenings,” however, has come, and brought with it the fulfilment of those desires which the whole nation has expressed, even in our sanctuaries, in reference to the last of these exciting subjects. Our American cousins have shown their wisdom in admitting the justness of our demands for the restoration of the Southern Commissioners with the *amende honorable*; in fact, they have seen that the law of nations proves us to be right this time. Although but young in the roll of those nations, they are yet experienced enough to know that “Discretion is the better part of valour,”—that one war on their hands is at least enough, and the unauthorized act of their officer, Captain Wilkes, in the *San Jacinto*, is therefore repudiated *in toto*. The Southern Commissioners, in whose favour we have thus for our own sakes been compelled to interfere, have been delivered over to our Ambassador, and left the States in one of our ships of war, the *Rinaldo*. This part of the American question is set at rest, but the blocking up of the entrance to Charleston has been protested against by France and ourselves, and there is a state of uneasiness arising from the civil war in the American States which still leaves a gloomy look in the western horizon.

In reference to the former unhappy subject to which he had alluded, the Chairman continued, a national loss like that which England has sustained was not likely to pass by unnoticed, and the many virtues and the blank that is left on occasions where those virtues possessed by Prince Albert were exercised, were not likely to be unrecognised in a country the community of which are not in general slow in acknowledging solid worth. A meeting in the metropolis, under the auspices of the Lord Mayor, has been attended as it should, and the resolutions passed would be recorded in their papers, the result of which was that above £17,000 had been already subscribed towards erecting a memorial to commemorate England’s admiration of the noble qualities of this excellent Prince. Under such auspices there can be no doubt that something more enduring in effecting a perpetual benefit of the most desirable kind than a mere monument will be accomplished. The hearts of her Majesty’s subjects are better receptacles

of good fame, from which its benefits may be read, than any record of stone or brass. The resolutions were:—

First—by the Bishop of London,—“That this meeting, deeply deploring the irreparable loss the country has sustained by the lamented death of his late Royal Highness the Prince Consort, whose powerful and well-regulated mind and great abilities have for more than twenty years been unceasingly devoted to improving the condition of the humbler classes, and to the development and extension of science and art, and to the judicious education and training of the royal family, is of opinion that a lasting memorial should be erected commemorative of his many virtues, and expressive of the gratitude of the people.”

Second—“That a committee be formed, consisting of the following noblemen and gentlemen, to carry into effect the foregoing resolution, with power to add to their number, and that the Right Hon. the Lord Mayor be president of the same, and treasurer of the fund: Lord Stratford de Redcliffe, the Bishop of London, Baron Rothschild, &c., &c.

Third—moved by Baron Rothschild, M.P.,—“That committees throughout the United Kingdom be formed to raise subscriptions to the proposed memorial, and that her Majesty’s subjects be invited to subscribe.”

Fourth,—“That the memorial recommended should be of a monumental and national character; and that its design and mode of execution be approved by her Most Gracious Majesty the Queen.”

The Chairman would not occupy the time of the Club in any further allusions to the progress of this good work, which he hoped would be taken up in the spirit which it merited by all those who gloried in the name of Briton, merely observing that they could not do wrong by sending their contributions to the Lord Mayor of London. In this busy time there was an abundance of subjects to occupy the attention of his friends around him, and which he should leave to them. There was one, however, on which he had received a letter from a naval officer abroad that he should consign to their minutes. They had no doubt read in the last *Nautical* the useful and elaborate remarks of Captain Spratt, of H.M.S. *Medina*, on the proper depths for electric cables as at present constructed, which recommended a depth under 300 fathoms being preserved. But as all information on the subject of submarine telegraphy as at present pursued was desirable, he would request the Secretary to read the letter he had in his hand from Mr. Staunton, an experienced Master of the Royal Navy, who had lately completed, with so much credit to himself and importance to his brother seamen, his excellent survey of Banca Strait. In fact, he might add, that so much service had this officer rendered to the navigation of the eastern seas by his survey of this strait—in which he had brought forward a superior channel to that called the Lucipara Channel, formerly used, but now discontinued—that it well deserved the attention of Lloyd’s, who, he believed, were always ready to promote whatever conduced to the safety of navigation.

The following interesting letter was then read :—

The Batavian Submarine Cable in Banka Strait was originally laid down in November, 1859, by Mr. Gordon, C.E., from the British screw steamer *Bahiana*, assisted by the Dutch steam-frigate *Merapie*.

A great mistake was made in the first place laying it along Lucipara Channel, as ships were constantly fouling it with their anchors. The cable only remained five months in working order, and even then a steamer was constantly employed splicing it. The Dutch, at last, finding the cable broken in so many places, decided to relay it along the middle of the strait, and between the banks bounding the southern entrance of Banka.

The cable, however, proved so rotten, that it would not bear the necessary strain of hauling in. In many places the iron wires were rusted through, and the gutta percha, being exposed, was much perforated by the destructive ravages of coralline and other sea animalculæ. In such a condition, were it practicable, the cable would not be worth the expence of raising, and the Dutch have therefore given up the attempt. Extensive buildings were erected at the principal stations,—electricians engaged for three years, and, with the original cost and freight of the cable, by this failure the Dutch estimate their loss at £250,000.

I do not know whether the iron wires were galvanized, which of course would tend to preserve them, but I am informed that in some places the Malay seamen covered over the splice with rope made from the Goumite palm (*Arenga saccharifera*). Where this was done the iron wires under the rope appeared *in good condition and free from rust*. At Mintok and other Dutch possessions piles of piers and other wooden buildings exposed to the action of salt water are wrapped round with this rope to preserve them from decay and destructive mollusca.

It is stated that the Goumite rope is nearly as effective as copper sheathing in preserving wood submerged. It is made from the bark of the Goumite palm, resembles horse-hair in appearance, is more durable and elastic than coir rope (made from the cocoa-nut bark), is much stronger than hemp, so light that it will float on the surface of water, and when well laid resists wet, and the natives say no insects will penetrate it. The Goumiti palm is very abundant all over the archipelago, and sold at Singapore at one dollar per cwt.

Having all these advantages, I believe that a cable made of Goumite rope round the gutta percha and copper wires would be more durable, elastic, and easier managed than one covered with iron wires, besides being less expensive. But should it be found necessary to cover the shore end with iron wires, I would then place a service of Goumite rope to prevent the wires rusting. From the present state of the Batavian cable I am convinced that no cable covered solely with wire will last two years submerged in a tropical sea.

At present the Dutch have no intention of laying down another cable. Singapore to Batavia is the first stage to connect our colonies

of Australia. I merely offer these remarks in the hope they will prove useful; as I am convinced, from the slight experience I gained when assisting to lay down the Atlantic cable, of the practicability of successfully submerging one made of Gomite bark.

Captain Spratt observed in his paper, added the Chairman, that out of 11,000 miles of submarine cable laid, 3,000 only were working, and, great as the loss of the Atlantic was, here was another to be added to the list of failures. He confessed to having his fears for that of the Red Sea. And it is said that Cyrus Field, the enterprising promoter of the unfortunate Atlantic cable, is appealed to on behalf of another trial. Much as he wished it could be achieved, we had yet our lesson to learn to secure success.

A calm review of the whole subject of the American question, said Albert, places prominently before us much that is highly creditable to us and much from which we ought to profit. In fact, we should learn a lesson for which we might be thankful that we have learnt it so cheaply. In respect to the origin of the difference between us and the Americans, it is to be hoped that Earl Russell's observation in reference to present proceedings will have attention, while future considerations of points of national law advanced by Mr. Seward are deferred, that "In the meantime it will be desirable that the commanders of the United States cruisers should be instructed not to repeat acts for which the British government will have to ask for redress, and which the United States government cannot undertake to justify."

It was gratifying to find that all our steamers had arrived successfully with their detachments of troops. The fact of the *Adriatic*, with the Guards, having penetrated the St. Lawrence in the month of December as far as the Riviere du Loup stood out as a solitary instance of the mildness of the season,—or, in fact, of the remarkable tardiness of the Canadian winter at a most propitious period for us. And this vessel having landed her troops and been driven away by the ice at a moment's warning, shows that the dangers of the St. Lawrence ice are not exaggerated. An account of the passage of this vessel, in a letter from a Serjeant-Major of the Guards, had appeared in a Plymouth paper, and so well described the adventures of her voyage and her mishaps that it was quite worth preserving. The routine of a steamer making a winter passage contrasted so well with the life of the Guards at home that it would afford them some amusement. It ran thus—

Halifax, Nova Scotia, 3rd January, 1862.

Dear Old Friend,—After encountering the dangers of the deep for eleven days and nights, I find myself in Halifax. People in the Old Country (Yankeeism) say, "Go to Halifax," and to Halifax I have gone. Oh, —, were you ever sea sick? If you were not I hope you never will be. I suffered frightfully, and, I am afraid, not with the stoicism of an Indian. We had 1,400 men on board, stowed away something like pigs, all on top of each other.

Then the rations were anything but inviting. Tea! Heaven forgive me for calling things by their wrong names, for I verily believe it was nothing more nor less than a tar rope suspended in a boiler of water, with a small portion of sugar in it. The chocolate I can say nothing about, for not one in ten drank it. The pea soup, the first day, was something awful: some companies got all peas (they call it "dog's-body," by way of recommending the pudding), and the others a kind of liquor. The soldiers on board (like the Persian army, under Darius, which drank the rivers dry) attacked the water barrels immediately after in good force. The Adjutant, after they had emptied one barrel, ordered them away from the second. They would not go, but were mutinous enough to cry out, "Throw him overboard." They then brought the hose to play on them, which soon cleared the ways. They were raging mad with thirst.

The cooking altogether was abominable,—not sufficient boilers. The pudding, commonly called "duff," which was supposed to be for dinner, was generally boiled during the night, and issued out before breakfast; it so stuck to your teeth that you could not get them cleaned for an hour after.

I was tolerably well up to Christmas Eve, when it commenced to blow a gale. The gale continued the whole of that and Christmas Day, and the day following. A more miserable Christmas I never passed. Not a particle entered my lips for the three days, although I got a sniff of a goose from the saloon. Then I thought of "Home, sweet Home." The voyage, altogether, was lonely. I thought the other morning, as I lay in bed, that I should like to hear a baby cry, just for novelty's sake.

On Sunday last we were on the banks of Newfoundland, and intended putting in the following morning at Sydney, Cape Breton Island, for coaling; then, if possible, up the St. Lawrence, only we chanced, most fortunately, to meet the *Persia* (which had taken out the 1st Battalion 16th Regiment) returning from the St. Lawrence. She made her way as far as a place called Bic, and commenced landing her troops. Nine companies were safely on shore, when the ice drifted down in such masses that she was driven from her moorings and obliged to make out to sea, with one company and all the baggage on board. She left behind six of the ship's boats and twenty of her crew. Hearing this, we gave up the thoughts of trying to ascend the St. Lawrence, and, in company with the *Persia*, arrived safely in Halifax Harbour on Tuesday last.

It appeared in the *Halifax Chronicle* of to-day that the *Parana* was lost at the mouth of the St. Lawrence, having on board the Scots Fusileer Guards and other troops. But it turned out to be false; the wreck of another vessel was made into the *Parana*. They are now at Sydney.

We are now taking in coal, and expect to leave on Monday for St. John, New Brunswick; then overland to Quebec, upwards of 300 miles, part by marching and part by sleighing. Each officer will have carried for him 40lbs. of baggage only. It is frightfully cold here;

you can see nothing but ice and snow, and sledges flying from one part of the town to another, each drawn by one miserable animal, called a horse, with a couple of bells jingling round his neck to give notice of his approach. Things are generally very cheap, meat particularly— $2\frac{1}{2}$ d. per lb.; lobsters, 1d. each; sugar, 10d. per lb.; rum, 6s. per gallon; clothes, very dear. The ladies appear in monster crinolines. The weather is so severe that I dread the journey, but I hope to be there by the end of the month, with a letter from you awaiting my arrival.

Ever yours,
 ———, *1st Battalion Grenadier Guards.*

Perhaps this was the first voyage the serjeant had made, and found out that the decks of a steamer in the Atlantic were not so pleasant as the parks with their nurserymaids and children.

However, the *Persia* with her freight seems to have done better, for here is the way in which her services have been recognised in a highly complimentary letter, addressed to Captain Judkins, by General Russell and the officers of the 16th Regiment, previous to disembarkation at Bic.

*Off the Island of Bic, River St. Lawrence,
 December 26th, 1861.*

Dear Captain Judkins,—We, the undersigned passengers in your fine steamer from Liverpool to the River St. Lawrence, cannot separate without expressing our thanks to you and to the officers under your command, for the extremely kind and courteous treatment we have met with since we have been on board. We can fully enter into your anxiety of mind consequent on a voyage which, up this river at such a season, is necessarily a hazardous one; and which, to the best of our belief, has never hitherto been attempted; and we have much pleasure in congratulating you at its successful termination, not only on the event itself, but on the skill and energy, combined with prudence, which you have throughout exhibited. We cannot speak too highly of the accommodation and comfort of the noble vessel under your command, or of the general good treatment shown, not only to ourselves, but to the whole of the large body of troops on board. In conclusion, we wish you a safe and speedy return to our native land; and with every good wish for your future welfare and prosperity, we remain ever sincerely yours,

C. RUSSELL, Major-General; GEO. SEACOCKE, Lieutenant-Colonel 1st Battalion 16th Regiment, and all the Officers of the 16th Regiment and Royal Engineers on board.

This is one of those pleasant certificates which frequently follow the conclusion of a satisfactory voyage, and eminently so seems to have been that of the *Persia*.

Then again, as the route through New Brunswick may be equally

new in these days, to some of us, although common enough about half a century ago, the following may be equally worth preserving.

The journal of a pioneer party that had travelled over the route by which it is proposed to forward the troops to Riviere du Loup, gives a vivid idea of the difficulties of the journey:—At one time the cold became so intense as to freeze the moustachios of the travellers to their coat collars and comforters; rendering every jolt of the sleigh intolerable, and every turn of the head “nearly pulling their faces off.” The first detachment of 104 troops was to leave St. John’s for Fredericton on the 6th of January. They were to drive the whole distance through in one day, hot coffee and an extra ration being provided for each man halfway on the road. The number was to be increased as new facilities were afforded along the route, and log huts were to be erected on the various stations between Fredericton and the St. Lawrence. The whole journey was calculated to occupy eleven days, and the following stages have been laid down:—

	<i>Miles.</i>		<i>Miles.</i>
1. St. John’s to Hovels....	20	7. Grand Falls	24
2. To Fredericton	30	8. Little Falls	36
3. Halfway to Woodstock..	29	9. Tour du Lac	37
4. Woodstock	32	10. St. Francois	26
5. Florenceville	23	11. Riviere du Loup.....	16
6. Tobique	23		

The sleighs, which have been built especially for the service, will each carry eight men, besides the driver.

But it is not a satisfactory state of things, continued Albert, the difficulty we have in the winter half of the year to communicate with our Canadian colonies by a route that is part on American soil. Notwithstanding the very courteous manner in which Mr. Seward is reported to have behaved in reference to this subject, offering every possible facility to the *Hibernia* to land her troops at Portland and send them to Canada by the Grand Trunk Railway,—a good proof certainly of the friendly feelings of the Americans towards us, which no doubt has been felt, and will be most cordially reciprocated by us. Still, on the principle of independence we should proceed: and so close is the territory of Maine, that in many places even our line of road is within rifle shot of the American ground, and this should not be, as it is no satisfactory state of things,—to be dependent for a safe road in peace, and in war to be open to attack in reaching one of our most important colonies.

It is to be hoped it will be remedied by combining with our colonists, observed the Commodore, in constructing what is to be the Halifax and Quebec Railway. Here is a complete account of the proposal.

It is stated that the following petition, signed by the most eminent firms in the city of Bristol, and by the Chamber of Commerce, has been forwarded for presentation to the House of Commons, and

Showeth,—That for six months of the year we are solely dependent on the United States of America for our communications with Canada; that in case of an interruption of our friendly relations with the United States our intercommunication with Canada during that period is liable to be cut off at a moment's notice, and an important portion of the British Empire placed in great jeopardy; that the completion of the line of railway from Halifax to Quebec, would render us perfectly independent of the United States at all seasons of the year.

That the completion of this line of railway would accelerate the delivery of the Canadian mails and dispatches at least thirty-six hours in advance of the present route through the United States.

That the completion of this line of railway would open up the colonisation and settlement by emigration from the mother country upwards of 14,000,000 acres of ungranted lands within a journey of ten days from our own shores.

That the present cost of conveying the British North American mails through the United States, estimated at £25,000 per annum, would be saved to the imperial treasury.

That by making Halifax the terminus of the Atlantic Royal Mail Service, instead of Boston and New York, the sum of £48,000 per annum would be saved in the mileage rate, as at present paid for that service by the imperial treasury.

That the military expense for the preservation of British North America, borne by the imperial treasury, amounts to the sum of £120,000 per annum.

That the completion of this line of railway would effect the almost total saving of this expenditure, as it would render Canada accessible within ten days at all seasons, whilst at the present time she is, in a military point of view, excluded from communication with the mother country for six months of the year.

That it would link together the three provinces of Canada, New Brunswick, and Nova Scotia, and give them access to the ocean at all seasons through the port of Halifax, one of the finest harbours in the world, and nearer to England (and to Europe) by 400 miles than any other open port in America.

That your petitioners believe that the immediate completion of the line of railway from Halifax to Quebec is essential for the preservation and integrity of the British Empire in North America.

That your petitioners believe that, in addition to its adding to the security and permanence of the British Empire in North America, accelerating the communication with the mother country, reviving that identity of interest with her which has been too long engrossed by the United States, the railway would also effect a saving to the imperial treasury far exceeding any assistance that may be required for its completion. Your petitioners, therefore, humbly pray your honourable house to grant such aid and assistance to the Halifax and Quebec Railway Company (Limited), as shall enable them to bring to a successful completion this great national undertaking.

Now he believed that all this was as true as that the Americans have a good feeling towards us if they can but make themselves understood. But here is the state of feeling towards this country in the western part of the great state of New York. A gentleman of Hamilton writes to the *Daily News*:—

I took the cars and went to Buffalo, New York. Every American recognised me as an Englishman, and both in the cars, the hotels, and the streets, I had long conversations with intelligent and influential men on the state of affairs between the two countries. I spoke with what common sense, judgment, and courage I possess. I very plainly told them that in case of war they must know they would have no chance in any pitched battle with us either by sea or land. No man whose opinion is worth anything attempted to deny it; but with the coolest judgment and best personal feeling, they brought forward unanswerable arguments to show that the war would be quite as disastrous to England as to themselves. But, sir, let me tell you, and you, sir, if you think proper may tell your readers, that I challenge any man in England to prove that there exists any desire on the part of the intelligent, wealthy, middle classes of this section of the States for a war with England. No, sir, the reverse is the fact. One of the principals of the firm whose card I enclose, a man I had never seen before, of eighteen years' standing in one of the largest commercial houses in Buffalo, assured me that ninety out of every hundred respectable citizens would unhesitatingly oppose any government that would attempt to promote a war with England. To use his own words, "He could not forget his ancestors were English, and the more he knew and had dealings with Englishmen the better he liked them, and the interests of the two countries were identical." They had no cause and no wish to quarrel with England. Let those of my countrymen who have never been in America, know that their idea of a Yankee has no connexion with the intelligent, enterprising, honourable, and hospitable American citizen or merchant. The unprincipled, calculating, canting humbug is as much disliked in the States as in England. Let them come into personal acquaintance more with the Americans and war would be impossible.

However, the subject of the *Sun Jacinto* affair is now passed away—it has proved the state of feeling between the two countries to be anything but hostile, and he was glad to find that Mr. Beecher Stowe was about to visit this country to place the whole question between the Northern and Seceding States in its proper light before the British public. And he would conclude his observations for the present on the American question with the following remarks.

It seems that the pilots have had the hardihood to assert that steamers can go up the St. Lawrence to the end of January;—on which the Quebec authorities state distinctly "that the lower St. Law-

rence is not navigable for such steamers as are now constructed for crossing the Atlantic after our winter frost has fairly set in." Had they been ten days earlier they might have landed the troops at River Loup itself "As they did not they have finally settled it. The *Persia* would not have put off to sea had she been able to stay with safety. The *Parana* would not have turned back when nearly up to Father Point, had it been at all practicable for her to proceed. The *Australasian* would not have reported that she could not get up the river if there had been no grounds for the assertion. The *Melbourne* would not have turned back unless there had been other difficulties than those which could be cut through by the ice saws with which she was furnished. We should, of course, be far more pleased if we could draw any other conclusion than that irresistibly forced upon us. But until vessels are built whose bows can cut through ice-fields, and whose sides are proof against the small icebergs which often block up the channels leading into and out of the gulf, we feel we must depend on railways not on steamships to give us the means of access to the open sea. Build the intercolonial railway as soon as possible: that is the political, military, and *commercial* lesson of the time and events now passing."

In this conclusion he cordially agreed, and he trusted that no time would be lost in carrying it into effect.

These American differences, observed the Commodore, seem to have reached our own doors. Even at Southampton there are the *Tuscarora* and the *Nashville* looking at each other like two Kilkenny cats; while we have enough to do to see that the laws of neutrality are not broken, and protesting at the same time, with the French, against the Federals blocking up the ports of the Confederates. One of these craft, the *Tuscarora*, deliberately runs down to the Solent, returns again, and would gladly get the *Nashville* out of the Southampton Docks.

But it is no pleasant thing for the Southampton folks to witness, added Rodmond, and there is no knowing how long it may last. Here is the way in which the two vessels are going on, as reported by the *Daily News* on the 25th of January:—

The Confederate war steamer *Nashville* and the Federal man-of-war *Tuscarora* are considered almost to belong to our port, so long have they been here and so long, apparently, are they likely to stay. The *Nashville* is still in the dock and the *Tuscarora* lies just outside. A night or two ago a collision took place in French-street, between fifteen of the crew of the *Nashville* and two of the crew of the *Tuscarora*. Some blows were struck and a pistol was drawn, which fortunately missed fire, or life would probably have been lost. The police were called in, and, to avoid being captured, both Federals and Confederates beat a precipitate retreat. At the Southampton Club several officers belonging to both ships have been introduced as visitors by different members, and against the entries of several names on the

visitors' book are to be seen "C.S.S. *Nashville*" and "U.S.N. *Tuscarora*."

The *Tuscarora* is away from America for a two years' cruise, and it is very evident that her mission is to look after the *Nashville* and nothing else. It is continually asked why does not the *Nashville* leave Southampton by getting, it is said, her twenty-four hours' start of the *Tuscarora*, for being much faster than the latter she could not be overtaken. But the difficulty with the *Nashville* is to get her twenty-four hours' start. She is watched night and day by the *Tuscarora*, the captain of which never leaves his ship; any signs of getting up steam on board the *Nashville* can immediately be detected on board the Federal steamer, and she is prepared to move and claim the priority of starting. They both may keep on successively moving and stopping in the neutral waters, and thus edge out towards the sea, but nothing can prevent the *Tuscarora*, if a good look-out is kept on board of her, from hindering the *Nashville* getting the start. H.M. frigate *Dauntless*, which is keeping watch over both ships, would not care if the two were to leave simultaneously; all that she would have to do in such a case would be to prevent their fighting before they got fairly out to sea.

The Secretary here observed that the discussion of these American differences, he feared, had broken in on their usual attention to the report of the National Lifeboat Institution, and submitted to the Chairman that it should be read, which was accordingly agreed to. It ran as follows:—

The lamented demise of the Prince Consort elicited from the meeting an expression of the deepest regret, and a vote of condolence and sympathy to her Majesty the Queen.

A reward of £6 10s. was voted to pay the expenses of their lifeboat at Thorpe, Suffolk, in saving the crew of five men of the brig *Content*, of Sunderland, which, during a gale of wind, was wrecked on Sizewell Bank on the 19th of December. A smack, cruising about, had previously approached the wreck, and taken one man on board, but she was afterwards only too glad to have the protection of the lifeboat. This valuable boat has several times been instrumental in saving shipwrecked crews from a watery grave.

A reward of £5 was also voted to defray the expenses of their Berwick lifeboat in rescuing the crew of five men of the schooner *Epimachus*, of Amsterdam, which was run ashore about three miles from Berwick on December 18th. This excellent boat has been the means, under Providence, of rescuing thirty poor fellows from different wrecks.

A reward of ££ 10s. was also given to the crew of their lifeboat at Fishguard, which, during a terrific gale of wind, took the crew of three men off the smack *Ellen Owens*, of Cardigan, flying a signal of distress. Fortunately, the gale having moderated, the vessel herself

was saved from destruction. Her crew having been put on board again, the next morning she proceeded to Bristol.

Rewards, amounting to £31 15s., were also voted to the crews of their lifeboats stationed at Rye, Newhaven, Brighton, Penarth, and Llandudno, for putting off to vessels which had signals of distress flying, but which did not afterwards require their services.

During the year which has just closed, the lifeboats of the institution have been instrumental in rescuing 288 persons from wrecks on the coasts of the United Kingdom. Many of the persons thus rescued from a watery grave were foreigners, and their expressions of gratitude are frequently, "Ah, we may always know whether it is upon the English coast that we are wrecked, by the lifeboat efforts that are made for our rescue."

- Miss Bertie Cator, daughter of Admiral Cator, handed to the institution £176, being the cost of a lifeboat, which she had collected from some ladies and friends for that purpose. She wished the boat to be called the *Princess Royal*, after the Crown Princess of Prussia.

The silver medal of the institution and £5 were presented to Mr. Thomas Adams, master of the smack *Volunteer*, of Harwich; also the silver medal and £2 each to five men who had manned the small boat, and the vellum thanks of the institution and £2 each to the remainder of the crew, six in number, in admiration of their noble and persevering services in rescuing, during a fearful storm, six out of eleven of the crew of the barque *Darius*, of South Shields, which had sunk on the Long Sand, near Harwich. The crew were taken off the only mast standing in a most helpless state, two of their comrades having previously perished from exposure, having been on the mast more than twelve hours. This was stated to be one of the most heroic and persevering deeds of rescue from shipwreck recorded recently.

The thanks of the society inscribed on vellum were ordered to be presented to Captain R. W. Wilson, of the steamship *Ciarence*, of the General Steam Navigation Company, for rescuing, after much difficulty and danger to his vessel, the crew of eight men of the brig *Virago*, of Hartlepool, which, in blowing weather, was driven on the Middle Sand, near the mouth of the Thames.

It was reported that a bazaar had lately been held at the village of Newbiggin, Northumberland, on behalf of the general funds of the National Lifeboat Institution; and that, through the kind and zealous exertions of the influential families of the neighbourhood, the net proceeds of the bazaar had realised the large sum of £300.

It was also reported that the builders were proceeding with the completion of three new lifeboats for Dublin Bay, and one for Dundee; and that the institution had lifeboats nearly ready to be sent to Plymouth, Blakeney (Norfolk), and Kingsgate, in Kent.

A cordial vote of thanks was presented to Thomas Chapman, Esq., deputy-chairman of the institution, and to Sir Edward Perrott, Bart., chairman of the sub-committee, for their important and valuable services to the society during the past year.

Payments amounting to £430 having been made on various lifeboat establishments, the proceedings terminated.

I find it stated, observed the Chairman, that 131 lighthouses and vessels have been destroyed and removed since this civil war began, and that the Charleston lighthouse, on Morris Island, was blown up by order of the rebel military authorities on the night of the 25th December.

The Secretary intimated that Messrs. Blunt had published a list of the extinguished lights, which he presented:—

Virginia.—Hog Island, Cape Charles, Cape Henry, Crany Island, Naval Hospital.

Virginia and Maryland.—White Shoal, Point of Shoals, Deep Water Shoals, Jordan Point, Cherrystone, Back River, York Spit lightship, New Point Comfort, Wolf Trap lightship, Stingray Point, Windmill Point lightship, Smith Point lightship, Lower Cedar Point lightship, Upper Cedar Point lightship, Fort Washington, Jones Point, Bowler Rock lightship.

North Carolina.—Boyd Island, Cape Hatteras, Cape Hatteras beacon, Ocracoke, Royal Shoal lightship, Brant Island lightship, Neuse River lightship, Long Shoal lightship, Pamlico Point, Roanoke Marshes, Croatan, Wade Point, Frying-pan Shoal lightship, Roanoke River lightship, Cape Lookout, Bogue Banks beacon, Federal Point, Cape Fear, Oak Island, Rice Creek, Horseshoe Shoal lightship, Orton Point, Campbell Island, Upper Jetty Range.

South Carolina.—Charleston, Bull Bay, Rattlesnake Shoal light-vessel, Cape Romain, Fort Point, Georgetown, Sullivan Island beacons, Fort Sumter, Castle Pinckney, Battery beacon, Hunting Island beacon, Cambahee Bank light-vessel.

Georgia.—Martin's Industry light-vessel, Callbogue Sound light-vessel Tybee, Tybee beacon, Tybee Island Knoll light-vessel, Cockspur Island beacon, Oyster Beds beacon, Fig Island beacon, the Bay, Sapel beacon, Wolf Island beacon, St. Simon, Little Cumberland Island.

Florida.—Amelia Island beacon, North beacons, St. Johns River, Dame Point lightboat, St. Augustine (Cape Canaveral), Jupiter Inlet, Cape Florida, St. Marks, Dog Island, Cape St. George, Cape San Blas, Pensacola (bar beacon), Fort M'Rea beacons, Barancas beacons.

Alabama.—Sand Island (beacons 1 and 2), Mobile Point (beacons 3 and 4), Choctaw Point (Choctaw Pass) beacons.

Mississippi and Louisiana.—Round Island, East Pascagonia River, Ship Island, Biloxi, Cat Island, Pass Christian, Merrill Shell Bank, St. Joseph Island (lighthouse), Pleasonton Island, Procter ville beacon, Rigolets, Bon Fonca, Port Ponchartrain, Bayou, St. John, New Canal, Tchefuncti River, Pass Manchac, Chandeleur, Pass a l'Outre, South Pass, Head of the Passes, S.W. Pass, Timballier Bay, Ship Shoal, S.W. Reef, Shell Keys, Sabine Pass.

Texas.—Bolivar Point beacon, Pelican Spit, Galveston Range beacons, Half Moon Shoal, Red Fish Bar, Clopper Bar, Matagorda, Saluria, Half Moon Reef, Swash, Aransas Pass, Padre Island beacon, Point Isabel, and Rio Grande.

The lighthouse at Tybee has since been burned by the rebels, and that at Charleston Harbour blown up. A total of 127 lights, many of which were necessary to the safety of the neutral commerce of the world.

The Chairman then stated that on visiting Liverpool lately he had had an opportunity of seeing something of the Naval Reserve at that place. It happened to be drilling time, and things were done in a highly creditable way on board the *Hastings*, that fully justified the report made of them.

The report stated that the men, about eighty-three, were first of all put through sighting practice at a mechanical target, fixed 'tween decks, which rolls and heaves as a vessel would do in a seaway, and which records the result of the aim, good, bad, or indifferent. A popular ex-mayor who was on board was successful in hitting the bull's-eye. It was pleasant to see the earnest manner in which the volunteers went through their duties. The visitors then descended to the main-deck to witness the drill with 32-pounder guns. The men were first put through handspike drill, and the smartness and alacrity with which they performed it could scarcely be surpassed. They then went through the operation of sponging, loading, aiming, and firing, without a mistake, and with a minimum of prompting. In "quick time" they loaded and fired three times in fifty-eight seconds. The mounting and dismounting a heavy gun were also performed most satisfactorily. And yet many of these men have only been at drill for a few days. The cutlass and rifle exercises followed. At the termination of the drill all the men were paraded. A finer body of seamen never stood on a ship's deck. Their appearance was intelligent, clean, and respectful. Each man had a regulation cap, with the letters R. N. R. inscribed on the ribbon.

He was very glad to see that this subject had been so warmly followed up—one which had been first started in the pages of their adopted *Nautical*; and in addition to the foregoing proof of its efficient condition, he looked on the report of the Registrar as a document of which England might be proud. It was something for her enemies to look at, and long might she be able to boast so glorious a roll of able nautical defenders. He was also glad to see that there was a fair chance of the whole body of our merchant seamen and officers qualifying themselves for the Reserve, the masters and mates having recently addressed the Admiralty to afford them opportunities for learning the gunnery drill and small arm exercise.

The report on the NAVAL RESERVE had been referred to, which showed that 9,287 claims have been received and 8,229 volunteers enrolled in the undermentioned ports in the Naval Reserve:—

Aberdeen	285	Greenock	30	Penzance	13
Aberystwith	18	Guernsey	1	Perth	5
Alloa	33	Hartlepool	447	Peterhead	76
Arbroath	19	Harwich	4	Plymouth	119
Banff	6	Hull	41	Portsmouth	5
Barnstaple	1	Inverness	21	Ramsgate	1
Berwick	24	Leith	41	Rochester	6
Blyth	47	Lerwick	50	Scarborough	18
Borrowstoness ..	3	Limerick	7	Seaham	312
Boston	1	Liverpool	375	Shields, North ..	971
Bridgewater	114	Llanely	2	Shields, South ..	233
Bridport	3	London	2,278	Southampton	110
Bristol	419	Londonderry	2	Stranraer	1
Cardiff	1	Lowestoft	9	Sunderland	902
Cork	48	Lyme	1	Swansea	59
Dartmouth	73	Lynn	2	Teignmouth	4
Dundee	435	Maldon	4	Waterford	7
Exeter	65	Maryport	30	Wells	2
Falmouth	14	Middlesborough ..	1	Wexford	3
Faversham	7	Milford	10	Weymouth	5
Fowey	32	Montrose	19	Whitehaven	36
Galway	11	Newcastle	127	Wisbeach	1
Glasgow	115	Newhaven	3	Yarmouth	29
Gloucester	1	Newport	3		
Grangemouth ..	3	Newry	1		
				Total ..	8,220

Of the above, 24 hold certificates of competency as masters, and 116 certificates of competency as mates; 17 hold certificates of service as masters, and 38 certificates of service as mates. Total holding certificates 195. And the force embraces 1,145 petty officers in the merchant service.

Reserve men are not prevented from making long voyages, as leave may be obtained from a shipping master after the drill has been performed. Reserve men are required to produce their books, R. V. 2, to the shipping master whenever engaged or discharged; and to consuls abroad on the like occasions, in order that the necessary entries may be made therein; and to deposit their books with the naval officer when entering on drill or entering the Royal Navy.

A volunteer must have served five years at sea, be an A.B. one year, and be under thirty-five years of age. He will receive £6 every year as a retaining fee, payable quarterly, and a pension of £12, after requisite service, at sixty years of age, or before if worn out. He is eligible for the coast guard and Greenwich Hospital. He is required to perform twenty-eight days' drill during each year, and will receive pay and allowances while on drill.

For detailed particulars respecting enrolment and drill, application should be made to a shipping master.

(Signed)

J. H. BROWN,

Registrar-General of Seamen and Shipping.

*General Register and Record Office of Seamen
and Shipping, January 1st, 1862.*

A sailor lad says he is sent for by Mr. Secretary, sir.

Oh aye, all right, responded this gentleman; let him come up stairs: (turning to the Chairman, he added) that young man-of-war's man not long entered from the merchant service that I mentioned to you.

To be sure, replied the Chairman, let's see him and what he thinks of her Majesty's ships.

"Jack Spratt," gentlemen, said the waiter as he ushered a fine handsome youth into the club room.

That sounds fishy, observed Rodmond.

Well, youngster, said the Chairman, so you are a reserve man, eh?

Ha! ha! don't know that, sir: they don't call me reserved, I speak out, sir. I'm first class boy, to be rated ordinary soon, sir.

And how do you like a man-of-war? plenty to do, eh?

Never was so happy in my life, sir; plenty to do and plenty of hands to do it, sir.

And plenty of grog.

Don't care for it, sir, as some do; but we have plenty to eat and drink.

And at Christmas time too, eh?

O, I believe you, sir, lots of Christmas fare, had all kinds of prog. Couldn't see fore and aft the deck for the smoking dishes and the Christmas boughs.

Plenty of leave, eh?

As much as we want, sir. We goes ashore till we are tired of it.

And how did you pass your Christmas day?

Right jolly, sir.

And what did you find to do after dinner? pick oakum?

What, on Christmas day, sir? No, we called all hands to dance.

And chaired your first lieutenant round the decks, eh? asked Rodmond.

Ha, ha, I remember a spree of Jack's a short time ago on Southsea common. A party of them had just landed from their ship and on their walk from the boat came across a donkey, grazing quietly enough. But Jack was always for a bit of fun, and a ride would do; so one of them mounted, which was all well enough for the donkey to begin; but another would mount too, a proceeding to which the donkey would not agree,—in fact, he couldn't carry both,—so down he went on his knees, donkey like: but that wouldn't do for Jack, so seeing that the donkey couldn't carry them, they must needs carry the donkey, and four of them at once shouldered each of the donkey's legs, and thus hoisted up suddenly, he was marched along in procession, the animal all the while looking out before him as if quite at home and enjoying his ride apparently as much as Jack would have done could he have carried the four of them as easily as they did him.

A good burlesque that, said the Chairman, on "*chairing a member!*"

Well, Jack Spratt, they say you're a good hand at a stave. You're merry on the lower deck, eh? Well, give us that about the Reserve that you have picked up. You're just the lad we wanted.

Jack strikes up.

Come all ye jolly bold Reserves,
 Come listen to my song :
 It is made for the occasion,
 And will not keep you long ;
 'Tis to make known our opinion,
 And to make it very plain,
 That the sea is our dominion,
 Which we ever will maintain.

When our noble Queen commands us,
 We will cheerfully comply,
 For " Ready, always ready, boys !"
 Is still our constant cry ;
 And this is our opinion,
 And we'll make it very plain,
 That the sea is our dominion,
 Which we mean for to maintain.

We will hoist Old England's glorious flag,
 And keep it flying still ;
 And we'll fight for Queen and country,
 With a hearty loyal will ;
 And we'll make known our opinion,
 And make it very plain,
 That the sea is our dominion,
 Which we mean for to maintain.

Oh ! there's no ship like a British ship,
 That sails the world around,
 And there's no land like Old England,
 Our dear lov'd native ground ;
 And the sea is our dominion,
 Which we mean for to maintain,
 There is no mistake about it,
 And we'll make it very plain.

Here's a health unto our gracious Queen,
 And her dear family :
 And also to our sailor Prince,
 Who'll lead us by and bye ;
 And this our opinion,
 Which we ever will maintain,
 For the sea is our dominion,
 And we'll make it very plain.

Here's to our gallant officers,
 Who've joined us in the cause ;
 And to the noble gentlemen
 Who made our sailor's laws ;
 For the sea is our dominion,
 Which we mean for to maintain,
 And there's no mistake about it,
 And we'll make it very plain.

Well done, Jack Spratt; you'll do, my boy. Now tell them they are to look after you. And here, youngster,—Saucy Jack Spratt,—continued the Commodore, you like a bit of fun, I see. Stick to it, my boy,—it will keep the devil out of your mind and out of the ship too, and remember that it is the most conservative element of society, and ought to be cherished and encouraged by all lawful means. People never plot mischief when they are merry. Laughter is an enemy to malice, a foe to scandal, and a friend to every virtue. It promotes good temper, enlivens the heart, and brightens the intellect. Laugh when we can. No one likes a long face, so mind you always laugh when you can.

Aye, aye, sir.

Nautical Notices.

DANGERS IN THE CARIMATA PASSAGE.

It is very well known to East India navigators that the Carimata Passage, that wide channel between the West side of Borneo and Billiton Island, is one of the most dangerous to navigate in that part of the world. The extensive character of it, moreover, above a hundred miles across, renders a survey of it a very serious undertaking, and no one need be surprised at such a work never having been done. The consequence is, the occurrence occasionally of wrecks and accounts of ships more fortunately *only* getting aground. Here is the report of a ship called the *Spirit of the North* having grounded near a small group of islands in the N.E. part of the strait, that we preserve as another caution to ships passing in their neighbourhood, showing the extreme faultiness of the charts, as it appears in that valuable paper the *Singapore Free Press* of November 8th last.

We have received from Captain Wise, of the *Spirit of the North*, the following description of the shoal in the Carimata Passage on which that ship lately grounded.

September 21st, 8h. a.m., on the starboard tack, heading N.E.b.E., West group Pulo Papan, East side of Carimata Passage, about half a point on weather bow. 8h. 35m., had passed two islands, a third nearly abeam, and a fourth one point on the weather bow, each distant about two miles. I observed reefs extending nearly a cable's length from the N.W. and S.W. extremes of the third island, which were not on the chart. It was evident the place was not well surveyed, and I ordered the crew to station for tacking, as it seemed not unlikely there might be detached reefs lying off the island.

8h. 40. a.m., the helm was put down, and almost immediately after, the ship struck on what appeared to be a coral shoal, not laid down on

the chart. A few minutes before this we had 9 fathoms, muddy bottom; there were now 17 feet at the starboard gangway.

All fore and aft sails were at once taken in, and the yards laid flat aback. As soon as the ship felt the weight of the canvas she came off stern foremost. Wore round and stood to the southward.

The West group of Pulo Papan consists of four islands, three only are laid down on the charts. The southernmost one bears nearly South from the one next to it, the remaining three are nearly in a line N.E.b.E. and S.W.b.W. The way the ship was heading she would have passed them at about equal distance. The shoal is two to two and a half miles N.W. from the middle one of the three. A current was setting S.E. about one mile per hour. The water was not discoloured, and when on the reef small round white patches were very indistinctly seen under the bottom. The water was quite smooth.

A 28lb. lead was over the side, and the sailmaker stationed at it to notice when the ship moved. Before she had gone a quarter of her own length astern, the lead dropped at once from 17 feet to 9 fathoms. After the ship was docked several planks high up on the port bilge in the way of the fore rigging, were found rubbed. I think there could not have been more than 12 feet under that part of her. As the ship drifted slightly to the S.E. before gathering sternway, it seems very probable that the shoal is altogether separate from the island.

CHAS. E. WISE, *Spirit of the North*.

There is no doubt that the Papan Islands are very wrongly shown on the chart; but it is right to observe that West of the group the chart shows no soundings for a space of eight or ten miles, and that Captain Wise was therefore really exploring unknown ground, finding, as he says, an island and reef entirely omitted. We have in a former volume alluded to this custom, which is risking the loss or at least injury to the ship. Where the lead has been, as shown by the soundings, a ship may go; but a blank space like that to which we have alluded is dangerous, being unknown ground. And this is really the part of the nautical surveyor to explore and report on. There are too many of these in the Carimata Passage, and the *Spirit of the North* has paid the penalty for exploring one.

But although this Carimata Passage is so extensive, there are parts of it through which a ship finds it advantageous to pass, so as to keep to windward, which are comparatively more dangerous than others,—from natural formation. Thus the Papan Islands belong evidently to a series of islands and dangers extending across in the N.E. part of the strait from Borneo to the S.W. towards Billiton. No doubt there are safe channels through them, and a service would be rendered to navigation if a fair channel on the Borneo side were explored and laid down in the chart, that all ships might then follow with safety. Thus a correct chart of the channels between Carimata Island and Borneo would be a most important contribution to a general chart of the whole "Passage," and would go far towards its safe navigation, although forming but a portion, and yet a principal one, of the whole channel.

We have done the whole of Banca Strait. What are our friends the Dutch doing to whom so much of Borneo belongs? Cannot they go to work here, and run off this survey of an area some thirty or forty miles square, while we are at work East and West of them? Surely they have as much interest as we have in giving to the world an accurate representation of hydrography in these extensive waters, or are we to do it for them?

DANGERS ON THE WEST COAST OF SUMATRA. *From the Batavia Gazette.*

The following reef is one of the many unknown dangers of the coast of Sumatra, and leads to ask when we are to see a chart of this part of the Dutch possessions in the East that will have any pretensions to accuracy.

Batavia, 7th November, 1861.

The commission for improving the Indian Sea charts, give notice of a reef recently discovered by the Netherlands steam ship *Padang*, on the West coast of Sumatra. It appeared to be about four ships' length in extent, with a depth of 14 and 15 feet water. The following bearings were taken near the centre of the reef:—Pulo Muskets S.E.b.S.; Karang Laut W.N.W. $\frac{1}{2}$ W.

*President, G. VOGELPOOT.
Secretary, H. DYSERINICK.*

On the North coast of Brazil the following will be found a useful *Caution to Mariners*:—On making *Paramaribo* they must be on their guard when running down the coast during the night, as the fishermen all along the coast to leeward of the Marowga River have large fires, which have repeatedly been mistaken for the Lightship off the Surinam River.

H. SAWYER, *U.S. Consul.*

THE PRATAS,—*China Sea.*

In the volume of this work for 1857 will be found an account of wrecks on the Pratas, with remarks on them by the late Mr. C. Biden while harbour master at Madras. The account was concluded with an interesting narrative of the wreck of H.M.S. *Reynard*, by Captain Cracroft. Since which we have also heard of a Dutch ship being lost on a reef to the northward of the shoal. And this event leads us to place confidence in the following account of a reef fifty miles N.N.E. of the reef, that has appeared in the *Straits Times*. Ships should be very careful how they approach these shoals, the danger of which is much increased by the uncertainty and strength of the currents which prevail about them.

The British ship *Cyclone* has had a succession of light airs and calms the entire passage. For the last four days has been becalmed outside. Captain Hossack discovered a reef on the 9th inst. bearing N.N.E. from the Pratas Shoal, about fifty miles distant, when standing to the N.W., wind W.S.W. Tacked ship, having seen two patches; the easternmost one appeared to be very shoal with about two or three fathoms water on it, extending about 400 feet, and the water breaking on it. From good observations the true position is, lat. $21^{\circ} 31' N.$, and long. $117^{\circ} 7' E.$, Prata Island bearing S.S.W., distant fifty miles.

DANGERS IN THE SOUTHERN APPROACHES TO THE MINCH,—
West Coast of Scotland.

The southern approaches of the Little Minch, that channel which, with its greater namesake, the Great Minch, is the great thoroughfare between the Hebrides Islands and the western coast of Scotland, has not even yet fallen under the examination of our naval surveyors, notwithstanding its proximity to Tobermorey. To the S.W. of Cana Island there appears to be a series of dangers, among which is one alluded to in the following account, which we find in *Mitchell's Register*. Until these dangers are correctly laid down, vessels from the southward should keep outside or to the westward of them when S.W. of Cana, and give the island a berth of eight or ten miles, keeping midchannel between that island as they run northward or southward. The S.W. extreme of this ridge, at present marked by Mills Rock, is cleared when the South point of Rum and the North point of Egg are opening of each other

Lerwick, December 9th, 1861.

Sir,—Please publish the following Notice to Mariners passing through the Minch to or from the Sound of Mull. On the 23rd October, 1860, as I was on my way from Liverpool towards Lerwick, running with a gale from S.W., I was struck with a heavy sea, which knocked everything adrift about the decks. However, going about nine knots, the next one did not catch us, which broke more violently than the first. So I took no more notice, but thought it was the tide running against wind, as there was no sea to make it break in twelve fathoms, which is the least water laid down in the chart, and also in the direction book, with directions or corrections to 1858.

And now, passing the same place on the 28th October last, at six p.m., civil time, with a light air of wind, and keeping the lead going on a regular bottom of thirteen to fourteen fathoms, it suddenly shoaled to $3\frac{1}{2}$ fathoms, which made everyone think she would be aground next minute. However, after a distance of ten yards, it slowly deepened to seven and ten, and so on to fourteen fathoms. It was dark at the time, so I could not take the proper bearings, but, as near as I could conjecture, the Humela Rock bore S.b.W. distant $1\frac{1}{2}$ mile, and the West end of Cana Island N.E. $\frac{1}{2}$ E., distant $1\frac{1}{4}$ mile.

It is right in the fairway between Ardnamurchan Head and the entrance of the Minch, distant from the former twenty-two miles, and the latter eighteen miles; and as a vessel is very apt to strike upon it with any sea, I think it is worth taking notice of; and if I am required, I can find out the spot with very little trouble.

Yours obediently.

ROBERT NISBET, of the schooner *Novice*.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of January, 1862, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

- United States, Kennebec River, U.S. survey, 1858, (1s. 6d.)
 - United States, Gloucester Harbour, U.S. survey, 1854, (6d.)
 - United States, Hatteras and Ocracoke Inlets, U.S. survey, 1857, (1s. 6d.)
 - United States, Cape Fear to St. Catherine Island, U.S. survey, 1857, (2s. 6d.)
 - United States, Wingah Bay and Georgetown Harbour, U.S. survey, 1855, (1s. 6d.)
 - United States, Edisto River, U.S. survey, 1856, (6d.)
 - United States, Port Royal Entrance and Beaufort Harbour, U.S. survey, 1855, (1s. 6d.)
 - United States, Galveston Harbour and three plans, U.S. survey, 1858, (1s. 6d.)
 - Red Sea, Jubal Strait, with views, Commander Mansell, R.N., 1861, (3s.)
 - China, Pechili Gulf, Port Adams, with a plan of Hulu-shan Bay, Commander Ward, R.N., 1860, (2s. 6d.)
 - Pacific Ocean, Tubuai Island Anchorage, Captain Bonard, French Imperial Navy, 1850, (6d.)
 - Directions for South and S.E. coasts of Africa, Robben Island to Natal, by G. March, Esq., Master, R.N., 1861, (1s.)
 - New Zealand, Hydrographic Notice, No. 2, West coast, North Island.
 - Tide Tables for 1862, John Burdwood Esq., R.N., (1s. 6d.)
 - African Lights, corrected to January, 1862, by Commander Dunsterville, R.N., (6d.)
 - British North American Lights, corrected to January, 1862, by Commander Dunsterville, R.N., (6d.)
 - West India Lights, corrected to January, 1862, by Commander Dunsterville, R.N., (1s.)
- Hydrographic Office, 20th January, 1862.*

THE LOSS OF THE BARQUE "NORMA."

[We preserve the following account of disaster in the dangerous Caroline Archipelago of the Pacific, as it may meet the eye hereafter of those who are not only concerned in it, but have had a share in the sufferings to which it refers.]

Annexed is a copy of two communications forwarded to Lloyd's by the agents at Liverpool, relative to the loss of the English barque

Norma, Wilson, from Newcastle (N.S.W.) for Hong Kong, on an uninhabited island in the Pacific Ocean, known as St. Augustine; but as regards the fate of the crew nothing is known.

H.M. sloop Pioneer, Hong Kong, October 19th, 1861.

Gentlemen,—In compliance with the request which it contains, I have the honour to forward you, for your information, the enclosed papers, together with a copy of the record which it covered, and which was found by me on the island of St. Augustine on the 25th ult., when in search of the party of which the writer was one.

I am, &c.,

H. H. REILLY, *Commander.*

To Messrs. Carne, Newton, and Co., Liverpool.

St. Augustine, or Mearthead Island and Road, North Pacific Ocean, 7° 11' N., 155° 18' E., August 19th, 1861.

This is to be left in the S.E. end of this island, in a white glass bottle, under the ship's name, *Norma*, nailed to a tree.

We leave this island about this date in a boat which was built on this island by twenty-two hands of the barque *Norma*, lost on the reef twenty-four miles E.S.E. from this, on Sunday night, the 31st of March, 1861. We arrived at this island, in all thirty-one hands, in one longboat and two smaller ones, on the 7th of April; and on the 17th of April Captain Wilson, wife and child, the chief officer (Mr. Robinson), one sailmaker, two quartermasters, and two lascars, left this in the longboat, taking all sextants, chronometers, and compasses, leaving nothing in case they were lost. They went away with the intention of going to Guam to get assistance for us, the other boats being too small to carry all. We have now been in this island better than four months, living on cocoanuts and wild fowl and turtle, which were to be had plentifully, but this last month there has not been any. We are going to try and reach the Pelew Islands if we can (God willing), having heard nor seen any person since the longboat left. So much for captain's promises and pride of English captains. A nice idea of the brave,—first to leave the ship and first to leave the crew!

On the reef, about fourteen miles from where the *Norma* was lost, is the wreck of a large Belgian ship—the *Constant*, of Antwerp—lost about the 7th of July, 1858, from Sydney (N.S.W.) to Manila. The *Norma* was from Newcastle (N.S.W.) for Hong Kong. We left on the 4th of March, 1861. Her owners are Dent and Co., Hong Kong. If this record should be found, the finder (God willing), if he get on shore safe in a Christian country, forward it to Dent and Co. they would much oblige. We had to break up one of the small boats for nails. She was quite rotten.

This is written by ROBERT NIXON TWEDDLE, late second officer of the barque *Norma*, on behalf of J. H. Foreland, carpenter, George Edwards and Isaac Ceffic, quartermasters, and eighteen Lascars.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

MARCH, 1862.

NOTES ON A VOYAGE FROM THE CAPE DE VERDES TO THE HAVANA:—*Navigation—Private Hospitals, Yellow Fever, and Coaling Stations—The barque “Emerald Isle” and a Consul’s Naval Board of Inquiry.*

Sir,—I send you a few notes made during a voyage to the West Indies, hoping to call attention to the necessity that exists for the erection of a public hospital for merchant seamen at Havana!

I took a cargo of coals to the Cape de Verdes. While at St. Vincents I saw three large ships come in and run aground before they could be brought up. The masters of them told me that they were deceived through the coaling hulk having been shifted further in. The water shoals very rapidly. In going in, after having nine fathoms the next cast gave a half five. I threw all aback and anchored in a quarter less five. There are two red buoys, moorings for steamers, laid down in about twenty-eight feet water. All coal ships must lie inside those buoys to discharge, so as to give the steamers a clear berth.

There is a small white house that stands in a bay on the port hand going in. This house in line with the bluff rocky point under the battery is a good anchoring mark for a heavy ship. On this line you will have twenty-eight or thirty feet water. Anchor well up towards the battery: the boats can then easily come off to and return from the ship.

It is a tedious business discharging, on account of the number of.
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saints' days they have here. Not only are all the saints' days of the Romish Calendar to be observed, but the old black priest has made a saint's day for every Christian name on the island not therein contained. Besides this, all cargo boats are put in requisition a couple of days before the steamers are due, and nothing can be landed until they are coaled. A ship should therefore work two gangs when she has the boats.

The sand ballast also comes off very wet. I estimate that what I took in lost in weight sixteen per cent. I took in twenty boat loads, and landed 250 tons; the ship drew four inches less water at her loading port on her arrival than when she left; the loss in weight arises from the water draining from the sand.

While I lay at St. Vincents a circumstance happened that I think cannot be too well known among navigators, as no doubt many of them are disposed to doubt the strength of the currents among these islands. The American ship *Borodino* arrived off the East end of St. Antonio early one night in June, and hauled her wind to wait for daylight. Shortly afterwards it fell calm, and the ship was drifted by the current over to St. Vincents, and had to let go an anchor in forty fathoms water to prevent her being driven on to the rocks. At daylight next morning a breeze sprung up, and she slipped her chain and came to an anchor at Porto Grande. Her commander (Captain Flower) told me that while he was at anchor he hove the log and found the current setting three knots per hour. In this instance there can be no mistake about a current.

A few days previously I had worked to windward from five p.m. until six a.m., with three topsails, jib, and mizen, and did not find any lee current. But the case of the *Borodino* shows that sometimes a most dangerous current is running amongst those islands.

I left St. Vincent on the 28th June and ran through the Old Bahama Channel without any difficulty (now it is lighted it is quite safe), arriving at Havana on the night of the 17th of July. Ships bound to Havana save much time by going through the Old Bahama Channel. I passed the meridian of 58° W. on the 10th of July and arrived off Havana on the 17th. Two London ships, both in ballast, passed the same meridian, one on the 8th the other on the 9th; both those ships arrived at Havana on the 26th; they both sailed as well as my ship, yet in 1,100 miles we beat them ten days! I may observe that I had never been through before, and my only directions were published in 1828. Maury's *Sailing Directions* is a very valuable work to the Atlantic navigator, but it is so large that it is difficult to find the information required.

Last winter I was bound from India to New York, and I read with attention Maury's remarks upon the Gulf Stream. I steered N.W. across the stream to make the land about Cape Lookout, but in the middle of the stream was caught in a heavy S.E. gale. I then hauled up for Cape Hatteras under close-reefed topsails and fore sail, taking the temperature of the water every ten minutes. At ten minutes past midnight the temperature of the water fell 4°, and five

minutes afterwards 2° more, viz., namely from 76° to 70° , and in another ten minutes down to 68° . The wind had hauled round to the southward, and I kept the ship up E.b.N., and in twenty minutes had the water thermometer up to 76° again. To test the truth of Maury's "wall of cold water," I twice kept the ship off North, and in ten or fifteen minutes the temperature of the water fell to 67° , and I then hauled up East and in about the same time we again had it up to 76° . I was aware that the stream was forced inshore by a S.E. gale, so, being afraid of the shoals off Hatteras, I hove to at 2h. a.m.

I was twenty days, in December and January last, beating about between Cape Hatteras and New York, and as we are likely to have some ships cruising on that station I will offer a few remarks. Blunt's *Coast Pilot* is the best book of directions; Maury's coloured chart of the approaches towards New York is very valuable. I found the water thermometer an infallible guide as to when we got on soundings; invariably the temperature of the water fell 5° when we came into fifty fathoms, and when the ship was inside of twenty fathoms the temperature of the water was 2° lower sometimes, but generally the same as the air. Steering N.W. from the Gulf Stream with the temperature of water 76° , we came to 67° , shortly after to 60° , and when in fifty fathoms, on the parallel of Cape Charles, the water thermometer showed 45° ; this difference was run in a few hours. In a short time we were so certain of the ship's position by the changes in the temperature of the water that my officers have frequently reported to me that the ship was on soundings, and on inquiry I have found that they had not had a cast of the lead, but judged by the water thermometer.

The soundings between Cape Hatteras and Long Island are so regular and so well laid down on Maury's chart that no man could be in doubt of his position if he only made use of his lead. Either in making a passage to New York from the southward or in cruising on the coast in winter, a ship should get inside the Gulf Stream as soon as she rounds Hatteras. A current nearly always sets towards the mouth of the Chesapeake, between the latitudes of Cape Henry and Barnegat. When it sets in for a regular winter gale from the N.W., a ship has smooth water by keeping inshore between twenty fathoms and forty miles outside of that. If she is further off than that the sea is very heavy. Winds from the eastward nearly always bring wet and thick weather. The deep sea lead is almost the only pilot required on the abovenamed coast.

I offer the following suggestion to any officer who may have to cruise on the North American coast in winter,—it will save the crew much exposure aloft. Take out the close-reef points of the fore and main topsails and fit points instead with an eye in one end; then put them into the close-reef the same as the points are fitted to the courses, viz., with a piece of rope rove through the eyes of the points on the fore part of the sail and stretched taught across from leach to leach. Let the topsail-yard be secured so as to set the sail close-

reefed, and make the close-reef fast securely to the yard. Then bend the head of the sail to another yard above with halliards fitted to it, to hoist up and down as required (the upper yard might be much lighter than the proper yard). It will be seen that by putting spilling lines on to the upper part of the sail, the topsails may be clewed down snug and set close-reefed without any one leaving the deck.

No person who has not cruized on the American coast can fancy the severity of the winter squalls, nor how much the men suffer when sent aloft so frequently to reef. The above plan is now followed by many of the large American ships when going round Cape Horn, and also on their own coast. The sail is not cut or altered in any way, and when the ship goes into harbour the extra yard can be sent down out of the way.

The Americans thoroughly understand the way to navigate their own coast, and no ship of any kind ever neglects the use of the water thermometer. It is to them what the lead is to us in the Channel. I have lately conversed with British officers (some of the Royal Navy) who spoke lightly of the value of the water thermometer. The above remarks may call attention to it.

On the passage to Havana I turned the crew out of the forecabin, and gave it a thorough clean out and two coats of paint; and I did not allow them to return to it until the day before I arrived. I lay forty-three days in Havana. Most of my crew were sick and went to hospital,—two died. I attribute the recovery of many of them to the newly-painted, clean forecabin, and to their removal from the hospital to the ship as soon as the fever was reduced. I turned the poop into a convalescent ward, having five or six in it at a time. I treated some cases myself and was successful. I gave a strong emetic, warm foot bath, ten grains of calomel, and then castor oil; all who were thus treated recovered.*

During the whole time my crew were in hospital not one of them ever had a wash. I offered to take soap, towels, &c., from the ship, and some hands, and wash them; but the doctor told me that it was not their practice to wash the patients, that yellow fever was better treated without doing so. As soon as my people came on board I acted on the opposite plan and they all recovered. I took some trouble to collect the following facts, and as English sailors are likely to be in requisition, I hope they will obtain some attention from people who are in a position to do something to alleviate the sufferings of poor Jack, who has but few friends in Havana.

I do not think that people who are not in the trade have any idea of the amount of sickness there is among European sailors in Havana every season, nor of the number of deaths that occur there among them. The harbour of Havana is simply a cesspool (rapidly filling up) to receive the drainage of the surrounding country and the sewage of a city containing upwards of 250,000 inhabitants, with its

* A successful mode of treating yellow fever will be found in our volume for 1853.

slaughter-houses, gas-houses, &c., all drained into it. In short, every thing that has been written about the state of the Thames holds good of Havana; and the latter place has scarcely any tide, so there is no change of water in the harbour. Take an instance, two rats were killed one morning on board my ship and thrown overboard; they were floating about in sight of the ship for forty-eight hours.

The deadly sickness of Havana is caused by the exhalations arising from the harbour. The stench is horrible, especially if you have to do anything with anchors and cables to disturb the bottom. Coal ships suffer more than any others, and generally have more fatal cases. The coal wharves where they discharge are considered less healthy than other places, especially the one in West Reglia. The head of East Reglia Bay is considered the most healthy place in the harbour, and West Reglia the most unhealthy.

I was informed by medical men that people under thirty years of age were much more likely to have yellow fever, and were generally worse, than middle aged or elderly persons; that sailors from the northern nations of Europe suffered more than those from the south; and that persons who had passed the winter in a very cold climate were much more liable to have the fever than if they had been in the tropics; also that acclimated persons after passing a winter in a cold climate were again subject to attack. I was told that the average amount of sickness among unacclimated European and American seamen was in the first fifteen days forty per cent. sick and five per cent. deaths; after that, fifty per cent. sick and five per cent. per week deaths; or for the season, ninety per cent. sick and thirty-three per cent. deaths. This appears a large amount, but it only applies to the sickly season, and I have understated what I was told by resident medical men, who could have had no object in deceiving me.

What I have here stated is for the purpose of calling attention to the absolute necessity there is for the erection of a public hospital for sick seamen at Havana; where they can have not only medical attendance but careful nursing, and be in a well drained and ventilated place, with water-closets, plenty of fresh water, and other requisites of an hospital, without which it is impossible for fever patients to recover. As the case is at present it is heartrending to see the sufferings of the poor fellows who are daily taken to the private hospitals from every European ship in harbour, and nightly shovelled into the mud, called a cemetery, by brutal Chinese Coolies and African slaves. In many instances not a soul who can speak his language is near to soothe the dying moments of the poor fellow; nor even is the funeral service read over his corpse.

For the space of five weeks I attended the hospital every day, sometimes twice or thrice, and I write from my own observations. I wish most distinctly to be understood as not casting any reflections on Dr. Bellot's establishment, for it was there I placed my crew, nor yet on the resident surgeons, nor on the method of conducting the hospital. On the contrary, I assert that everything was done that I could wish for, as far as the means permitted, and that Doctors Catlin

Nicholas were unceasing in their attention to the patients. And I publicly tender my thanks to them for their care and kindness to my crew, especially to my apprentices and officers.

But the private hospitals are a joint stock speculation to make money. They are purely investments to secure a larger per centage than bank interest. The proprietors are not residents. The resident surgeons are salaried. Admission is obtained by contract, the whole crew of a ship are taken at five dollars per head, and all the sick are taken to the hospital; or they are admitted when sick at the rate of three dollars per day for each person. The former is the usual practice. When a patient dies he is buried by the hospital staff, and twenty-five dollars are charged for funeral expences.

Heaven forbid that I should insinuate that there are people so dead to the common feelings of humanity as to allow patients to die in hospital when medical skill could save them; such is not my intention. But the fact remains, that under the contract the hospital receives sixteen dollars if the patient dies, but only five dollars if he recovers.

I need not express my opinion on the expence actually incurred by the hospital for each funeral: common report affirms that it is very little. I did not witness one, although I was informed that during the time my crew were in hospital there had been fifty deaths. I inquired at the British Consulate about the funeral expences, and was informed that they are apportioned thus:—To the Spanish government, seven dollars; to the priest of East Reglia parish, seven dollars; for the coffin, seven dollars; and for the bearers, four dollars; equal to twenty-five dollars. This seems a monstrous sum for the funeral of a sailor; especially the fourteen dollars paid to the government and the priest. The vice-consul in Havana told me that he had had correspondence with the authorities both at home and in Cuba, and that there was no getting off paying that amount. I feel much obliged to Mr. Crauford for his kindness and advice to me, and for the civility and attention I received both from him and the consul-general.

The present private hospitals are built on low land, nearly level with the water of the harbour; there is not a water closet in the place, nor is there any kind of drainage; the only convenience is a chamber utensil for each patient, which at stated times is emptied into the water of the harbour, which flows up to the walls. The effluvia arising from this system may be imagined; the stench is intolerable. Fresh water had to be carried in casks from another part of the harbour. How can fever patients be expected to recover?

But far as these establishments are from what is required, we are truly thankful to have them to take the sick to. In talking to the consul-general about a public hospital, he expressed an opinion that the British government had other things to do besides building hospitals for merchant sailors. I beg leave to differ in opinion with him, and to assert that it is the bounden duty of the British government to see that there is hospital accommodation in Havana for British sailors, a greater number of whom, serving in British and American

vessels, die every year there than were killed in the battle of Trafalgar: or I think I may say have perished by any single catastrophe since the *Royal George* foundered.

The proper site for an hospital is on the high land on the North side of the harbour. There is plenty of room to the eastward of the fortifications. There is elevated ground there, with a sea breeze every day, pure air, free from the stench of the harbour and the miasma of the low land, affording every facility for good drainage, ventilation, &c., and not more than 400 yards from the landing place. If a good hospital was erected, and in good working order, it would be self-supporting if the British and American governments made it imperative on all their ships to pay five dollars for each of the crew. If France and the northern nations joined in this, it would pay interest on the capital.

As an answer to shipowners about expence; 1, they pay that sum now, and cannot avoid it: 2, they pay now to the Spanish government tonnage dues and mud machine equal to 1½ dollar per ton, the other one sixth of a dollar per ton would pay the hospital fee, and be a good excuse for charging £5 a ton more freight: 3, they are bound by the articles to provide proper medical attendance for the crew when sick. The "Sailor" is among the most expensive and the most difficult to be procured of all our manufactured articles. I have heard it said that it requires six years to make a proper artillery man,—I am certain that it requires from seven to nine years to make a thorough seaman. If so, they are worth taking care of. It is very certain that upwards of three fourths of the crew of American ships are British sailors, therefore the manner in which they are expended is worth the consideration of the Board of Trade.

It is extraordinary how yellow fever selects its victims. No amount of care preserves people from it. I saw one of H.M. ships come into Havana at 6h. a.m., steam up to the coal depot, take in coals and steam out of the harbour again by 2h. p.m. the same day; in less than forty-eight hours one of her officers died, and the ship had to go to Halifax on account of the fever among the crew.

Having laid six weeks in Havana and four weeks in Matanzas, I was struck with the advantages of the latter as a coaling station for H.M. ships during the sickly season. The bay of Matanzas is open, with a cool sea breeze every day; the water is clear and is alive with fish; fresh water is plentiful, so are fresh provisions and supplies of all sorts, and 20 per cent. cheaper than in Havana. I found the beef as good as I have ever had on board ship in London. There is abundance of sand on the beach, and "broom stuff" close at hand, that would have gladdened the hearts of some first lieutenants I have known. There is also a railroad to Havana. It is true the ship could not go alongside the wharf; but there are launches that carry 70 tons.

I am certain that H.M. ships could coal and refit at Matanzas without the crews being liable to yellow fever in a greater degree than they are in the Windward Islands, always provided they were not

given liberty on shore during the sickly season. The officers would like the change, for there is really some pleasure in a walk on shore. I was informed that the bottom of H.M.S. *Romney*, after lying upwards of twenty years in Havana, was on the slip for breaking up, and went to look at it. The copper appeared nearly as good as when it was put on; the pieces I examined were very little worn. When I got to sea, in ballast, I found the ship's metal from the water line six feet down a complete bed of white coral an inch and a half long. It was not barnacles, but a compact mass of coral all round the ship, and it required a good scraper to pull it off. The water was too thick in Havana for us to see this stuff forming on the metal.

While lying in Matanzas, I was one day at the vice-consulate to form one of a naval board, to inquire into the competency of the mate of the British barque *Emerald Isle* to succeed to the command of her. The mate did not appear, but the carpenter and two seamen from her did, to lodge a complaint against the said mate. As the carpenter seemed to have cause of complaint, and very little notice appeared to be taken of it, I offered to put his statement upon paper for him; and in the vice-consulate, at the vice-consul's desk, I wrote a statement to the following effect, viz. :—

Henry M^cKay states that he is a native of Antigua, and that he is carpenter of the British barque *Emerald Isle*. That on the 28th of July, while on the passage from Liverpool in said ship, he was sick and had taken medicine administered to him by the master, and while under the effects of said medicine, the mate ordered him to go to work. He stated that he was sick, but prepared to obey the mate's order, who thereupon beat him with a belaying pin, striking him six blows on the head. Also that upon Monday the 16th of September, he was employed at his work on board the said ship in the bay of Matanzas, when John Wilson, one of the seamen, inquired what he was doing. When he told him, Wilson said, do not do that, go over the bows and look for a leak. The carpenter replied, both you and me looked on Saturday and could not find one, and continued his work, viz., cutting a piece of metal to put on the main topsail-yard; he was on his knees at the time. On this Wilson, without the slightest provocation, struck him a violent blow in the face, causing his nose to bleed, and making a contusion about the eye. The carpenter rose from his knees and caught hold of his assailant to prevent him from striking him again, when the mate came behind him, saying, you ———, who gave you leave to strike a man, and struck him (the carpenter) three heavy blows on the head with a large serving mallet, knocking him down on deck; and that while he was lying on deck Wilson struck him several violent blows on the head with a caulking mallet, knocking him senseless, stunning him, and making several severe wounds on his head. (In fact, these two cowardly scoundrels, one with a caulking mallet, the other with a serving mallet, were standing over the man beating his skull in.) That after this brutal treatment he lay senseless on deck, unable to move, and that a doctor was sent from the shore, who found him in this condition, and can

depose to the injuries he has received. M'Kay declares that he gave no provocation to the parties who made this murderous assault on him. He also says that his shipmates tell him that when the doctor came on board, the mate told him that he had fallen from the top of the house on his head.

I read this statement over in the presence of the vice-consul and the ship's consignee. M'Kay and his two shipmates all three signed it, and I handed it to the acting vice-consul.

No notice was taken of this complaint; an American chief mate was placed in command of the barque, and those two "brutal ruffians" were allowed to go to sea in the ship, without having been called upon even to deny the offence! The barque was bound to the United States. I cannot find words strong enough to express my indignation that such an outrage should have been permitted to pass unquestioned under the British flag.

I remain, &c.,

JAMES B. KENNEDY.

To the Editor of the Nautical Magazine.

The lives of our merchant seamen, even the sanitary condition of their ships, very properly form a subject of the first importance in the estimation of our government authorities. Captain Kennedy has here exposed one of the foul blots which yet remain to be eradicated, for he has shown the existence of a joint stock establishment in a pestilential harbour that is evidently so conducted as to prosper on those seamen being victimised. It is a cancer lying at the very root of our trade to the Havana, one of the first ports of the West Indies. We trust that the suggestions of Captain Kennedy will meet with the attention they so well deserve. But whether they are attended to or not, he has acquitted himself of his duty in a manner that does him much credit. Indeed, whether we look on the foregoing communication either from a nautical, medical, or juridical point of view, the opinions he has advanced and the information which he has given on all of these, are highly honourable to him, and prove him to be no ordinary member of his profession.

But here is a proof, from the *Shipping Gazette*, if we required it, that our seamen are looked after by the authorities. We hope that those at the Havana will be served as well. The case of the *Emerald Isle* is neither more nor less than one of the greatest brutality—Ed.

"At the last assizes of the Bouches-du-Rhone two English sailors were tried for murder. The Court appointed M. Bouteille as advocate to defend them, and they were acquitted. The English Consul at Marseilles hastened to Aix to thank the advocate, and offer him his fee, which he declined to accept. Shortly afterwards M. Bouteille received a case containing the collection of English laws in five volumes, richly bound, and bearing Queen Victoria's arms, and the inscription,—'The English government to M. Martial Bouteille, Advocate at Aix, in recognition of the talent, zeal, and disinterestedness with which he defended its subjects.'"

MELBOURNE TO SYDNEY, *Norfolk Island, and Auckland: Extracts from a Journal of H.M.S. "Niger" while on the Australian Station, under the Command of Captain P Cracroft, R.N.*

(Continued from p. 65.)

On Tuesday, August 16th, at 2h. p.m., the *Niger* bade adieu to Melbourne, and steamed away for the Heads. The wind was still fresh from the S.W., and the hour of 8h. p.m. had arrived before we had reached the bar. We found the ebb running very strong in the narrows, and the sea raised by it lifted like a wall, flooding the ship fore and aft. This tide rip must be very formidable in heavy weather, sufficient indeed to swamp small vessels in attempting to run over. Having cleared it, we discharged the pilot to the little schooner waiting for him, and hove up the screw, as the wind was fair for running through Bass Straits.

The land was in sight all the next day, and at 4h. p.m. we passed close to the southward of the Curtis Group, and entered the clear open sea to the eastward. The revolving light on Kent Island is good. During the night we had heavy rain squalls off the land, and the wind fell light and baffling; and the next forenoon, as there was every prospect of a dead calm, by steaming we rounded Cape Howe at sunset. The fixed light on the island off this point marks the south-eastern extreme of Australia.

We steamed along the land against light variable airs the whole of the following day. A remarkable conical hill called Cook's Pigeon House, and some magnificent table land, were very prominent objects; but the country appeared barren and desolate, and not a sail was visible, not even a fishing boat, to enliven the scene. How different from the coast of China. Passed Jervis Bay at sunset.

Sunday, August 21st.—We made the revolving light of Port Jackson soon after midnight. At daylight a pilot came out to us from the Heads, and we entered Sydney Harbour, mooring in Farm Cove, close to Government House, the snuggest and prettiest place I ever saw, before eight o'clock. * * *

Notwithstanding a refit aloft being most urgently required, we were ordered to complete provisions, &c., and get away for Auckland, New Zealand, as soon as possible. The state of the rudder and stern post rendered this, however, out of the question until their complaints were remedied, which could only be done in dock: and as the *Pelorus* was occupying the dock at Cockatoo Island, undergoing the process of re-coppering, it would be some time before they were made good. Besides this, the ship required a thorough caulking inside and out, which was far more than we could accomplish without assistance. A contract was therefore made with Mr. Cuthbert, the shipbuilder of Darling Harbour, to do the work; and right well it was done. His bill amounted to £221 14s., which appeared not excessive; caulkers' wages being fourteen shillings a day, and fifteen while in dock, owing to the distance they had to come to their work. Resin thirty shillings

a barrel; pitch thirty shillings; oakum fifty shillings a hundred weight; oil six shillings a gallon; copper (for the rudder) sixteen pence halfpenny a pound.

The engineers' defects, which included a waste water discharge valve, two anchor stocks, new plates for the galley, &c., were made good by the firm of Russell and Co.; and considering the value of skilled labour here, their bill was also reasonable. The metal valve (weight 3 qrs. 21 lbs.) cost 2s. 3d. a pound, in England the price would have been eighteen pence a pound. The anchor stocks (each 6½ cwt.) cost nine pence a pound; the price in England being about four pence. The cast iron plates for the galley three pence a pound; the same in England would cost about three half-pence. A new thirty foot gig (there being none in store) was also ordered of Looke, a first rate boatbuilder, to take the place of the one washed away, to be built of kauri, copper fastened, for £42, or twenty-eight shillings a foot, the shell only, without the fittings.

These are but a few items, for many other purchases had to be made of needful things, for which heavy prices were paid to the ship-chandlers, and it is impossible to resist a conviction that it would be true economy to have a naval establishment here instead of a single storehouse, which cannot supply a tenth part of the requirements of the squadron in these waters. Let it not be forgotten, also, that the French colony of New Caledonia is fast becoming a formidable military station, and it would show timely wisdom in being prepared for possibilities.

The government watering place is conveniently situated in Farm Cove, but we were obliged to purchase a few tons of water in consequence of the pinnacle leaking badly when she was hoisted out, and so being unfit without a thorough repair to bring it off in bulk, (and there is not a cask in the ship,) the charge was 3s. 6d. a ton.

The *Pelorus* came out of dock on the 4th of September, and on the 8th we were taken in. Found two of the gudgeons and the upper-pintle of the rudder had worked quite loose. Having refastened them, and replaced about thirty sheets of copper which were worn through, we returned to Farm Cove on Saturday the 10th. Completing coals to 291 tons, Woollongon, at 25s. 6d. a ton, supplied by Messrs. Manning, of Darling Harbour, occupied nearly the whole of the following week, owing to very bad weather, and on Saturday September 17th, at 2h. p.m., we left Sydney for Norfolk Island and New Zealand.

Sydney, with its seventy thousand inhabitants, is too well known to need any description here, and it will be sufficient to remark that no town in England of the same size can vie with it in its appearance or in its public buildings, which indeed are on a scale far beyond its present wants. For instance, the University and Exchange, the public hall of the former is gorgeous in the extreme with carving and gilding, heraldic ornaments, and stained glass; the cost of it all has yet to be ascertained. For the recreation of the inhabitants there are few more beautiful spots on the earth than the domain including Hyde Park and the Botanical Gardens, where the Bamboo and Norfolk Island pine

grow most luxuriantly side by side. The Infirmary, an extensive building, is admirably managed: in the absence of a naval hospital, we were obliged to send a seaman there for treatment, and he appeared to be very well cared for. In the course of time, and when this becomes a great naval station, which it ought to be considering the enormous interest even now at stake, Cockatoo Island will in all probability be made the arsenal. It is admirably situated, and is being gradually furnished with every convenience both for the equipment and repair of vessels. The largest screw frigate can lie alongside the jetty. The dock we were in, excavated out of the solid rock, that is now three hundred feet long, is to be further extended, and a new one is also projected. A steam factory is in course of construction, a turning lathe and planing machine, and two Naysmith's hammers, have already arrived from England for it, and a forty horse power engine, only used now for pumping out the dock, will be available for setting the machinery in motion. Captain Mann, formerly in the East India Company's service, is the engineer in charge of the works, with Mr. Broderick, once in the employ of Messrs. Rennie, of Blackfriars, as his assistant. From both these gentlemen we received the greatest attention.

The environs of Sydney claim a passing remark. La Perouse's monument, at the entrance of Botany Bay, is well worth a visit, and there are some charming pretty places skirting the shore on both sides of the harbour. Pleasant excursions may be made to the Heads, and Manly Bay, and up the river to Paramatta by steamers, which run frequently.

Sunday, September 18th.—Under steam we bade adieu to Port Jackson yesterday, with two boilers only, and dispensed with the propeller as soon as we were clear of the Heads. There was a heavy sea on, the effects of the gale that has been blowing the last three or four days, and frightful breakers under the Gap, where that unfortunate ship, the *Duncan Dunbar* met her untimely end. It is to be hoped the new light placed on the extreme point of the South Head will prevent the recurrence of such a disaster as hers.

At daylight on the morning of the 20th, Lord Howe Island and Balls Pyramid were in sight; the latter, a most remarkable pointed rock, tapering like a spire to the height of eighteen hundred feet: Lord Howe Island is 2,834 feet high, and has some three hundred inhabitants, who raise supplies for whalers, &c.; but we passed at too great a distance to make out anything on it.

We have on board a quantity of stores of all descriptions to Norfolk Island, for the use of the Pitcairn Islanders, who have been located there by our government: and as the anchorage is reported to be very indifferent, and landing by no means safe, the state of the weather on our arrival there is a source of some little anxiety. At 4h. a.m. on Monday, September 26th, with steam up in three boilers, we stood in for the island, which we made at daylight. Its appearance is very prepossessing. Rich green undulating pasture land dotted with clumps of trees and thick copses, give it a very English park-like

appearance, while the beautiful pine tree, so well known and admired, to which the island gives its name, everywhere crowns the landscape and completes a most perfect picture of luxuriance. Mount Pitt, which rises towards the northern end of the island, more than a thousand feet above the level of the sea, is the only portion that appears densely timbered. It is about six miles long from N.W. to S.E., and three broad, and being exposed on all sides to the unbroken swell of the Pacific Ocean, is fringed with breakers, which render landing difficult if not impossible excepting at two places, where the reefs projecting at an angle afford a little shelter; but great care is still requisite, and that on the lee side of the island must be selected. As the wind was N.E., we were enabled to avail ourselves of the anchorage immediately in front of the settlement at its South-west extreme; and at 9h. a.m., under the most favourable conditions of weather, the anchor was dropped in 22 fathoms, about midway between Phillips Island and Nepean Islet.

The moon was new, and we found the tide running very strong, at least two knots and a half, setting fairly through the channel, the flood to the westward and ebb to the eastward, five and seven hours respectively. Shortly after we had anchored, a whale-boat came alongside, steered by Arthur Quintal, a noble looking man, who heartily welcomed us to the island. He was followed by the Chief Magistrate, Mr. G. W. Young, an equally fine specimen of the *Bounty's* crew's descendants, and as it was impossible to land safely in a cutter, the galley building at Sydney not being finished when we left, I took a passage ashore with him in his whale-boat. A stone jetty or pier has been run out here about fifty yards from a small cove upon a foundation of coral rock, and watching for a smooth, after three rollers had broken outside, we pulled smartly in, and landed quietly (it being nearly the top of high water) at some stone steps, where an assemblage, chiefly of the female portion of the community, nearly all the men being absent on a whaling expedition, was congregated to receive me.

After mutual kindly greetings I was taken to the house of the Rev. Mr. Nobbs, their pastor, who for the last thirty years has zealously laboured in the charge, both temporal and spiritual, of this interesting people. It is needless to say that he was delighted to see me, and to receive the dispatches with which I was charged for him by Sir Wm. Denison, the Governor of the island. These were important documents, being the leases of the different sections of land which are in future to be held direct from the Crown.

The area of Norfolk Island is 8,607 acres, nearly all capable of cultivation. This has been divided into plots of about fifty acres each, two sections being retained as government reserves, and each adult male is allowed a section, which is to be drawn by lot. The present population is 225, nearly half males, so at the present rate of increase (about ten males annually) it will be A.D. 1890 before the sections are all occupied; and many more years must elapse before they are brought under cultivation, judging from the small progress

that has been made during the last three, that is since June 8th, 1856, the date of their arrival here. Nor is this very surprising, the wants of this simple people are few; it is true their wheat crops have failed, but they raise enough Indian corn, sweet potatoes, and other vegetables for themselves and even to spare for the whalers, who have begun to call here for supplies; and they can purchase flour and other necessaries, such as tea and sugar, with the other produce of their industry.

Whaling appears to be their favourite occupation. They have five boats with gear complete, and during our stay some of them were continually in chase. But the season is hardly begun as the dams have not yet made their appearance with their calves. The hump-back is the species that frequents this locality; and last year's fishing produced a hundred and twenty barrels of oil, which were sold at Sydney for £239 6s., and this sum I brought with me and handed over to the chief magistrate.

Another and more certain and prolific source of wealth, which might be increased to an enormous extent, is that arising from their flocks and herds. There are now 1,200 sheep and 460 head of cattle on the island. The number of the former would have been greater but for the ravages made by the scab: the disease has, however, been arrested, and the prospects for the future seem very promising. Seventeen bales of wool, averaging three hundred pounds each, have been sent to Sydney during the last two years; these and the hides exported during the same period produced £550. Besides these, there are the pigs and poultry, the former multiplying fast; the fresh beef, for which we paid 3½d. a pound, and a good deal is sold to the whalers; so that, independent of other articles, such as dripstones, which meet with a ready sale in Australia, this community may be considered as quite self supporting, with every prospect of becoming rich if they will only continue industrious; but I noticed written on the wall of the room where the Indian corn was being ground, the significant admonition of St. Paul to the Thessalonians, "If any will not work neither should he eat," I could only hope it was not required!

Certainly there is no lack of work to be done here. In the course of my rambles I noticed that many of the occupied houses were not in the best state of repair; their gardens neglected; in short, that a general air of untidiness prevailed. As for the large buildings, which were formerly government store-houses, the prisons, &c., which are now untenanted, in a very short time they will become splendid ruins. In a still more deplorable state of neglect is the large garden near the cascade and landing place on the East side of the island, which used to be famous for the variety of its productions and the beautiful order in which it was kept by the prisoners. Here nearly every fruit grown in England, and many tropical ones, came to perfection. It is now little better than a wilderness! What was formerly an agricultural establishment or farm at Longridge, a beautiful situation on a plateau about a mile and a half from the settlement, is in a similar state. The dam also of the only mill on the island is out of repair, the water

course choked with weeds, huge flags six feet high, and the miller lately sent out has a sinecure. Then the roads are fast going to destruction, and it was with no small feeling of regret that I surveyed the wreck of what must have cost much labour and expence to bring to what was considered almost perfection by the former occupants.

Tuesday, September 27th.—Shifted berth further into the landing place this morning, and exercised the great guns with shot and shell at a rock off Nepean Island; the distance was 1,100 yards. Our proceedings were watched with the liveliest interest by the community. They had never witnessed anything of the kind before. After the practice was over, going ashore again, found every one in a state of excitement; it was a general holiday: the school was closed, and the children, healthy looking joyous urchins, all at play. The fatted calf had been killed too, and every house was open for the display of hospitality to the numerous visitors from the ship. Mr. Nobbs had constituted himself my host and cicerone. This gentleman's life has been a chequered and eventful one. Commencing his career as a Mid. in the Royal Navy, in 1811, he joined Lord Cochrane's expedition in 1816, assisted at the cutting out of the *Esmeralda* at Callao, commanded a gunboat and saw a good deal of hard fighting in the Chilian war of liberation. Since that period he has wandered about in all parts of the world, but

“ God gives to every man

The virtue, temper, understanding, taste,
That lifts him into life, and lets him fall
Just in the niche he was ordained to fill.”

And doubtless at Pitcairn and here this veteran sailor and minister of God, (he was ordained by the Bishop of London in 1852,) has found ample employment congenial to his spirit. Long may he be spared to continue his useful labours among the interesting people with whom his lot has been cast.

Amongst other places we visited, was the old burial ground, which contains some curious memorials of the former inhabitants, *inter alia*, a head stone records the death of an old convict, ——— aged 105 years; this man had been transported for fourteen years at the patriarchal age of a hundred!

We observed in one of the gardens a very fine specimen of the *Stellingia sebifera* in flower; this is the tallow tree of China, which I have often seen growing in the neighbourhood of Ningpo. From the fatty matter contained in the seeds candles are made; were the cultivation of this tree, and the preparation of its produce attended to, another certain source of revenue to the islanders would be secured. The same remark will apply to the castor oil plant, which seems to thrive, as it was to be seen growing every where. It is not improbable that many other plants equally valuable for commercial purposes would flourish here, in a soil so rich and a climate not to be surpassed. But it is too much to expect that these simple minded people should feel any anxiety about developing the resources of their beautiful is-

land, even if they possessed the requisite intelligence and knowledge. The yearnings after their old home at Pitcairn are hardly yet subdued, although the difficulties inseparable from removing to a new one many thousand miles distant have been overcome manfully. They have no longings yet for this world's wealth. They "labour not to be rich,"—Prov. xxiii, 4. For them—

"The fall of waters and the song of birds,
And hills that echo to the distant herds,
Are luxuries excelling all the glare
The world can boast."

And in the natural course of things it must be many years before these feelings give place to others more worldly. The moralist would pray that such a consummation might never arrive. What, indeed, it may be asked, have these poor people to gain by being brought into closer contact with our rough every day life? Their charming simplicity, their unanimity and superior manners, would soon vanish, and all the petty—perhaps the great—vices of human nature become developed, to the destruction of that happiness which appears now to prevail unstinted. At present this is an earthly paradise,—*Esto perpetuâ!*

I bid adieu to my kind entertainer and his interesting flock with sincere regret. Many mutual expressions of goodwill passed between us at parting, almost the last words addressed me being "We won't forget you and your ship at our evening service to-morrow; and surely if the effectual fervent prayer of the righteous availeth much, we ought to go on our way rejoicing indeed!

At sunset the anchor was up and we stood to the southward, and as Norfolk Island faded in the distance and disappeared in the shades of night, I could not help reflecting how truly "These are Thy works, Thou Source of good."

Wednesday, September 28th.—Lifted the propeller last night as soon as the fires were burnt down, and shaped a course to pass about thirty miles to the eastward of the North Cape of New Zealand. We had a gradually increasing breeze from the N.E., with a south-westerly set averaging twenty-five miles a day, and at 8h. a.m. on the 30th made Cape Brett, bearing S.W.½W. We were too far off the coast to see two small islets, called the Poor Knights, but sighted the Moko Hinou Group, which at noon bore S.S.W., about six miles distant. We passed between them and the Great Barrier Island, and had a good view of the Needles, most remarkable rocks off its North end. The afternoon turned out very wet, with a thick fog at times. At 3h. 45m. p.m. we caught a glimpse of the Little Barrier Island; rounded it about a mile and a half off shore, and stood up the Gulf of Auckland. At seven o'clock, considering it not quite prudent to venture further, as the night was very dark, and no one in the ship had been here before, we anchored in twenty-two fathoms, about three miles N.N.E. of Tiri Tiri Matangi Island. Exercised at general quarters at midnight, firing three rounds of blank cartridge.

October 1st.—The wind died away to a calm in the night, and at 6h. a.m. I started under steam for Auckland, distant about fourteen miles. The fog had cleared off, and the peaks of all the neighbouring hills were visible, chiefly the pointed cones of extinct volcanoes, looking barren and desolate,—three on the island of Rangitoto being most remarkable objects. Lower down, the sides of the hills were clothed with dense masses of scrub, interspersed with patches of cleared land looking beautifully green and bright. At the entrance of the Waitemata a pilot came off to us, and soon after eight o'clock we anchored in five fathoms, about half a mile from the Wynyard Pier, and moored ship with three shackles each way, putting the swivel on.

The appearance of the city of Auckland, as viewed from the sea, is not very striking. Its dimensions are at present restricted to two small bays—respectively named Commercial and Official, probably from the occupations of the inhabitants—and the adjoining headlands, which terminate in low cliffs jutting into the harbour. At the extremity of the centre one there is a small unfinished fort or battery, containing some government buildings and the flagstaff, upon which the union jack is hoisted. Behind it stands St. Paul's, a neat looking church, with a low pointed octagonal belfry. A little higher up on the left stands the Government House, a building with some pretensions to effect. Although only constructed of wood, like every other house here, it cost more than fourteen thousand pounds (£14,581), and the money for it was borrowed at ten per cent. interest. Nearly behind it, surrounded by a high wall, are the barracks, the roofs only visible, which can accommodate some five hundred men. The houses are clustered together on either hand, apparently with little order or regularity, extending up the hill as far as a whitewashed windmill, which is a prominent feature in the landscape. They become more scattered in the distance towards Mount Eden, an extinct volcano, 640 feet high, which bounds the view in that direction. In the rear of Official Bay a tract of land, about 400 acres in extent, has been reserved for a government domain or people's park. It is prettily broken, well wooded—although none of the trees are large, and commands extensive views. To the left of it, stretching up another hill, is the suburb called Parnell, recently sprung into existence, but promising before long to arrive at the dignity of a town.

Two long wooden piers project into the harbour. The one in front of Commercial Bay is 1,600 feet long, and has its terminus, a T head, in four fathoms water. It is a great convenience, and the *Tornado*, a magnificent iron ship, nearly 1,100 tons register, was discharging a cargo of emigrants alongside it on our arrival. It only wants a railway to be complete. The Wynyard Pier, in Official Bay, is a much less solid construction, intended only for foot passengers. This is our watering-place: a pipe leads down from a spring a few yards up the hill to the end of the pier, and boats fill underneath. The charge for men-of-war is sixpence a ton.

This being a military station, the commissariat officers have contracts open for the supply of bread, meat, and coal. The ship's com-

pany had four days a week of the former. As we wanted thirty tons of coal we completed at once, and then commenced our long wanted refit. Stripped the foremast to the gantlines, two of the shrouds having been carried away close to the seizings; found two more shrouds of the maintopmast rigging gone also. As soon as we were all a taunto aloft again, cleared the holds, got all the tanks up on deck, cleaned, whitewashed them, and having well purified the lower regions, restowed the hold and commenced painting and blacking down. It took five weeks to finish all this, the weather having interfered very much with us latterly.

On the 19th of October the *Prince Alfred*, s.s., arrived from Sydney with the English mail, *viâ* Suez; London dates to August 18th.

October 28th.—The physical aspect of this district of New Zealand is very remarkable. The island appears to have been at some distant period nothing but a huge volcano, or series of volcanoes. From the summit of Mount Eden, before mentioned, numbers of cones are visible, and the land is every where, excepting where it has been cleared, covered more or less with scoria; this scoria is useful, being the only material the colonists possess for their roads and boundary walls; but the greater part is found too porous for house building purposes. Nothing can exceed the richness of the pasture on the cleared land, and the sheep and cattle are quite equal in appearance to those in England. The ascent of this hill ought to be made by every stranger if only for the sake of viewing the splendid panorama it commands.

The colony of New Zealand is in a transition state, but there is no doubt its prospects are brilliant; the great obstacle in the way of its prosperity at present is the universal gambling in land, which fetches fabulous prices in consequence, especially in the neighbourhood of Auckland; but it is only nominally paid for, the greater portion of the purchase money being left on mortgage, and as the land is only bought on speculation to resell at a profit, every time it changes hands this charge is of course increased, till the nominal value is run up to a frightful extent. A hundred pounds an acre for land still uncleared is thought nothing of. Such indeed is the avidity to become possessed of land, that there are few, even among the working classes, who do not devote all their savings for this purpose; the result is, there is little left to provide the ordinary comforts and conveniences of life. No place of its size and population has been worse looked after than Auckland: originally very badly planned, and the streets infamously laid out, it is totally wanting still in the necessary paving, draining, and lighting, and the inhabitants appear to be content to live and to trust their lives and property in the most beggarly wooden houses, not so good as our meanest cottages, for these at least are water tight. But a destructive fire which took place a few months ago in the business part of the city, caused such an alarm, as to originate a law to prevent any more wooden houses being erected within certain limits.

The present population of Auckland (province) is 18,177. The following is the number of vessels that hail from the port. Employed,

in the foreign and intercolonial trade, 4 barques, measuring 1,503 tons; 5 brigs, 951 tons; 8 schooners, 836 tons; total 3,290 tons. Coasters from 10 to 63 tons burthen, 269, measuring 5,412 tons. Total tonnage at the port, 8,702. Besides steamers which consist of four, belonging to the Intercolonial M. S. Co., and the *White Swan*, a regular trader to Wellington and Napier, equal to 1,776 tons.

ELECTRIC TELEGRAPH—*between Europe and America by Behring Strait.*

Substance of a Memorial to the U.S. Congress.

Washington, 1862.

In view of the development of American commerce in N.E. Asia, and the idea of overland telegraphic communication between Europe and America, I visited Russia twice since my first voyage to the Amoor, and have presented to the imperial government the plan of the Russo-American overland telegraph from Moscow to St. Louis.

The Russian government has responded in part to the plan proposed, and authorised your petitioner to survey and explore such portions of the proposed route as lie between the mouth of the Amoor River in Asia and the confines of Russian territory in America.

The North Pacific Ocean presents a vast field for our commercial expansion, and though to some parts of it our flag is no stranger, yet much of it is comparatively little known, and but partially surveyed or sounded.

To this ocean resort yearly a large number of our ships in search of whales, while the opening of Japan and the Amoor to our commerce has added quite a number of merchant vessels.

The Aleutian Islands, which, as it were, afford stepping stones from America to Kamschatka, are but the prolongation of a sister chain of islands, the Kuriles, that reach from Japan to Kamschatka. These two chains of islands, as it were, shut out the more northern waters of the Pacific from the great ocean itself, affording innumerable bays, gulfs, seas and harbours, where our adventurous seamen may pursue the great monsters of the deep and capture them for the use of civilized man and the demands of commerce.

The island of Sah-ka-lin or Tarakay, which lies to the North of the Japanese group, shuts in from the Pacific the northern portion of the Japanese Sea and the coast of Mantchuria, including the mouth of Amoor River. This is the only outlet to the ocean of that system of rivers which drain the very best portion of N.E. Asia, and open a highway into the interior of Tartary and Asiatic Russia.

Hakodadi, which lies on the line of navigation for our vessels penetrating the Ochotsk Sea on visiting the Amoor, is only from two to three days' sail for steamers from De Castries or the mouth of the Amoor.

Hakodadi is likely to become the Honolulu of the North Pacific for our whaling fleet. This, with the impetus to North Pacific commerce by the opening of Japan and the Amoor, more and more increases the interest we have as a great maritime nation in the opening and investigation of North Pacific waters. Hakodadi is also favourably situated in view of steam communication between San Francisco and China, where our steamers touching on their return voyage will communicate with those in the Amoor trade.

Thus, with our subsisting and growing commerce in the North Pacific, Japan, the Amoor, and China, and with Russian America, it results that we cannot be too well advised by actual survey of that portion of the great ocean.

Your petitioner would therefore respectfully ask, in view of all the circumstances of the case, whether Congress would not authorise a survey and exploration to be made of the coasts, seas, islands, and harbours, as well as a reconnaissance on land of the North Pacific, under the grant accorded to your petitioner by the Russian government, so far as may be necessary in view of and for the purpose of ascertaining the practicability of constructing a telegraph to unite Europe with America overland *viâ* the Amoor River.

The object of the survey will be to ascertain a practicable roadway, as it were, for the route of the proposed telegraph, starting from Russian America and progressing towards the Amoor.

There should be a land as well as a sea survey, the expedition to be fitted out at San Francisco and proceed thence, touching at Sitka, the capital of Russian America, to confer with the Russian authorities at that point.

A coast line as well as deep sea crossings should be surveyed and sounded, the soundings to be at three or four several points. First *via* the Aleutian Islands or such of them as may be considered advisable on which to have telegraphic stations in crossing from Cape Alyaska *viâ* Said Islands to Kamschatka. Second, From the American shore, in about 60° N. lat. at Nunivak to Oulantsky, on the coast of Kamschatka. Third, From the mouth of the Noichpak River, or Norton Cape, on the American coast, to the Island St. Lawrence, in the sea of Kamschatka. Fourth, From East Cape, on the Asiatic coast, to Cape Prince of Wales on the American coast, which is in Behring Strait, the narrowest point of intervening water between the two continents, measuring but thirty-nine miles from land in America to land in Asia.

This examination will of course include such points on the coast of Kamschatka as lie opposite to America on the line or lines of survey.

The next step will be to examine the West coast of Kamschatka at or near Bolcherisk, and sound thence to the North point of the island of Sak-ha-lin, or to a point on that island more directly opposite the mouth of the Amoor River at its entrance into the strait of Tartary.

Also a survey from the vicinity of Cape Lopatka, the southern point of Kamschatka, *viâ* the Kurile Islands, or such of them as may be necessary in view of telegraphic stations thereon, and thence to Cape

Patience, on the southern point of Sak-ha-lin, on the strait of La Perouse.

The coast of the island Sak-ha-lin on the western side, fronting the sea of Japan and strait of Tartary, should be examined in lieu of a shore or land line; but it is supposed that from the Russian settlements and surveys made by the Russian Government all necessary information can be obtained in relation thereto.

Thus by a survey and expedition, both by land and sea, from the shores of America to the mouth of the Amoor, a vast work would be accomplished, advantageous to our commerce and civilization; science would be vastly benefited and knowledge among men would be much increased; our adventurous whaling and merchant ships would reap the benefit for all time of this government survey, guiding them in their perilous voyages and saving many from shipwreck, and much consequent loss of life.

In view, therefore, of the foregoing premises, and in furtherance of American commerce and enterprise, as well as the vast benefits to result to us as a great commercial nation, to grow out of the fact of a telegraphic communication which shall not only unite Europe with America, but add the whole of Asia, including China and Japan, your petitioner respectfully asks the favourable consideration of the Congress of the United States of America.

PERRY M'D. COLLINS.

PACIFIC RAILWAY—and the Claims of Saint John, New Brunswick, to be the Atlantic Terminus. Proposed by T. T. Vernon Smith, C.E.

[An important scheme has been laid before the American Congress for a "Trans-Pacific Telegraph" which is to connect Europe with America through Asia, by Chinese Tartary, the Amoor, and Japan, across Behring's Straits, through Russian America to San Francisco: and considering the enterprising characters of the Russian and American Governments along with the advantages that will accrue to each from its formation in the commerce to which it will give rise, the project will in all probability be taken up in earnest, and it may not be long before it is completed. The surveys and reconnoitring expeditions which it will require, and the route which it will take, will be found noticed in another part of this number.

But we have larger possessions in North America than Russia, and although the project of connecting them with the Atlantic sea-board may appear gigantic by means of a telegraph, yet it is not so difficult as that, for there is no deep sea to cross, or repeated immersions for a cable to undergo. And desirable as it must ever be to see these great deeds accomplished, the project of a rail even is well worthy of consideration. We have therefore preserved the substance of a lecture

given at St. John's, New Brunswick, on this subject, which will be completed in three numbers, and we shall rejoice if by familiarizing the minds of our readers to the project itself that it should contribute towards its eventual adoption. The proposed rail to Quebec would form a portion of the subject, and as that is to insure the most rapid means of communication we cannot suppose that any point on the St. Lawrence would form its Atlantic terminus, on the principle that land carriage (by rail especially) is more certain and rapid than water carriage, and therefore that either Halifax or St. John, but most probably the former, would be best entitled to form that terminus.]

The first design of a Pacific Railway, extending from the Atlantic to the Pacific Ocean, across the Continent of America, had for its object the territorial advantage only of opening up a belt of land shut out from cultivation by its distance from navigable water, and from the markets of the Eastern States. Ever since the settlement of Oregon, and before the cession of California to the Federal Government, Mr. Whitney laboured at this gigantic immigration scheme with a zeal and perseverance worthy a better reward. Unlike most modern railway projectors, Mr. Whitney asked from the public no capital; a belt of land thirty miles wide was the only requirement, and the 20,000 acres per mile thrown into the market was expected to pay for the construction of the road. The subsequent acquisition of California became another and a powerful inducement to its construction; the political and commercial ascendancy of the Union was seen to be identified with the land project; and the line became a national link to connect the new with the older States—to give a Pacific frontage to the former possessions, and to open a new field to enterprize and ambition.

Ceded as late as 1848, California presented itself to the Federal Government as a desirable acquisition from its supposed command of the Pacific trade. "The number of our whale ships alone in that sea," said the Presidential message, "exceeds 700, with 20,000 seamen, and a capital of forty million dollars invested in that branch of business alone. By the possession of California we are brought into immediate proximity with the west coast of America from Cape Horn to the Russian boundary, and by a voyage of thirty days, we shall be in direct communication with Canton and the ports of China,

Simultaneously with the closing of the agreement for the cession of the district, gold in quantity was accidentally discovered, the newly acquired territory assumed an unexpected importance, and within four months from the ratification of the treaty between the United States and the Mexican Government, 6000 gold diggers were at work, and 600,000 dollars worth of gold dust had been collected. The impetus given to immigration and travel by the continued success of these mines led to the proposition, almost immediately, of no less than three lines of railroad across the continent to communicate with the new El Dorado. Only one of these has been as yet really commenced, and in ten years the Pacific Railroad, so called, has been opened about one hundred and fifty miles only, westward from St. Louis. Much dis-

cussion has taken place, and immense influence been brought to bear upon the Government, by the partizans of the rival routes, but that the St. Louis line will ultimately be the choice of Congress has been lately indicated by the establishment of a semi-weekly mail, and arrangements for the settlement of stations, at every ten or fifteen miles of the distance between St. Louis and San Francisco.

Since 1848, when the mineral wealth of the Pacific coast first attracted attention, a series of explorations and surveys have been undertaken by the United States Government to determine the best direction and most feasible course for this railway, the construction of which has now become a national want that each succeeding year renders more important, for the political, commercial and social well-being of the whole community. These researches have so far had an opposite tendency to what was expected, and have developed physical difficulties to be overcome, and natural obstacles so insurmountable by any ordinary appliances, that the Pacific Railway, if ever completed on United States territory, must be the slow elaboration of years, and constructed at an expense not at all commensurate with any commercial advantage to be gained, or any value to be imparted by the belt of land to be intersected.

The continent of North America is traversed in a North and South direction by two extensive mountain ranges, which following the general direction of the Atlantic and Pacific coasts diverge from each other as they proceed northward, leaving between them an immense and fertile valley, containing over three million square miles of territory, and including nine-tenths of all the really valuable land, either in the United States or British possessions. This valley comprises three basins or areas watered by the Mississippi and its tributaries on the South, the St. Lawrence in the middle, and the Saskatchewan to the North—the water-shed or swell of land dividing these basins scarcely averaging three hundred feet above the ordinary elevation of the Great Valley itself. Of these three large tracts of valuable land, the North-Western section watered by the Saskatchewan, Assiniboine, and the Red River of the North, all flowing into Lake Winnipeg,—an inland sea as large as Lake Erie, and equally capable of supporting a busy population—has been until lately comparatively unknown and undervalued, and recent investigations have shown that through this district the only passable route for a Pacific Railway can be expected.

The Eastern range of mountains dividing the Great Valley from the Atlantic, the Apalachian or Alleghany system are unbroken in the whole length of their course, except in one place, where the Hudson River deeply cuts them to their base, and affords a natural outlet from the West, which our neighbours have admirably improved by the construction of the Erie and Champlain Canals, and the New York Central Railway. The Rocky Mountains on the West are unbroken through the whole length of the range from Mexico to the Arctic circle, and it is with this extensive mountain system that the great difficulties of the Pacific Railway must be encountered and the physical features of which must determine the ultimate route to be adopted.

These difficulties will be best appreciated by a brief comparison of the works already executed on the Alleghanies, with those necessary to overcome the far more gigantic steepness of the Rocky Mountain range. The swell of land or water-shed of the Alleghanies has an average elevation of 3000 feet, although many of the ridges and peaks based upon it are very much higher, rising in some places to 6000 feet. The most difficult and expensive works on the railways of the United States have been encountered in crossing this chain of hills, an obstacle which any line from the Atlantic to the Mississippi Valley, south of Albany, must surmount. The New York and Erie Road rises from tide-water by gradients several miles in extent, of one in eighty-eight or sixty feet per mile to an elevation of 1,760 feet above the sea, overcoming altogether four summits by a total rise and fall of 8,056 feet, equivalent in mechanical power to raising and lowering every train one and a half miles of vertical elevation, in the round trip between New York and Buffalo. The Pennsylvania Central passes its principal summit 2,121 feet in height, by a tunnel three-fourths of a mile long, approached from the East by gradients averaging for twelve miles, over ninety-four feet per mile. The summit of the Baltimore and Ohio Railroad is over half a mile vertically above the sea, in a tunnel nearly a mile long, with thirty miles of gradients, varying from one in forty-three to one in fifty-six. This line has fifteen tunnels, together about two and a half miles long, the execution of which entailed a frightful expense. Four other Railways pierce the Alleghanies, their summits varying from 2,200 to 2,800 feet, by tunnels of from one quarter to one and a quarter miles long, all of them approached by heavy, if not dangerous gradients, and constructed at an enormous outlay.

Besides these executed works the State of Pennsylvania sunk £8,000,000 sterling, and suffered a still more serious loss in national credit, in the construction of an unfinished water-communication between the Atlantic and the Ohio; and it must be borne in mind that these works have all been undertaken in a densely populated country, with every modern appliance close at hand, roads and other facilities round them in every direction, and labour and machinery in any quantity constantly procurable. Yet the difficulties have been so great, and the expenditure so enormous, that all these Alleghany works have occupied years in their construction, and have been brought to their present imperfect state of efficiency only by taxing to the utmost both the skill and the finances of their respective corporations,

The Rocky Mountain range consists generally of a more complicated and difficult system than the Alleghanies, and includes numerous parallel ridges, and an up-heaved table-land of very considerable extent, occupying altogether one-third of the entire breadth of country to be traversed between the Atlantic and the Pacific. "This Great Western mountain system of the North American continent, may be described," says Professor Henry in a Report presented to the United States government, "as a broad elevated swell or plateau of land, the prolongation of the Andes in South America, extending northwards in

the general direction of the Pacific coast, with varying elevation and width, to the Arctic circle. It occupies nearly the whole breadth of Mexico from the Rio del Norte to the Pacific, and as it extends northward becomes still broader, until in the latitude of New York it occupies one-third of the breadth of the Continent, the other two-thirds being about equally divided by the Mississippi river."

Resting upon this great swell of land is a series of parallel ridges, the general direction of which is North, and between these ranges are extensive elevated vallies of extreme dryness, and in the summer, of intense heat. Proceeding North from the high plains of Mexico, the base of the mountain system gradually declines to the parallel of Natchez in the State of Mississippi. The average elevation is here about 4,000 feet, and the lowest notch 5,700 feet above the sea, more than double the highest summit crossed by any railway on the Atlantic side, and one-third of a mile higher than the most elevated part of the Copiapo Railway in Chili, on the snow-bound passes of the Andes, where a gradient of three hundred feet per mile, as steep as the upper part of King Street, has been necessarily resorted to. Proceeding northward from this point, the system gradually rises until in latitude 35°, the average elevation is 5,500 feet, and the lowest pass of the principal range, over a mile and a half of vertical elevation.

Still rising to the parallel of St. Louis, the whole system of mountains has an elevation of over 7,000 feet, and the lowest notch in the main ridge has the impracticable altitude of over 10,000 feet above the sea level. Northwards from this, the mountain range gradually declines both in average height, and in width of base, until about one hundred and forty miles South of the British boundary, the average elevation is reduced to about 2,500 feet. The lowest pass is still, however, double the height of any railway summit of the Alleghanics, and therefore to be deemed impracticable, nor is there so far as is now known, any more feasible route, than the one last indicated—the route suggested by Mr. Whitney.

But the main difficulty to contend with in the United States portion of the range arises not only from the enormous elevation of the passes, the length of broken and intricate country to be crossed, and the unheard of engineering difficulties to be encountered, but the character of the soil, the geological formation, and the general physical features of the whole route, form a still more insuperable objection to the construction of a railway through any portion of the United States between the Mississippi and the Pacific. Referring again to Reports presented to Congress, and deriving all our information from unprejudiced American authorities, we are told by Professor Henry that the general character of the soil is a barren waste, over which the eye may roam to the extent of the visible horizon, without finding any object to break the monotony.

Dr. Leatherman, surgeon to the United States army at Fort Defiance, describes the country along the parallel of 35° as a series of mountain ridges, broken in many places by deep cracks called *canons*,

which afford the only means of traversing the country, except with great difficulty and labour. Dr. Anticete, geologist to the exploring expedition for the southern route, describes the country traversed as utterly destitute of the means of supporting a population. "The entire district," he says, "is bare of soil and vegetation, except a few varieties of the cactus. Over the greater portion of northern Sonora, and the southern part of New Mexico, sterility reigns supreme." The greater part of this extensive desert, occupying one-third of the total area of the United States, has now been thoroughly explored for the purpose of finding a route for the Pacific Railway, and of the five lines examined and reported upon, it appears that the least distance of uncultivable land that must be passed on any line between the Mississippi and the ocean, exceeds 1200 miles in length, whilst four out of the five require the crossing of a desert 1400 miles long, in one vast unbroken solitude.

As the only means for the conveyance for materials and iron for the construction of the road and the supplies of the men, must be carried on any of these routes by the finished portion of the railway itself, only comparatively short sections could be undertaken in advance of the parts actually completed, and the experience of every work, so situated, teaches us that its progress must be extremely slow, and the expense enormously increased. With the best arrangements, and a lavish outlay of means, years must elapse on any of these routes, before the most difficult portions of the line could be even commenced, and by what means the number of men necessary to operate efficiently amongst the gorges of the Rocky Mountains, could be concentrated, fed and otherwise provided for, a thousand miles in the interior of such a desert, is a problem that has not yet been solved, or is likely for some time to be attempted.

The country North of the international boundary, between the United States and British America, in latitude 49°, was a short time since, as utterly unknown to the general world as any place could possibly be. Granted by a very doubtful title to a rich and powerful monopoly, few had the curiosity or interest to disturb the solitude, purposely depreciated by the Hudson Bay Company. Even the best means of access to it was, for exclusive motives, and to shut out travellers and explorers at the very threshold, systematically disregarded; and a portage so accessible that without previous preparation, and for a moderate compensation, a regular mail from Toronto has for some time been carried over it, was purposely neglected by the Company, who preferred the additional expense and inconvenience of a voyage some thousand miles long, round the inhospitable shores of Hudson's Bay, to the admission of strangers upon their premises, or the knowledge of the real value of the land locked up from cultivation becoming generally known. Indeed so perfect a system of secrecy seems to have prevailed through the whole establishment, in order that the monopoly might be undisturbed, that the existence of a valuable agricultural district, the size of Europe, and of the highest fertility, has been looked

upon, until very lately, as an impossible absurdity, and fit only for the purposes of the trapper and the huntsman.

The expiry of the Company's charter last year, the strong feeling that exists in Canada against the monopoly, the opening of the Sault Ste Marie Canal, which brought Lake Superior into navigable communication with the Canadian Lakes, and the development of the valuable mines of copper and iron on the verge of the unknown territory, all attracted attention to a part of the continent, the value and accessibility of which was fast becoming evident. A surveying and exploring party, deputed by the Canadian government, under the guidance of Captain Kennedy, an old North West hunter and former friend of Sir John Franklin, visited the Saskatchewan Valley, and have only lately made their report.

The beauty and fertility of this magnificent valley is now an established fact. It is described as a vast oasis of continental dimensions, and prairie character. The numerous herds of buffaloes supported by it, and browsing throughout the winter, is a sufficient warrant both of the extent of its resources, and the moderation of its climate; whilst the beds of coal known to exist on the Upper Saskatchewan, and well developed on the Red River, give to these woodless but fertile pasture fields a commercial and political importance that cannot be too highly appreciated. The river divides into two branches, both of them navigable for steamboats to the foot of the Rocky Mountains, and within 300 miles of the Pacific, presenting a continuous water communication, interrupted by only one rapid from the foot of Lake Winnipeg, nearly 800 miles due West on the course of the projected railway.

The exploring party had scarcely returned, before the discovery of gold fields of great extent and value are reported on Frazer's River, a stream flowing into the Pacific through British territory, and forming at its mouth one of the finest harbours in the world. The gold fields are situated within 200 miles of the head of navigation of the Saskatchewan, and when it was further determined that the gold bearing stream itself presents one of the lowest and most practicable passes through the Rocky Mountains that has yet been discovered, such that does not exist further South, lower in absolute elevation than the Alleghany summits of the Atlantic Railways, and accessible by navigable rivers on both sides to the base of the mountains, nothing further remains in an engineering point of view, and the Pacific Railway on this route presents no works of magnitude or difficulty to prevent its rapid and easy completion, whilst by far the greater proportion is a surface line of the most economical description.

Steamers of 400 tons can now pass from Quebec to the head of Lake Superior, a distance over 1600 miles. Forward to Red River, crossing the water-shed that divides the rivers flowing into Lake Superior from those emptying into Lake Winnipeg, the distance as at present travelled by the mail is about 700 miles, of which less than thirty is obstructed navigation, and much of the remainder composed of rivers sufficiently large and sluggish to permit of the employment of steam-

boats. The North West Transportation Company however, propose to shorten this part of the route by the immediate construction of three or four portage roads, and when their arrangements are complete, the distance from Lake Superior to Red River will be reduced to 500 miles, one hundred and forty of which will be a wagon road, and the communication maintained by four steamboats running in connection with each other,

One of these navigable reaches on Rainy River and Lake of the Woods is 160 miles long, and available for a passenger-boat of respectable dimensions. From Red River, which is itself navigable to some distance in the State of Minnesota, Lake Winnipeg and the Saskatchewan, form with one single break of less than a mile, a continuous route westward of over 1,000 miles to the foot of the Rocky range much of it available for steamboats of the largest class. From this point to the Pacific, 400 miles by the Frazer's River, only 200 is necessarily land portage; so that in all probability in another year or two, of the 3,500 miles from Quebec to Vancouver's, following the course of the navigable streams, nearly 3,200 will be provided with steamboats, and travellers will be able without any additional Railway facilities than those now in existence, to reach Frazer's River from Montreal in ten days, without more fatigue than usually incurred in an ordinary journey of that duration.

T. T. V. S.

(To be continued.)

VOYAGE OF H.M.S. "CYCLOPS" FROM ENGLAND TO THE CAPE.—
Captain W. J. S. Pullen.

(Continued from page 87.)

From the 4th to the 7th, the wind from S.E. to E.S.E., varying in strength from 2 to 4, consequently not making much progress to the southward. The current from its direction at noon of the 3rd, had been gradually tending more westerly, varying in strength from fourteen to twenty miles; when at noon of the 6th it was found with southing in it, and with greater rapidity than we had yet experienced, being for the preceding twenty-four hours S. 64° W., twenty-eight miles. From this I concluded we had crossed the equatorials, and were now feeling the Brazil current, varying both in strength and direction as we got South, until we felt the effects of that caused by the Trade wind.

On the morning of the 7th we exchanged colours with an American ship steering the same way as ourselves. He, however, soon passed us and ran out of sight ahead.

Occasionally the swell was up, long from the northward, and lumi-

nous patches were seen during the night; this swell, however, decreased to-day.

Early on the morning of the 8th, the wind was light from E.N.E., and very much inclined to calm: at seven o'clock, however, it increased to 4 in strength, and being nearly up to the 10th parallel of latitude, and not having swung the ship for deviation since crossing the equator, I decided on doing it to day: at the same time get a cast for temperature. Thinking we might possibly get bottom with the temperature line, and perhaps bring up bottom with the partially detaching weight, one of them was got up for use, and to aid in the operation steam was got in one of the foremost boilers, the one in immediate connection with the deck engine, and I may as well here say that in sounding with the ship steam was always got up.

After shortening sail, except main topsail and boom mainsail, we began, and results were obtained as shown in the following table.

Fathoms.	Times.			Intervals.	Diff.	Remarks.
	h.	m.	s.	m.	s.	
0	2	27	45	Let go.		Thermom. A 10, with water bottle, attached.
100	2	29	0	1	15	
200	2	30	44	1	44	29
300	2	32	46	2	2	18
400	2	34	52	2	6	4
	2	35	40	Let go.		
500	2	38	10	2	20	
600	2	40	46	2	36	16
700	2	43	28	2	42	6
800	2	46	10	2	42	0
900	2	49	0	2	50	8
1000	2	51	52	2	52	2
1100	2	54	51	2	59	7
1200	2	58	4	3	13	14
1280						Quantity paid out. No bottom; weight coming in without any derangement.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 363	Surface.	80		1025 at 80	In this min. temp. I think a mistake was made in reading off; it ought to be 44.8 instead: not detected at the time.
A 6	880 fms.	75.8	41.5	1025 at 78.5	
A 10	1280 ,,	77.2	55.2?	1025 at 78.5	

This was the whale line spoken of before as having been appropri-

ated expressly for temperature, and from its size and greater strength than the deep sea line, it gives greater confidence as to the safety of the instruments; for the strength of the smallest part of it, $1\frac{1}{2}$ inch untanned, exceeds greatly the strength of the regular deep sea line in the proportion of 87 to 60. The weight was one of the partially detaching ones, made on board, of 50 lbs., and this time first used; it appears to answer well as far as we can judge yet.

The maximum temperature, at least the tell tales in each case show differently from what they started with; how far the minimum column is affected it is impossible to say, but I think that at the 1280 ought to be 44.8, a mistake probably made in reading off.

The result of the observations from swinging showed a decrease in the deviation: but only in one point changed from West to East. This has been the first time of swinging since crossing the equator, and this change showing only in the one point, N.E., it may possibly be a mistake. The variation has been gradually decreasing throughout. The tables will be shown together when the series is completed up to the Cape.

After swinging, the fires were drawn, and all sail made to a light wind from E.N.E., which up to this time is the most northerly point to which the S.E. Trade has veered. Early again the next morning it began to return to E.b.S., and at 6h. a.m. settled steady at that point, continuing so for the next twenty-four hours, hardly ever exceeding in strength 4, generally 2 to 3.

On Thursday morning the wind was light, veering to the southward; but still fine weather and a moderate swell from S.E.

On Friday morning, finding water getting short, steam was got up in two foremost boilers, and taking advantage of the circumstances steered the ship round in the afternoon to get the deviation. I find the changes very much and unaccountable, for the observations are too carefully taken to impute it to them. The observations on the 8th giving deviation on N.E. point $1^{\circ} 20' E.$, having previously been West, although small. But to-day it is westerly again, and agreeing better with the former results. In fact, there appears no regularity in the changes.

All Saturday the wind was very light, and a more clouded sky than since crossing the equator. A few passing showers of rain, too, in the early part of the day, with a steady wind, but light. Towards night the sky clearing, and the Magellan clouds plainly seen..

Sunday came in with squally and unsettled weather, wind unsteady and light, occasionally calm, that I began to conclude we had lost the S.E. Trade, or rather on the point of getting the variables. In the afternoon steam was got in all boilers, and from the light weather and little swell from S.E., hoped to have a good run for the next twenty-four hours.

On Monday morning the wind was still light and variable, and being nearly on the parallel of 20° , the ship was first steered round for deviation of compass, then sounding for temperature obtained.

Fathoms.	Times.			Intervals.		Diff.	Remarks.
	h.	m.	s.	m.	s.		
0	9	56	45	Let go.			Ther. 10, in water bottle, attached, showing 76° at surface before going down.
100	9	58	7	1 22			
200	10	0	3	1 56		34	
300	10	2	15	2 12		16	Ther. 6 attached. 76° at surface.
400	10	4	45	2 30		18	
	10	6	32	Let go.			
500	10	9	0	2 28			
600	10	11	38	2 36		10	Ther. 9 attached. 86° at surface. Line used was the whale-line, with 50lb. weight and partially detaching apparatus. Smooth water; wind moderate from E. Weight does not reach bottom.
700	10	14	9	2 31		7	
800	10	16	50	2 41		10	
	10	19	15	Let go.			
900	10	21	52	2 37			
1000	10	24	40	2 48		11	
1100	10	27	28	2 48		0	
1200	10	30	17	2 49		1	

On comparing these three thermometers, No. 9 is found to register 10° higher than the others. At the surface temperature, Nos. 10 and 6 agree with A 363, the thermometer in general use for surface temperatures.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 363	Surface.			1026 at 76	Surf. temp. before descent: A 9, 86° A 6, 76 A 10, 76
A 9	400 fms.	87	53	1028 at 75	
A 6	800 „	76	38.5	1027 at 74.5	
A 10	1200 „	74.2	41.2	1026 at 74.5	

The water brought up in the water bottles from the depth of 400 fathoms was of a pale greenish colour. The water at the greater depths was quite similar to that of the surface; but at the surface as well as at the 800 and 1,200 fathoms, the water was not so dense as the 400 fathoms.

The minimum temperature at the 800 and its density, is a mean of the 400 and 1,200 fathoms.

As the day advanced, the wind from E.b.N. appeared settled, increased, and enabled us to dispense with the steam, and the fires were therefore drawn. In the evening wind fell again, veering between E.b.N. and S.E.; but towards midnight steady from E.S.E., with a slight increase.

On Tuesday morning the weather had a very unsettled appearance, sky looking squally and rainy. This change had come on shortly after midnight, and up to ten this forenoon they were both pretty frequent, passing over in quick succession, the rain rather heavy. Soon after,

it began to clear up with a moderate breeze from the East, and heavy cumulus clouds on the horizon. It lasted fine till about six o'clock, when the weather again became squally, with occasional showers of rain and light variable winds.

All through the night the wind was light from the eastward, and the first shark was seen and caught since having left England. At four o'clock in the afternoon the wind had fallen so very light, in fact almost calm, that I had a boat lowered to try current, and also get a cast of the lead for bottom with the twine line. A 20 lb. lead was attached; but unfortunately on going out the line fouled on the reel at the first 100 fathoms and carried away, so I abandoned it for the present.

The current was found to set S. 22° W., a quarter of a knot the hour.

For the next three days the wind still continued light, veering from S.E. and E.N.E. In fact, we might call it the confines of the variables, for it was a constant succession of getting steam and connecting, with making sail, banking, and disconnecting, to get the old ship along. And we also swung the ship round for deviation as we neared the appointed parallel of latitude. The currents deduced from the difference of observation and D.R., all showed to the southward and westward until the 18th, when it took a turn to the S.E. The Trade I should say was lost on the 17th in about 24° S.: but through the Trade winds generally I had never experienced them so light before. Hardly ever at the best of times more than a moderate breeze, 5 in strength, and for a very short continuation. Nearly all the 18th and 19th was calm weather or a light cat's paw from S.E.

Taking advantage of this circumstance, I determined on trying a deep cast on the morning of the 19th, and the weather was so calm, and the water perfectly smooth, that I resolved to spare no trouble to get a complete experiment, not for bottom only, but temperature, at the depth the weight might reach. And as it would only be a single thermometer, decided on combining here, considering that the water bottle would assist the rapid descent of the weight without suffering any check, to attach them as before, and offer slight additional resistance in coming in again.

The port booms were accordingly cleared, and a fair lead from the reel to bow, so that no check might impede the line, and at four the operation commenced.

Bottom at 2,700 fathoms. Massey's machine registering 2,374 fathoms. The valve brought up a plentiful specimen of the bottom, an unmistakeable proof of the weight being down, besides its not coming back. And which I think is the greatest depth from which bottom has been brought up, for I find no mention of such in the cruise of the American *Dolphin*.

The descent occupied just one hour, a velocity rarely if ever yet been equalled by line of a small size, showing that it is more dependent on the size of the line than the weight of sinker for rapidity of descent. The line was two hours and one minute reeling in.

Fathoms.	Times.			Intervals.	Diff.	Remarks.	
	h.	m.	s.				m.	s.
0	4	48	30	Let go.	.	Ther. 10, in water bottle, attached. Surf. temp. by it before going down 75°, agreeing with deck thermometer.	
100	4	49	2	0	32		
200	4	50	2	1	0		28
300	4	51	19	1	17		15
400	4	52	51	1	32		17
500	4	54	34	1	43		11
600	4	56	24	1	50		7
700	4	58	21	1	57		7
800	5	0	25	2	4		7
900	5	2	32	2	7		3
1000	5	4	45	2	13	6	Common deep sea line, with one of the detaching weights on Brooks' plan of 120lbs.; Massey's machine 1318, with cylindrical shield and lever stop,—another improvement by Mr. Mayes!
1100	5	7	4	2	19	6	
1200	5	9	23	2	19	0	
1300	5	11	45	2	22	3	
1400	5	14	11	2	26	4	
1500	5	16	40	2	29	3	
1600	5	19	11	2	31	2	
1700	5	21	43	2	32	1	
1800	5	24	15	2	32	0	
1900	5	26	50	2	35	3	
2000	5	29	29	2	39	4	Calm, still weather.
2100	5	32	9	2	40	1	
2200	5	34	49	2	40	0	
2300	5	37	27	2	38	2	
2400	5	40	9	2	42	4	
2500	5	42	58	2	44	2	
2600	5	45	47	2	54	10	
2700	5	48	30	2	43	11	
2800	5	51	55	3	25	42	
						Bottom.	

In the following table we have the result of the temperature lower than I could ever have expected it, for 39° has generally been considered the lowest temperature of the ocean. But this of course is dependent on the instrument used, its correctness, and whether the indices are moved.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 363	Surface.			1025 at 75	Surface temp. by No. 10 on starting, 75°.
A 10		68	35	1027 at 70	

By this it is evident that the index in the minimum column has shifted, fallen down 7°. Now, with respect to the other column, if it had fallen on that side as the instrument is made the index would have been at a lower temperature still, without the instrument had

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been reversed, or upside down; but that it never could have been, or it would not have brought up water. Therefore I infer that the temperature of 35° is right as far as we may depend on the thermometer.

In respect to Massey's machine, it shows very much less than the line, and not yet having had good opportunity of getting any corrections, I cannot say how far it is to be depended on.

The bottom brought up was a species of very fine brown sandy mud, in which under our microscope nothing living could be detected. But having no one on board used to the instrument, we cannot pronounce on what is really the nature of this specimen, a quantity of which, however, will be sent home.

While the operation was going on, many dolphins were swimming across the bows, and were apparently attracted by the white marks, as they came up swimming close to them.

For the last twenty-four hours the current was South and West 60° , fourteen miles; whereas the day before it was S. 41° E., sixteen miles.

All Sunday was calm weather, with but few clouds in the heavens, except about the horizon heavy cumulus masses. The current at noon we found nearly dead East, but a decrease in the strength. In the evening and during all the first watch several meteors were seen, and lightning from S.S.E. round to West. The heat has been very great during the day.

(To be continued.)

DARING DEEDS IN SAVING LIFE AT SEA,—and their Reward.

How our hardy Seamen have done deeds of daring,—how they have snatched from the gripe of the destroyer in the depths of the sea their less fortunate brethren, nursed them, and in every respect done the work of the good Samaritan for them,—how their gallantry has been recognised, we will not say rewarded, for their own breasts contain their best reward,—accounts of such things, we say, flit about in fugitive paragraphs, for like the stray "golden grain" in time of harvest it is as yet ungathered and welcomed in a collected form into the granary of literature. As yet we have seen no collective general register of these gallant proceedings to which appeal may be made for an account of them with the certainty of finding it. In future we hope to make the pages of the *Nautical* fill that vacuum, to which duty it is entitled. A beginning is made herewith, and we have only to add that our attention will be as freely given to any such acts as may be sent to our publisher as to those we may find in the sources to which we have alluded. Our method speaks for itself, and our motto is,—
"Honor to whom honour."

<i>Saving Commander.</i>	<i>Vessel.</i>	<i>Where Belonging.</i>	<i>Wreck.</i>	<i>Where Belonging.</i>
1. Otio Baker	<i>Thatch Magoun</i>	Boston	<i>Corbiere</i>	Jersey
2. Gordon Morrison ..	<i>Fibberty</i>	Cape Town..	<i>Borderer</i>	London
3. Thomas Connor ...	<i>Petrel</i>	Wexford	<i>Billon</i>	Wexford
4. G. T. Van Ommeren	<i>Minerva</i>	Dutch	<i>Charles Brownell</i>	Liverpool
5. Silas Mariner	<i>Brothers</i>	New York..	<i>Union</i>	Hullfax
6. W. de F. Bowers ...	<i>Bostonian</i>	American ..	<i>Aire</i>	Goole
7. — Legendre	<i>France</i>	St. Malo ..	<i>Prospero</i>	Liverpool
8. R. Flanagan	Shoreman at Wic	kiow	<i>W. Campbell</i> ...	Ardrossan
9. Antonio Zulcasta ...	<i>Destino</i>	Spanish ..	<i>W. Hyde</i>	British barque
10. Frederic Vroom	<i>Sophia Elizabeth</i>	Dutch	<i>Jeanie Johnson</i>	North Shields
11. Master and Crew ..	<i>Po</i>	Spanish ..	<i>Francis</i>	Londonderry
12. M. Benson	<i>Acteon</i>	Glasgow ..	<i>John</i>	Liverpool
13. N. Ropallo	<i>Australia</i>	Sardinian ..	<i>Venila</i>	Yarmouth
14. James Bowen	<i>Maryland</i>	American ..	<i>Creole</i>	Belize
15. A. Auguste	<i>Prince Royal</i> ...	Belgian	<i>Ceylon</i>	Liverpool
16. S. Farrel	Fishing smack ..		<i>Glide</i>	Dungarvan
17. — Schroot	<i>Sirene</i>	Dutch	<i>W. Hammond</i> ..	
18. S. T. Swates	<i>Britannia</i>		<i>Bell</i>	Liverpool
19. T. Hastings	<i>Hastings</i>	Liverpool ..	<i>Alexander Gray</i>	Wick
20. Master and Crew ..	<i>Try All</i>	Woodbridge.	<i>General Cathcart</i>	Faversham
Master and Crew ..	<i>Wonder</i>	"	"	"
Master and Crew ..	<i>Aurora's Increase</i>	Harwich	"	"
21. Master and Crew ..	<i>Pearl</i>	Plymouth ...	<i>Galatea</i>	Sunderland
22. H. Hinke	<i>Magdalena</i>	Bremen	<i>Neptune</i>	London
23. W. Smith	<i>Spray</i>	Bridlington..	<i>Produce</i>	Hartlepool
24. Ann Danger	Coast-guard	Bude	Wrecked property	
25. W. Milton	Coast-guard	Chapel	<i>Yarborough</i> ...	Grimsby
26. T. A. Hallingren ...	<i>Hedwig Charlotte</i>	Stockholm..	<i>W. Brown</i>	Whitby
27. O. C. Olsen	<i>Lelf</i>	Stavanger ..	<i>Marie Bozarris</i>	London
28. Crew	<i>Brace Nelson</i> ...	Walmer	<i>Terra Nora</i>	Dartmouth
29. Peter Neilson	<i>Lady Bird</i>		<i>Admella</i>	Greenock
30. A. F. Tobias	<i>Olympia</i>	Hanoverian .	<i>Asiatic</i>	"
31. Johann Walling	<i>India</i>	Hremen	<i>Hull Packet</i> ...	Glasgow
32. J. Rip	<i>Macassar</i>	Rotterdam ..	"	"
33. T. Adams	<i>Volunteer</i>	Harwich	<i>Darius</i> "	Shields
34. P. Cox and Joseph	Sinclair. <i>Platelaye</i>	"	<i>Persoverance</i> ...	Douglas
35. Edward Scott	<i>John Bell</i>	Glasgow	<i>John Silver</i>	Hullfax
36. W. Morgan	<i>Mangerton</i>	Limerick	<i>Euphrosine</i>	Cherbourg
37. W. Cornish	<i>Four Brothers</i> ..	Brixham	<i>L'Augusto</i>	
38. J. Westgarth	<i>J. Masterman</i> ..	London	<i>Fred. Gustave</i> ..	
39. H. de Gruchy	<i>Farmer</i>	Jersey	<i>Cultivateur</i> ...	

1. For services in rescuing the crew of the *Corbiere*, of Jersey, from her while foundering in a heavy gale, on 22nd January, 1860,—*a Sextant*.

2. For services in saving the crew on 11th of July, 1860,—*a Gold Watch*.

3. For services in rescuing the crew,—*the sum of £2*, and J. Deveureux, J. Moran, W. Gear, J. Symonds,—*£1* each, in March, 1860. Vessel abandoned.

4. For rescuing the crew of the abandoned ship, on 24th of June, 1860,—*a Telescope*, and to the crew (eight) of saving ship, *£2* each, and *£1* to the boy.

5. For humane kindness to crew of the stranded vessel, on 6th of May, 1860,—*a Telescope*.

6. For volunteering to man a boat and saving crew on 1st of January, 1860,—*a Telescope*. Mr. Bowers was chief mate of the *Bostonian*.

7. For humane kindness to six seamen of the *Prospero*,—*a Telescope*.

8. For saving the master by wading into the surf and seizing him from being washed into the sea,—*the sum of £2*. The only survivor, on 9th of February, 1860.

9. For humane services to crew and passengers of the foundering ship, off Cape Antonio, in May, 1860.—*a Sextant*.

10. For saving master and crew of vessel lost in the Atlantic, November, 1858,—*a Telescope*.

11. For rescuing crew of the foundering vessel off Puerto Colono (?) on 20th of June, 1861,—*the sum of £5*.

12. For services in rescuing the crew of the vessel found waterlogged and dismasted, in April, 1861,—*a Telescope*. Also to A. M'Dougall, first mate, £3; W. Benson, Jun., third mate, £3, and nine of her crew, £1 each.

13. For humane services in rescuing crew, in May, 1861,—*a Gold Watch*.

14. For humane services to the crew of the *Creole*, after saving them from their waterlogged vessel, on July 18th, 1861,—*a Telescope*.

15. The *Prince Royal* was a fishing smack. To her commander, £5, and each of her crew, £2. For humane services in saving the crew when *Ceylon* was foundering, and landing them at Ostend, in August, 1861.

16. With three other fishermen for services rendered to the distressed boat's crew of the *Glide*, after she was wrecked on Wicklow Head, *the sum of 10s.* each.

17. With seven forming her crew. To Captain Schroot,—*a Telescope*; to each of the crew, £2. For attention to the master on abandoning the *W. Hammond* at sea, on 17th of March last.

18. With two other fishermen and two apprentices,—*10s.* each; apprentices *5s.* For services to crew of *Bell*, lost on 25th August last.

19. For rescuing the crew of the fishing smack, *A. Gray*, disabled at sea, on 24th of September, 1861,—*the sum of £10* for commander and crew,

20. To *Tryall* and six crew,—£8. To *Wonder* and five crew,—£6. *Aurora* and five crew,—£6. For services in saving crew of schooner *General Cathcart*, wrecked on 10th of October, 1861.

21. With crew, four in all,—*the sum of £2*. For saving crew of *Galatea*, while foundering at sea, on 23rd of October, 1861.

22. For services to the crew of the wrecked *Neptune*, on 15th of October, 1861, to Captain Hinke,—*a Gold Watch*. To first and second mates,—*30s.* each; and to crew (6),—£1 each.

23. With crew, eight in all,—*the sum of £1* each. For saving crew of the foundering *Produce*, on 22nd of November, 1861.

24. The widow of T. Danger, who lost his life in protection of wrecked property while in execution of his duty,—*the sum of £15*.

25. And W. Tyrrell, W. Russell, commissioned boatmen, and Frederick Lane, boatman,—£1 each. For rescuing nineteen of crew of the *Yarborough*, while foundering, on 2nd of November, 1861.

26. *A Gold Watch* for kindness and humanity in rescuing crew

and passengers, twenty-three in all, of the barque *W. Brown*, when destroyed by fire, on 2nd of October last.

27. A *Sextant* for saving crew of *St. Marie Bozarris*, abandoned at sea, on 16th of October, 1861.

28. For services in rescuing crew of *Terra Nova*, wrecked off Dungeness, on 5th of November, 1861, and crew of the lugger (seven),—*the sum of £5.*

29. Mr. Neilson, second mate of the *Lady Bird*, was one of the crew of the whaleboat which assisted in saving life at the wreck of the *Admella*, near Cape Northumberland, South Australia, 6th of August, 1859,—a *Bronze Medal* for his gallantry. See notice of wreck in *Nautical Magazine*, February 1862, p. 64.

30. In acknowledgment of his humanity and kindness to the master and part of crew of the *Asiatic*, picked up at sea on 18th June, 1861, their vessel having foundered a few days previously,—a *Telescope.*

31. In testimony of services in saving master and crew of the *Hull Packet*, discovered waterlogged, on 9th October, 1861,—a *Telescope.*

32. Received the above wrecked crew on the following day on board the *Macassar*, and landed them at Rotterdam, in acknowledgement of which—a *Telescope.*

33. The smack *Volunteer*, T. Adams, at considerable risk saved the survivors of the crew of the *Darius*, on 3rd of November, 1861,—a *Telescope.*

34. Saved a boy from her wreck, on 26th of November, 1861,—10s. each.

35. To Captain Scott,—a *Telescope*; to J. Campbell, second mate, John Lees, third mate, G. Rhyne, Thomas Davidson, Henry Forsyth, and James Ford, seamen,—a *Bronze Medal* and £2 each. For gallant conduct in rescuing three of the schooner *Silver's* crew, on 27th of October, 1861.

36. For services in saving her crew, on 11th of February, 1860,—a *Silver Medal.*

37. Also to T. Bray, J. Burgoyne, James Cornish, and R. Tuckerman,—a *Silver Medal of second class*; and to Captain Cornish,—a *Silver Medal of first class.* For services to crew of the French ship.

38. To Captain Westgarth,—a *Gold Medal*; to A. Gidden, W. Johnson, and W. Stonor, seamen of that ship,—a *Silver Medal* each. For saving crew of the French ship *F. Gustave*, from Bordeaux, when foundering at sea.

39. To Mr. Helier de Gruchy, farmer at Jersey,—a *Gold Medal*; to Captain Lecorine, Amice Dufue, P. J. Manger, and Aaron Syret, farmers at Jersey,—a *Silver Medal* each. For saving crew of the French vessel, *Cultivateur*, wrecked on the coast of St. Owens, Jersey, on 12th of March, 1861, at risk of life, in a gale.

BOTTLE PAPERS.

The bottle containing the following paper has escaped the perils of the sea, and has reached its intended destination. It has been added to our chart with the rest, and we hope it will not be long before that is published.

December 15th, 1861.

The following report was picked up in a bottle, well corked and sealed, at Mayaro, on the eastern coast of the Island of Trinidad, lat. $10^{\circ} 15' N$, long. $60^{\circ} 59' W$. on the 4th of December last:—

This bottle, thrown overboard from the barque *Monica*, from Sunderland for Demerara, 51 days from the Downs, for the purpose of finding the drift of the current. Whoever finds it will please report the same to the editor of the *Nautical Magazine* or other leading journal, for the benefit of navigation. Lat. $7^{\circ} 30' N$, long. $54^{\circ} 30' W$. 4 P.M., October 23rd, 1861.

W. C. MADDEN, Master.

I have had a N. $59^{\circ} W$. current, 40 miles during the last 24 hours.
W. C. M.

Found in a bottle, well corked and sealed, by one Pierre Frontin, on the beach of Mayaro, on the eastern coast of the Island of Trinidad, one of the British West Indies, on the 4th of December, 1861.

HENRY LOUIS JOBITY, *Stipendiary Justice of Mayaro.*

Thus it has been drifted something over 400 miles in a direction about $W. 26^{\circ} N$. the distance and time elapsed giving it a rate of 10 miles per day, which has no doubt been reduced by lying for some days unobserved, as the current is well known to be much stronger along that coast.

Nassau, 11th January, 1862.

Sir,—Will you have the kindness to forward the enclosed note and paper I received from Watlings Island, by the government schooner, *Electric*, to the Secretary of the Admiralty London.

I have, &c.

WILLIAM MARSHALL.

To the Hon. A. H. Thompson, Acting Hon. Secretary.

Watling Island, January 5th, 1862.

My dear Sir,—By request of Mr. Loudon Butler, I enclose a paper picked up by him on the beach on the North-East part of this Island, requesting you to hand it to the Colonial Secretary in order that it be forwarded to the Secretary of the Admiralty, London. You will see by the dates that it has been a long time in the water, and judging by lat. marked on it has drifted nearly in a straight line.

I am, &c.

W. Marshall, Esq.

M. W. NAIRN.

The enclosed paper was picked up on the 22nd December, 1861, on North East part of this Island, about five miles in a South Eastern direction from the northern and eastern extremity of the Island, which N.E. point lies in lat. $24^{\circ} 28'$, long. $74^{\circ} 35'$ —M. W. N.

H.M.S. *Bloodhound*, 9th of August, 1860, lat. $25^{\circ} 48'$ N., long. $20^{\circ} 33'$ W., four days from Maderia, bound to Sierra Leone. All well. This bottle is thrown overboard to determine the set of currents.

FRANCIS W. BENNETT, *Lieutenant and Commander*.

This bottle has had the long run of 3010 miles, and like a bottle of Captain Owen's which started about 5° West of it, and about 2° Northward of it, has reached Watling Island at a rate of about six miles per day.

Ship, *Tiptree*, lat. N. $48^{\circ} 47'$ long. W. $16^{\circ} 9'$, July 20th, 1861. Any person finding this is requested to forward it to Mr. James Glaisher, Greenwich Observatory, England,

F. HAES.

Picked up by a boy at the Portland Breakwater. Received October 7th, 1861, having been posted October 5th 1861.

It has taken nearly an East course, and drifted about 600 miles for 77 days—nearly 8 miles per day. It coincides with the usual Easterly course of the rest.

Rutland Dungtal, Co. Donegal, February 4th, 1859.

Sir,—I beg leave to enclose a letter which I have received from the chief boatman at Portnoo, enclosing one picked up in a bottle by one of the fishermen off that station,—the letter enclosed in the bottle appears to have been written last May at Bogota, New Granada, it may help to elucidate something about the set of the tides.

I have, &c.

THOS. BATE.

Ajax, Kingstown, 7th February, 1859.

Submitted for information and transmission to the Hydrographer of the Navy.

J. M^cN. BOYD, *Captain*.

Bogota. 23rd May, 1858.

This letter, which Heaven knows where it may find your Reverence, is intended to say that the voyage of your Reverence and P. Equilerz, and whoever else may accompany you, should be direct to Bogota, and on no account elsewhere. If your Reverence should have gone to Santa Martha with Senor Mier, you will have received from him sufficient instructions: if not, your Reverence may learn Senor Demetrio Povras, who will probably deliver this letter, to hasten leaving Conejo for Honda, but it would be as well to wait some intelligence here.

Above all it is necessary to write a letter immediately and request the commander of the steamer to deliver it at Honda, to any person who will immediately forward it to them by a canoe to stop them going up the river. Such person should be him to whom they may be recommended by the letter—and failing that person your Reverence may refer to Sen. Santiago Leon. But it is to be observed, that the Captain should leave Conejo thus early as the opportunity may be easily lost if the letter be not delivered beforehand, or at the time of anchoring.

To the S. S — S. S. — and O.o of your Reverence I heartily commend myself.

From your Reverence's humble servant in Christ,

J. H. S.

Pablo de Blas de la Compania de Jesus.

For His Reverence in Christ P. Jose Joaquin Cotanilla.

A remarkable instance this of the effects of current from the coast of New Granada. It must have gone through the Western part of the Carribbean Sea, a part of the Gulf of Mexico, and found its way by the Gulf Stream along the American coast to the N.E., and falling within the influence of the S. W. winds, has been washed on shore on the coast of Donegal, travelling altogether at a rate little short of 20 miles per day over a distance of about 4,600 miles.

EVENINGS AT HOME AT THE NAUTICAL CLUB:—*Gunboat Movements—The Chairman's Address—Prince Albert Memorial—Loss of the "Conqueror"—Report of the Life-Boat Institution—Navigation of the St. Lawrence—The Canadian Expedition—Voyage of the "Orlando"—Peacock's Composition—Paraffine—The Great Pythoness—The French Navy.*

Signal was made from the *Victory*, flagship of Vice-Admiral Sir H. W. Bruce, in Portsmouth Harbour, at 8h. a.m., to-day (8th Feb.), for "all the gunboats in the first class of the reserve to man with their crews, take on board a week's provisions, and report themselves for sea when ready." The men were scattered on board the different ships in harbour, in various parts of the dockyard, and over at the Haslar Gunboat Yard, and the signal was wholly unexpected, yet every boat was manned, provisioned, and reported officially as ready for sea under two hours, and there is no doubt but that another hour would have seen them fairly under steam at Spithead.

What would our ancestors have said to that, observed Rodmond, as he concluded reading it. What would they have thought of it, Commodore, eh?

Thought of it? why, they would have rubbed their eyes and asked

if they were dreaming? The giant steam makes wonderful strides. But they would have said as some one has for them, and what we should always keep in mind, and will therefore bear repeating, that

“ England indeed will ne'er have ought to rue
If to herself fair England prove but true.”

'Tis a good motto that, Rodmond, which says, *Cura quietem*, and following up, as we did, our recent demand for the outrage on the *Trent*, so that we might be prepared at all points, was just as it should be. Of what use to make a demand that we were not prepared to support? But that is all gone by in peace, and no country ever more sincerely desired that consummation than England.

The Chairman, in addressing his friends, whom he was glad to see about him, said,—Reverting to the recent severe calamity which has been so generally and so deeply felt and deplored in this land, and which has excited so much sympathy for our bereaved Queen, he would first acquit himself of the duty he owed to the Club as their Chairman, and in reference to the memorial proposed to the late Prince Consort,

“ Whose glory was redressing human wrong ;”

he might state that her Majesty had signified that should that memorial take the form of an obelisk in Hyde Park, on the site of the national exhibition of 1851, it would be more in accordance with her feelings. It would doubtless thus perpetuate that

“ Modest, kindly, all accomplished, wise,”

and excellent Prince, the loss of whom the whole nation deplores in common with their Queen, and would mark the site of one of his principal triumphs in good works, which now seem likely to be decennial. The nation's sympathies are so entirely with her Majesty, that her wishes will be most scrupulously carried out by all the efforts which art and science, judgment and good taste, can produce. These sympathies have been so well expressed by a gentleman (Mr. W. S. Passmore) that with their permission he would read them to the Club. It has been most truly said that they add another proof to the many that are recorded of a nation's sympathy for the bereavement which our beloved Queen has sustained. They run thus, being most appropriately entitled—

GOD SAVE THE QUEEN.*

Father of Mercies, at whose will
Both Queens and Princes reign ;
Who dost the proudest realms o'er rule
And life and death ordain ;
Since it hath pleased thee hence to call
Good Albert from earth's scene,
Be thou the lone one's comfort now ;
And bless our widow'd Queen !

* *God Bless our Widowed Queen.* A National Prayer. Music by W. T. Wrighton. R. Cocks and Co., New Burlington Street.

Thou hast withdrawn her earthly guide,
 Her bosom's lord, her stay,
 To her be Thou support instead
 Of him Thou'st call'd away !
 Be Thou her children's Father now :
 May they for succour lean
 On Thy strong arm confidently,
 Beside their mother Queen.

Do Thou in this bereavement dire
 Sustaining strength impart ;
 And give her still, long, long, to reign,
 In ev'ry British heart !
 Dry Thou the royal mourner's tears,
 Give balmy hope between ;
 Grant Thou the nation's heartfelt prayer,
 And bless our widowed Queen !

He was sure the Club would approve of the excellent taste shown by the composer of these lines. (They were received with unbounded approval.) And they would now turn to their usual business.

Before he sat down, he much regretted having to notice the loss of one of the finest ships of her Majesty's navy, the *Conqueror*, of 101 guns, on Rum Cay, among the Bahama group. She was on her way from Jamaica to Bermuda, and seems to have taken the Crooked Island passage, which brought her into a part of the West Indies notoriously bad for currents,—being on the outer border of the Gulf Stream, or rather in the eddy occasioned by it, and the wind N.E. would assist that eddy in accelerating a counter current that would affect the ship. As yet no particulars had been reported of this disaster, but it was gratifying to learn that no lives had been lost in consequence.

The following proceedings took place at the Mansion House, on the 20th of February, on the subject of the Albert memorial.

The general Committee of the Memorial Fund met at the Mansion House, the Right Hon. William Cubitt in the Chair.

The Lord Mayor said that in accordance with a resolution passed at the last meeting a letter had been forwarded to her Most Gracious Majesty the Queen, to ascertain her feelings in regard to the memorial to the late illustrious Prince, and he had received a reply to that letter through Lieut.-General the Hon. C. Grey. The letter ran as follows:

Osborne, February 19th, 1862.

My Lord,—I have had the honour of receiving and of submitting to the Queen your lordship's letter of the 18th instant, communicating the proceedings which have taken place with a view to the erection of a national memorial monument to the much lamented Prince Consort.

The Queen feels grateful from the bottom of her heart for the universal sympathy that has been expressed for her in her deep affliction.

But it is still more soothing to her feelings to know that the noble character—the truly princely nature—of him whose loss has bowed her to the earth with a sense of desolation and misery that every day, alas! serves only to increase—is appreciated by the country; that the benefits he has been instrumental in conferring on the nation—the good he has brought since he first came amongst us, to effect which he may be truly said alone to have lived—are understood and acknowledged.

The Queen is also much touched by the feeling which has led the promoters of the movement for erecting a national monument to the Prince to leave the nature of that monument to her decision. It is a subject on which there must be necessarily much difference of opinion. Many, influenced doubtless by the belief that there was nothing which the Prince himself had so deeply and constantly at heart as the promotion of whatever might tend to the advantage of the community at large or any portion of it, have thought that the most appropriate monument to his memory would be to commemorate his name with some great work that should have that end in view, and the Queen cannot but be gratified by this proof of a just appreciation of his character.

But it would probably be difficult to procure anything like agreement as to the nature of the institution which should thus bear his honoured name, and it would be inexpressibly painful to the Queen were any controversy to arise on such a subject.

It would be also more in accordance with her own feelings, and she believes with those of the country in general, that the memorial should be more directly personal to its object—should be, in fact, more than what is commonly indicated by the word. Even so, it is probable that opinions may differ as to the character that would be most appropriate for such a monument.

But the Queen is confident that the same good feeling which has led to the reference of the subject for her decision, will lead to a cordial acquiescence in it, to the cheerful abandonment of individual views, and to an unanimous working together to effect the object all have at heart.

After giving the subject her best consideration her Majesty has come to the conclusion that nothing would be more appropriate, provided it is on a scale of sufficient grandeur, than an obelisk to be erected in Hyde Park on the site of the Great Exhibition of 1851, or on some spot immediately contiguous to it; nor would any proposal that could be made be more gratifying to the Queen personally, for she can never forget that the Prince himself had highly approved of the idea of a memorial of this character being raised on the same spot in remembrance of the Great Exhibition.

There would also be the advantage in a monument of this nature that several of the highest artists of the day might take part in its execution, for there would be room enough at its base for various groups of statuary, each of which might be entrusted to a different artist.

In the selection of the artists to be employed in the choice of a design and in the consideration of the details of execution the Queen would wish to obtain the best advice, and she would therefore desire to call to her assistance a small committee, consisting of persons in whom she could feel satisfied that the country would repose entire confidence.

I have written by her Majesty's commands to those whose assistance she thus desires to obtain, and will lose no time, as soon as I have received their answers, in communicating their names to your lordship.

I have, &c.,

C. GREY.

To the Right Hon. the Lord Mayor.

Sir Edmund Antrobus, Bart., then moved, "That the committee desire to express their deep gratification that the measures which they have taken for raising a national monument to the memory of the late illustrious Prince Consort have been honoured by the approval of her Most Gracious Majesty the Queen.

The motion was seconded by Mr. T. Baring, M.P., and carried unanimously.

Mr. Gregson, M.P., moved, "That a sub-committee be appointed hereafter to co-operate with the committee to be named by the Queen, in carrying out more fully her Majesty's wishes in the choice of a design, its execution, and the selection of the artist to be employed."

This motion was seconded by Mr. Winkworth, and unanimously agreed to.

Mr. Alderman and Colonel Wilson then moved, "That the foregoing resolutions be forwarded to Lieutenant-General the Hon. C. Grey, with a request that they may be laid before her Majesty the Queen."

This motion was seconded by Mr. Russell Gurney, Q.C., and also carried unanimously.

The Chairman then requested the Secretary to read the Report of the last Meeting of the National Life-Boat Institution. This Report stated that—

A letter was read from Sir George Grey, Bart., M.P., Principal Secretary of State for the Home Department, to the Duke of Northumberland, President of the Institution, stating that he would take an early opportunity to lay before her Majesty the loyal and dutiful address of the Royal National Life-Boat Institution on the occasion of the much-lamented death of his Royal Highness the Prince Consort.

A reward of £12 was voted to the crew of the institution's lifeboat, stationed at Eastbourne, for rescuing nine men from the barque *Druid*, of Sunderland, wrecked off Eastbourne on the night of the 12th ult, during a heavy gale of wind.

The Lytham lifeboat, also belonging to the institution, had succeeded

in bringing safely to port the schooner, *Chance*, of Preston, which during a gale of wind and foggy weather had stranded on the Horse Sand bank on the 17th ult.

A reward of £8 was voted to the crew of the society's lifeboat at Dundalk, for assisting to bring the schooner *Rook*, of Liverpool, to a port of safety on the night of the 16th ult. She was found thumping on the sandbanks on Dundalk Bar.

A reward of £4 10s. was also given to the crew of the *Tyrella*, Dundrum Bay life-boat, belonging to the society, for rescuing the master of the schooner *Bellona*, of Liverpool, which, during a heavy gale of wind was wrecked in Dundrum Bay on the night of the 17th ult. The cost of this life-boat, and those stationed at Newquay and St. Ives, Cornwall, and at Bankie in Scotland, was presented to the Institution by a benevolent lady. She had said that she would be amply rewarded if ever she had the pleasure to hear that *even one life* had been saved by any of the boats. The poor man rescued on this occasion had a most narrow escape—his crew of three men having previously perished during the fearful night.

A reward of £7 10s. was also voted to the crew of the Southwold lifeboat of the institution, for putting off and rescuing the crew of five men from a small boat belonging to the schooner *Princess Alice*, of Ipswich, which during strong winds and heavy seas had sunk on Sizewell Bank on the night of the 27th ult.

A reward of £12 was likewise voted to the crew of the Cardigan lifeboat belonging to the institution, for putting off and rescuing one man from the brig *Pioneer*, of Carnarvon, which, during a terrific gale of wind, was found on the 23rd ult. in a dismantled state in Cardigan Bay. Several of the crew had previously taken to their own boat, and had unfortunately perished.

Rewards amounting to £51 were likewise voted to the crews of lifeboats belonging to the institution for putting off with the view of rendering assistance to vessels in distress, which did not, however, require their services. Several other rewards were also voted for laudable services in saving life from various wrecks.

A letter was read from the Lords Commissioners of the Admiralty allowing officers and men of the navy to wear the medals presented to them by the institution for their intrepidity in saving life from shipwreck.

During the past month the institution had established a lifeboat station at Kingsgate, near Margate. Another was about being inaugurated at Plymouth, the lifeboat of this station being the munificent gift to the institution of Miss Burdett Coutts.

A communication was read from Admiral Sir G. Sartorius, stating that the Portuguese Government had decided on placing five additional lifeboats, on the plan of the Royal National Lifeboat Institution, on the coasts of that country, and requesting the co-operation of the institution in building the same.

The Royal Thames Yacht Club transmitted their usual donation of £10 to the Lifeboat Institution. At present only three or four yacht

clubs subscribe to the Institution, which, considering its national and important character, has peculiar claims on yachtsmen.

It was reported that a "Shipwrecked Pilot" had sent a donation of £10 to the institution through the Rev. R. Dallas, of Guildford.

During the past two years upwards of 1,000 lives had been saved by life-boats alone from various shipwrecks on the coasts of the United Kingdom. Payments amounting to £530 having been made in various lifeboat establishments, the proceedings terminated.

We had arrived at the conclusion when we last met, observed Albert, that the navigation of the lower part of the St. Lawrence was not adapted to our present steamers either of wood or iron; that although the season was open down to a period quite beyond the memory of all of us, still that when the ice did come, it was not to be trifled with. The *Persia* by the good fortune of arriving in time, by the good management of her commander, landed nearly all her troops, with their munitions of war in two days, but with some left still on board and unable to recover her boats she was obliged to be off at the first warning of the ice, on the 28th of December, and with the rest got safely to Halifax. The conduct of her commander had been highly approved by the troops, and his employers have good reason to be proud of him. Our minutes have preserved the record of this event, and we now find in a Quebec paper the following remarks on the whole subject:—

There were those who went about the streets on the arrival of the *Persia*, vociferously proclaiming that she had solved in the affirmative the question whether the Lower St. Lawrence is navigable for steamers throughout the winter or not—that we possessed in Bic a seaport always open, with good anchorage protected from all winds—and that we had only to build a wharf and a few additional miles of railroad to secure constant direct communication throughout the year with the Lower Provinces and with Europe. But when the news came that she had put off to sea again, unable to land her stores, leaving some of her boats behind her, stranded, they talked a little less loudly about open water, well-sheltered harbours, and the like.

The fact is the voyage of the *Persia* has proved just nothing new. We were all aware before that it is possible for steamers to enter the St. Lawrence in early winter, and to ascend as far as Bic, without material hindrance from the ice, which is much less troublesome in December and the beginning of January than it is in April. But the frequent snow storms, very dangerous to any vessels in a deep, narrow, rock-bound channel, and the want of harbours in the estuary of our noble river, constitute dangers not to be hazarded unless in such a case of sudden and great emergency as that which brought the *Persia* hither.

Bic is certainly the best spot in the St. Lawrence for landing troops in winter from vessels drawing too much water to be moored beside the wharf at River du Loup. But Bic does not deserve the name of a harbour. There is a place where a few small boats can nestle in among the rocks, but there is no port where large vessels can lie in

safety, while the experience of the *Persia* shows how difficult it is to land stores when there is a capful of wind. There is shelter of a certain kind, we know, behind the islands there—we have ourselves had reason to be thankful for it—but not of a nature to make the place a harbour available for traffic.

Next to Bic, Gaspe has been spoken of. The inner basin there, however, freezes over early, and although, perhaps, some use could be made of the outer bay, in winter time, it would be under the greatest difficulty, and Gaspe is almost as far from this as St. John or St. Andrews, in New Brunswick, where there are many of the facilities required.

The truth is—and the experience of this season gives it confirmation, that to preserve our communication with our sister colonies and Europe free from interruption by the periodical rigours of winter or the intermittent freaks of a foreign people, we must have the Intercolonial railroad built. That will bring Halifax harbour to Quebec, that alone will give us the benefit of open water throughout the year.

We have strong hopes that although the London Press—the *Daily News*, and even *The Times* itself, have regarded with coolness the proposition to build this line by the joint efforts of the Imperial and the Colonial Governments, the endeavours of our Commissioners will be successful. The opponents of the plan have always taken the ground that war is unlikely ever to occur between Britain and the States, and still more unlikely to break out in winter. This is now entirely cut from under their feet by the indisputable logic of events. For we have been on the brink of war, and at the commencement of our winter too. The British Government will therefore not be prone to listen henceforth to counsellors who have proved untrustworthy. They will remember that it was *The Times* and the *Daily News* which, by preventing them from sending us reinforcements last fall, have plunged them into the expense of sending out an army now. They will see that the two positions of *The Times*, which recommends, first, that no troops should be kept here—and, secondly, that no assistance should be given to the railway, are inconsistent and contradictory of each other. For the essential condition of withdrawing from the colony the troops necessary to occupy its strategical positions is that there should be a railway by which they could be rapidly poured in, in case of their being required. In fact, the matter assumes the shape of a dilemma, thus—if the British Government maintain a large force in Canada, they should ensure the construction of the Intercolonial line in order rapidly and cheaply to supply them with stores in winter time; if not, they should equally take means to have it built in order that in the event of need in winter they may send them here.

Some persons blamed Captain Judkins of the *Persia*, for leaving Bic, as they thought, hastily. We have already expressed our opinion on the subject, and asserted that the *Persia's* experience, so far from proving that St. Lawrence could be navigated during the latter end of

December and the beginning of January, showed that it was impracticable, and furnished an additional argument in favour of our constructing the Inter-Colonial Railway. We are happy to have in support of our views, the testimony we subjoin.

Sir,—Being between Father Point and Bic on the morning that the troop ship *Persia* left, 28th December, we had a good opportunity to see the state the Gulf was in with ice. It was then blowing a heavy gale from the N.N.E., and many miles of ice, some of it thirty or forty feet thick, were drifting from the North Shore. We consider that Captain Judkins displayed great wisdom in taking his fine ship clear of such dangers.

Notwithstanding the remarks of many of our drawing-room navigators, we beg to state that no practical mariner would have remained at Bic under such perils and difficulties.

We are, &c.

FRED. WATHEN, *Master of wrecked ship, Sulej.*

DANL. McLEAN, *Master of wrecked barque, John Pink.*

To the Editor of the Morning Chronicle.

We have here satisfactory proof of the state of affairs as to navigation when the *Persia* left. But as it is of importance that we should be able to get into that noble country at all times, he trusted that what had been said about a winter access to it by rail, would be taken up in earnest. It was highly gratifying to find that our troops met with that ready attention which could only be looked for among loyal subjects. We learn with satisfaction that on their landing "the *habitans*," assembled at Bic, and tendered the gratuitous use of their sleighs to the military for the conveyance of the troops through the district where they reside, as far as Riviere du Loup, a distance of fifty miles. The country people made a perfect carnival of the occasion, and threw open all their houses freely for the reception of the men. No better proof could be given of the utter misapprehension of the Northern States as regards the devotion of the French Canadians to the English crown, and of the inaccuracy and malignity of certain rumours that the soldiers were not well received on their landing on the shores of the St. Lawrence.

That ill-judged act of the *Trent* seems to have been most untimely, to add to its other evils, for the weather which our ships had to encounter was trying in the extreme. There was no helping it, for our troops had to go in spite of everything. We have already seen the account given by the guardsman of the *Adriatic*. Here is what the *Mauritius* transport met with, commanded by Captain Craikshank who left Cork on the 2nd of January, and seems to have had a remarkably bad passage. It runs thus :—

Halifax, N.S, Jan. 31st.

We have at length reached this dreary spot, after a very severe passage. Five days after leaving Cork, we experienced a succession of the most terrific gales of wind and tremendous seas, which lasted for a

fortnight. We lay to for eleven days, every sail we set was blown away, and at last we were under bare poles. Luckily the vessel was as fine a sea boat as ever was launched, and our captain a very first-rate man, a capital fellow, and won all our hearts. He is also a thorough gentleman. We carried away jibboom, foretopmast, maintop-gallantmast, and nearly lost one of our lifeboats, four gaffs, &c. We had nearly 700 men on board, and 27 officers, but we suffered but little inconvenience, and the men were healthy and behaved very well. We, however, lost sixteen horses out of forty of the Artillery battery, on board. After the gales abated, we feared getting short of coals, and made for St. John's, Newfoundland, and took in 240 tons, and remained 24 hours. Two days before we got here, we had another gale, and I see by the local papers that that gale had gone down the coast, and done terrific damage near New York. We got here on the 28th, in the morning. As there is no war at present, I am to be sent to Canada, via Boston, and there is no steamer till next week. There is also no mail to England for ten days, but as the transport *Parana* is going away to-morrow morning—to Portsmouth, Lord Mulgrave has decided to send a bag by her.

This is a wretched place to be quartered in, I think—a waste of existence—but a paradise compared with St. John's, Newfoundland, where we found a battery of garrison artillery, which had just been sent on.

The *Orlando*, 51 guns, is here, half a wreck, having been out in the same gales as we were, but was nearly done for, so I feel very thankful to have been in so good a ship and with so able a seaman as the captain. It is a great shame of the government to send troops across the Atlantic in the worst months of the year in vessels with only auxiliary horse power.

Captain McDonald Cruikshank received from Colonel Low and the officers who went out with him a most flattering letter of thanks for the skill and conduct he evinced during an almost unprecedentedly bad passage.

These passages were bad enough—but here is that of the *Orlando* alluded to in the foregoing, a screw steam ship of war, from Plymouth to Halifax:—

From the size and description of the frigate *Orlando*, 51, Captain F. Scott, C.B. as well as from the circumstances under which she was commissioned and sent away from England, more than ordinary interest is felt in her movements. It will be remembered that this ship was commissioned, got ready, manned, and sent to sea within a week. She left Plymouth Sound on the 24th of December, and passed out at the east end of the Breakwater with a fair wind. When off the Eddy-stone she shaped her course and made easy sail. Steaming easy, and easy she made 11 and 12 knots. In the mean time things about the ship had been put to rights, and everything had got into ship-shape and comfortable trim. In these five days half the distance was accomplished. The first misfortune happened to one of the topping-lifts of

one of the quarter davits, which went, followed by a cutter and jolly-boat. Then came an appalling gale of wind.

It was deemed best to put the ship under sail to save coals. The fires were banked up. Away went tiller ropes, and the drawbacks of hasty fitting out began to show themselves in the stretching of rigging or lanyards; the masts worked threateningly and frightfully, and the more they worked the more the rigging stretched. The pitching and straining thus occasioned made the ship leak. The water at last got so high as to put out the fires in the after boilers. The pumps were resorted to, but every one of them refused to work; not a drop of water could be drawn. Here was fresh and serious cause of anxiety, and almost alarm. It was found that the pipes had been broken by the working of the ship. After much trouble, steam was got up in the foremost boilers, and the engines put to work, so as to inject from the bilge. In a short time this means of relieving the ship failed; the pipe had become choked. Baling was commenced, but was found ineffective against the rate at which the ship was taking in water.

The chief engineer, Mr. Oliver, at this juncture, proved himself equal to the emergency, and went into the water up to his neck, groped, and found the rose of the injection pipe. It was covered and rendered useless by old clothes, chips, and rubbish that had been stowed away in the bilge. He soon cleared it and cut off the end of the bilge pump. Away went the engines, and now the water was soon under command. Some tons of rubbish were cleared out of the bilge, so that the donkey engines could work effectively. The ship was now put under sail. Even after the water difficulty had been abated, troubles continued. Gale followed gale in rapid and continued succession.

The *Orlando* leaked everywhere; over the beds of officers it was necessary to have the protection of awnings, and in spite of these, water was rushing about in all directions. So great was the force of the gale, and so much did it stretch, that it became necessary to swift in the rigging. The compasses had not been swung before the departure of the ship, and the safety of sailing by the chronometer was uncertain. On the 14th of January the land was sighted. A better land fall could not have been made, which, under the circumstances, is most creditable to the Master, Mr. A. J. Veitch. On the 15th the ship came into Halifax Harbour. The cold was frightfully severe, and everyone on board felt it more or less. The *Orlando* was taken alongside the dockyard, for the purpose of having her defects made good. This would take some time. An inspection of the ship after she came into harbour only served to prove how much she had suffered, and increases the wonder how she should have been brought in.

So much for the affair of the *Trent*; but if it teaches us to have our winter roads ready, observed Rodmond, so that we can get into the country when our ships reach their destined port, the lesson will not have been given in vain.

I see a capital report of the state of the *Himalaya's* bottom, ob-

served the Commodore, which has rather surprised me after some one asserting in the House of Commons that iron ships fouled so much that they were not to be kept clean. But here's the account, and it seems to me that it would be worth trying whether the coating of Peacock's would last three or four years, or what is the extent of time that one coating might be supposed to last.

The iron screw troop-ship *Himalaya* was docked on the 12th inst., in No. 1 dock, Keyham, to examine her bottom, after her expeditious voyage to the Mediterranean, Nova Scotia, and the West Indies. It is eight months since she was last docked and coated with Messrs. Peacock and Buchan's composition, and was found to be perfectly and entirely free from barnacle, weed, or corrosion. We understand that she is again to be coated with this composition.

A remarkable discovery has been made recently, observed the Commodore, in the substance called Paraffine, which has been found in large quantities in coal tar, and now forms the best and most economical light that we have for household purposes. The *Mechanic's Magazine* gives, along with the analysis of several kinds of coal tar, an interesting account of this article, which he would read.

The pure and beautiful light which paraffine yields, its perfect freedom from grease, and its clear translucent appearance, render it invaluable for the production of the superior classes of candles, and since its make has so wonderfully increased, and the method of its manufacture so greatly improved, these candles manufactured by the Messrs. Field, her Majesty's chandlers, of Lambeth, are far from expensive, and when their illuminating power is taken into consideration, as well as the curious fact that their combustion is much slower than that of any other varieties, such as wax, sperm, &c., it may be open to question if they are not the most economical of any description of candle whatever.

Another incidental advantage may likewise be mentioned.

There are many who prefer for their drawing-rooms coloured candles, red, or blue, or green, but have hitherto been deterred from using them, owing to their inferior burning capabilities, caused by the large amount of incombustible colouring matter which it has been found necessary to introduce in order to bring them to the required tint. From the transparency of paraffine, a much smaller proportion is required, so small indeed, that there is no difference in the illuminating power of the coloured and the white. The beautiful compounds lately formed by Mr. Perkins, Messrs. Simpson, Maule, Nicholson, and others, all of organic origin, impart to these candles as well as to other articles, the most chaste and delicate tints, red, mauve, violet, crimson, and rose colour, which can possibly be imagined, and when it is remembered that these colours also are derived from the oxidation of a base found amongst the distilled products of coal, and have existed in different states indeed, but still existed side by side with each other in the very foundations of the earth, it is certainly a curious fact that light-giving and colouring principles are both obtained from the de-

composition of gigantic forests and spreading ferns, the vegetation of a grand and prolific flora of thousands of ages ago : that they should be recovered by the hand of science from their associated congeners, to meet once more—resuscitated and individualised—the rose, the crimson, and the glowing purple mingling with the white—the luminous taper being tinted with colour coeval with its own creation.

How wonderful to trace the circulation of matter in nature, even in such an apparently simple thing as a burning candle.

Paraffine has existed in other forms for millions of years, perchance in the rain and the atmosphere which fostered the tree, and the shrub, and the tender flower, flourishing in worlds now passed away. Vegetation seems to perish, and leave no trace behind ; but Nature, ever working, was storing the relics to accumulate them in the exhaustless coal beds, destined to illumine the inhabitants of the worlds to be. And now, as the taper grows smaller and smaller, who can tell what part those products of its combustion will have to play in the economy of the universe. They are not lost, but will enter once more into the foliage of the Future, as the same products entered into the foliage of the dim mysterious Past. Thus, by an eternal round, paraffine may re-produce paraffine, as a grain of wheat produces a grain of wheat.

On reflecting upon the history of artificial light, we may also trace distinct phases in the social condition of the world.

The savage, rude and violent in all his actions, did not even wait to prepare the grease flowing from the slaughtered quarry, but lighted his dwelling with the blazing pine torch, or resinous faggot, hewn from the fastnesses of his native forests. As time rolled on, and pastoral pursuits and the genial spirit of agriculture filled the land with flocks and cattle, man sought in the fat of animals a more convenient and enduring source of light, and the torch and blazing pine branch gave place to the candle and the lamp. As civilisation still progressed, and man, weary of spending the long winter evenings in darkness, or by the uncertain and fitful gleam of his rude manufacture, sought far and near for light-giving material, and the sea itself was ransacked for its stores, and the seal, the walrus, and the mighty whale, yielded each its tribute in oleaginous supply.

Then came a new and important phase, when vast machinery was brought to bear, and the palm, the cocoanut, and a hundred variety of seeds, were expressed for their valuable oil. And, as though living Nature, prolific as she is, could not meet the perpetual demand forced upon her, the dead organism of a former world was disinterred, giving heat and light to the generations dwelling upon this. Who can foretell the discoveries yet to be made, by careful researches, upon the products of a bygone time?

And, continued the Commodore, as another novelty, we have heard of wonderful supplies of rock oil in Canada, indeed marvellous fountains of this fluid : but for the candles we have a new nautical candlestick, which is worthy the attention of the Club.

A candle with its socket and shade in jimbals at last ! exclaimed Rodmond.

The best of all hand candlesticks for shore or ship, and the very thing for yachts. All carelessness in carrying it is neutralized, continued the Commodore. It may be held in any slanting condition, as such things are commonly done with others, which cast about their molten store accordingly, but which the nautical candlestick can never do, because the socket carrying the candle with its shade remains always perfectly upright. Then look here, continued the Commodore, as he hung it up on a hook in the wall by the fireside, as he would place his hat on a peg.

The nautical candlestick in its novel position excited the admiration of the whole Club, and was pronounced one of the best inventions of the day, deserving of general patronage both ashore and afloat.

The Commodore received the thanks of the Club for his attention to their objects, adding that they considered this new article most appropriately named.

The French Minister of Marine, said Albert, had just issued his report on naval affairs, and as the Club took great interest in these matters, he would, with permission, read the following extract:—

The work of transformation of the *materiel* continues to progress at the rate provided for by credits regularly allotted every year for the purpose, according to the plan adopted in 1857. As was made known last year, a greater number of our building slips, up to the end of 1860, were unoccupied than had been the case for a long time past. The government was awaiting the results of the trial of the first iron-cased frigate which was ever built, and the bold "initiative" of which belongs to France.

After the success which has been obtained, to doubt was no longer permitted; the art of shipbuilding has made an immense stride; it was our duty, therefore, to resume the course of those labours which can alone keep up the naval power of the empire to the level it must preserve if we would not see it decline.

We have done so alike without precipitation and without hesitation; the goal fixed beforehand in 1857, and which it was then proposed to attain in fourteen years, we are approaching with firm and steady strides, as befits a great country whose loyalty stands too high, and whose independence and might are too unquestionable to permit of any indecorous hurry or slackness in the fulfilment of its most legitimate designs. At the present day the number of our men-of-war is 101, as appears from the following tabular statement:—

	<i>New ships.</i>	<i>Old sail. ships transf. into aux. screws.</i>	<i>Totals.</i>
Line of battle ships	12	23	35
Iron-plated frigates	2	..	2
Ordinary frigates	15	6	21
Corvettes	7	..	7
Avisos (<i>i. e.</i> , gunboats) ..	36	..	36
	<hr/>	<hr/>	<hr/>
	72	29	101

Which would show for the year an increase of thirteen new ships; but, on the other hand, five ships have been lost at sea, and eleven have been ordered to be broken up as too old and unfit for service. Lastly, we have afloat and in course of completion, one line-of-battle ship, four iron-cased frigates, three ordinary frigates, six gunboats, and two floating batteries.

The inscription maritime on the 1st July last numbered 170,496 seamen, viz. :—

On board men-of-war	39,743
Shipped for long voyages on board merchantmen	31,047
Engaged in the coasting trade	33,150
Engaged in the coast fisheries	32,042
In private dockyards	8,585
In their quarters	25,929

170,496

The experiments for the improvement of naval artillery are being carefully carried on. Satisfactory results have been obtained, and we have reason to believe that in the construction of our *materiel* we shall have realised improvements at least equal to those of other nations.

The supply of timber by means of contracts taken without any intermediate agents by the Administration of Woods and Forests is proceeding satisfactorily, as well as the supply of our harbours with French coal, which, henceforth secure, will be very soon further facilitated by the completion of the railways in Brittany, and enable us to dispense with foreign supplies.

The hydraulic works indispensable to meet the growing requirements of the fleet are being carried on with all the activity that the sums allowed for the purpose will admit. Six dry docks were completed in 1861 at Cherbourg, l'Orient, and Rochfort, others have been commenced at Brest and Toulon. The submarine foundation of Fort Chavagnac is progressing at the entrance of Cherbourg Roadstead; the foundation of sea forts at Castigneanu, close to Toulon, is being laid; the quays of that harbour are now completed; the Vauban Dock has been deepened, and a new one, that of Missiessy, has been commenced.

Lastly, 135 electric signal posts, connecting every point of the seaboard of the empire with each other, will be at an early period provided with their apparatus, and will thus soon be able to render all those services which the defence of our coasts and humanity may require."

The Secretary hoped that so unprecedented an event in this country as that which had taken place in the Zoological Gardens of London, and so remarkable in natural history, as that regarding the female boa constrictor, he might be allowed to preserve among their records :—

Among advertisements to seekers of amusement, one from the Zoological Society has, probably, been observed by our readers. It announces that at the Society's Gardens "the large python may be now seen incubating her eggs." We confess that this advertisement somewhat surprised us; for having recently read in the *Treatise on Reptiles*, published in the last edition of the *Encyclopædia Britannica*, that "no reptile is known to hatch its eggs," we were not prepared for an announcement from the Zoological Society so directly in opposition to that of the author of this recent treatise, which is supposed to be a high authority on reptiles. True, herpetology has by no means kept pace with other sciences, many important features still remaining obscure; yet we thought that the question of reptiles hatching their eggs had been as firmly settled as that all ophidians are oviparous. But from the days of Pliny, who tells us that young boas feed on cow's-milk, and that they are indebted to this mythical connexion with the bovine family for their name, mighty serpents, worse

"Than fables yet have feigned, or fear conceived,"

have always been subjects of mystery, and it is not, therefore, any very great wonder that opinions should differ respecting the hatching of their eggs. The pythoness which has suddenly become a celebrated and interesting character in the great London world, where almost daily some event or person is elevated to a prominent position only to be put aside when a new wonder appears, is one of the large varieties of the great boa family. It was born in West Africa, and has been eleven years in the Gardens, during which period it has thriven well, waxing yearly in strength, girth, and length, until now it is a very giant among the serpents in the Zoological Society's collection.

The great egg-laying event occurred four weeks ago. The plethoric condition of the serpent occasioned uneasiness. Some supposed that she had bolted a stray blanket; it was considered whether something might not be done to relieve the great reptile, when she excluded, as well as the keeper can estimate, about one hundred eggs. These, enclosed in a white leather-like substance, are about the size of those of a goose, the majority of a dirty-white appearance, connected by a membrane. Among them are two small red eggs, and many are indented, probably by the great pressure of the serpent's body. It is remarkable that this prolific exclusion of eggs, which might be supposed to have exhausted the animal and consequently excited hunger, has had apparently an opposite effect. At all events, the reptile has not broken fast for twenty-three weeks, her husband having, meanwhile indulged in occasional rabbits. Indeed, the sight of these animals, pleasantly provocative at other seasons, seemingly only irritates the pythoness: a few days since, an unsuspecting rabbit frisked near her ladyship, she straightway seized it by the throat, and cast the affrighted beast savagely from her. And, on more than one

occasion, when her husband, doubtless actuated by proper paternal pride and feeling, approached his wife in order to see how domestic matters were going on, she has, to use the keeper's words, shouldered him away with one of her great coils, showing plainly that by thus giving him the cold shoulder she prefers performing her maternal duties unassisted. Once, and once only, has the keeper seen her absent from her interesting incubatory operation; and then, before he could get round to the back of the cage to have a better view of the eggs, she was on them again. In fact, she much resembles an old hen with a brood, puffed up by maternal pride and conceit, and is in a highly excitable condition;—spiteful, too, according to the keeper, for she has struck more than once at objects outside the glass which have irritated her. Though she does not eat, she drinks freely: but as water is near her, she is not obliged to leave her eggs to assuage thirst.

Having communicated these interesting particulars, the keeper kindly went round to the back of the cage, opened the door and removed the blanket cautiously. There, true enough, in direct opposition to the non-hatching theory, was the mighty pythoness in great coils—

“Fold above fold, a surgy maze, her head .
Crested aloft,”

—not a whit attenuated by her long fast, while beneath the lowest coil were bunches of eggs, some plainly visible between the folds of the coil, others, as the keeper said, being only partially seen in consequence of their being overlaid by the serpent's body. Some of the eggs were of a dirty-green white, decomposition having probably taken place: a supposition strengthened by the odour emanating from them, and also from the serpent. The removal of the blanket, though effected most quietly, immediately excited the pythoness. Her head, which was lying on the topmost coil, in the best position for observation was suddenly raised; she became restless, darted out her long quivering tongue with great rapidity, and would have struck the keeper had he not re-covered her with the blanket and put an end to her irritation.

It will be interesting to watch the result. A few lively baby pythons would undoubtedly be an important addition to the attraction of these unrivalled Gardens during the ensuing season. We trust, however, that, apart from this financial consideration, the Society will take care that the pythoness shall be carefully and closely observed while she is incubating.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

APRIL, 1862.

MICRONESIA—of the Pacific Ocean.

[The numerous small coral islands scattered over a considerable portion of the great Pacific Ocean have found an able historian in the Rev. L. H. Gulick, M.D. A series of lectures relating to their history, resources, and their present condition in respect of natives, has been given by this gentleman at Honolulu, and we propose to give them to our readers in some few of our consecutive numbers, forming as they do the best account of an interesting but little known portion of the distant part of the ocean in which they are situated.—ED.]

Micronesia is a portion of that part of the world's surface which was first called the Third World, and which is now generally known as Oceanica.

In the progress of geographical and ethnological knowledge Oceanica has been divided into five districts: *Polynesia*, to the East, comprehending the Sandwich, Marquesas, Society, Hervey, Friendly, New Zealand, and Samoan Groups; *Melanesia*, to the South, including the Fiji, New Hebrides, and Solomon Archipelagoes, with New Guinea, inhabited, as the name indicates, by black races; *Australasia*, to the South of Melanesia, including New Holland (Australia) and its dependencies; then to the *West Malaisia*, inhabited principally by the Malay races, which embraces the East Indian Islands; and finally, and centrally, *Micronesia*, fitly termed, for it is the region of small islands.

Micronesia extends from long. 130° to 180° E. from Greenwich,
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and from lat. 3° S. to 21° or 22° N., excepting only the S.W. corner of the parallelogram, trenched upon by the Melanesian Islands.

Four large archipelagoes embrace nearly every island of Micronesia. In the S.E. corner of the Micronesian parallelogram lies a chain of fifteen low atolls, extending through seven degrees of latitude both North and South of the equator, and called the Gilbert (improperly Kingsmill) Islands. This group sustains a population speaking one language, and numbering between 40,000 and 50,000.

A little to the N.W. of the Gilbert Islands lie the thirty atolls of the Marshall Archipelago, extending as far North as lat. 12°. They lie in two chains of fifteen atolls each, running in a N.W. and S.E. direction, the eastern chain being the Ratak, and the western the Ralik Islands. The Ratak and Ralik islanders speak nearly the same language, and number together perhaps 10,000.

The Caroline Islands stretch from long. 130° E. to 165° E., the greater number of them being found between the parallels 5° and 9° N. There are forty-eight islands of this archipelago, forty-three of which are low coralline, and five are basaltic, with a large coral element about them. This range of islands sustains perhaps 25,000 people. Many different dialects are spoken on its widely separated islands, though they are evidently dialects of the same mother tongue, and are strongly allied to the Marshall Islands dialect, and even to the language spoken on the Gilbert Islands.

The Ladrone Islands are all basaltic, about sixteen in number, and some of them very small. The chain runs nearly North and South, between the meridians 145° and 147° E., and from lat. 14° to 21° N. The most southern island, as also the largest and the best known, is Guam, probably more properly called Guahan. Guam and Seypan are at present the only inhabited islands of the group, numbering perhaps 4,000 souls, who are, however, the descendants of Spanish and Philippine Islands' ancestry, mingled with native blood.

The Ladrone Group—was the earliest discovery of the civilized world in Micronesia, and indeed in the Pacific Ocean. Magalhaens (Magellan) came upon the islands of Zinian and Seypan March 6th, 1521, on the first voyage across the Pacific. His crew spoke of the discovery as "the islands of the lateen sail," it having been the first view they had of this triangular sail, so universal through Micronesia and all Polynesia. Magalhaens named the people "Ladrones" (robbers), from their thievish propensities, though these were no greater than on most islands, and the Roman missionary, Le Gobien, informs us that they abhorred thieving! The same credible historian of these islands informs us that they did not know what fire was!

They are reported as having been very numerous when discovered. The figures vary greatly, from 73,000 to 300,000. Here were first seen those gigantic proas, that then, as now in the Marshall and western Caroline Islands, made marvellous voyages, sailing with great rapidity and very close to the wind. Their houses were large and high, divided into apartments, "the whole raised a story from the earth and supported upon pillars of stone. Besides these dwelling

houses they had others for their canoes, built likewise on large pillars of stone, one of which was capable of holding four of the largest canoes. This account is fully confirmed by the massive and almost colossal remains of buildings which have been formed in the islands of Tinian and Rota."—*Prichard's Researches*.

The people were mild, mercurial, licentious. They preserved and adored the bones of their ancestors, as many Micronesian people do to this day, while all of them worship the spirits of their ancestors. The historians speak of three castes among them, the nobles, the half nobles or sons of the nobles, and the plebians, and these classes are to this day preserved throughout the greater number of the Marshall and Caroline Islands.

The descriptions given of their physical appearance shows them allied to Micronesians of the present day, particularly to the Caroline Islanders. No accessible portions of their language have been published, but it is said to have had many relations to the Tagala dialect of the Philippine Islands, to which all the Micronesian and Polynesian dialects have a palpable correspondence.

These islands produced originally, it is said, rice, maize, cocoanut, areca nut, the cyca, dogdog, rima; and since then the orange, citron, mango, guava, and grape have been introduced, together with the stag, hog, goat, horse, ass, cat, dog, and fowls.

The Ladrone Islands were frequently touched at by the Spanish navigators as they crossed the Pacific in the N.E. trade wind zone from New Spain, as it was then called, or Mexico, to their possessions in the East Indies. In 1564 Legapi formally proclaimed possession on behalf of Spain, though no active steps were taken towards rendering it effective till more than a century later.

In 1663 two independent movements were made towards evangelizing the islanders of the Pacific. A priest, named Jean Paulmier, in that year published "Memoires relative to the establishment of a Christian mission in the Third World, otherwise called the South Land." He himself was the descendant of a native, probably of Madagascar, named Essemoric, who, in 1504, was taken to France, and there married into the family of De Gonneville, the commander of the expedition. In the same year Diego Luis de Sanvitores addressed Philip IV of Spain regarding the more specific idea of a mission to the Ladrone, concerning which his mind was excited by having touched there in 1662. Philip IV favoured the proposition, and on his death, in 1665, his widow, Maria Anna of Austria, carried it into effect, and consequently the group was called the Marian Islands.

In June, 1668, Sanvitores, with five other fathers and several lay assistants, arrived at Guaham from the Philippines by the way of New Spain. They were received with great friendship by the natives. The next year 13,000 islanders were reported as baptized. The same year a zealous lay convert from Malabar, who had been wrecked there in 1638, was killed by the natives, showing the rapid rise of their animosities. Le Gobien, the historian of the mission, whose history

is brought down to 1695, reports many miraculous occurrences connected particularly with Sanvitores. They were not, however, sufficient to subdue the natives' rising fear of being dispossessed of their homes and of the faith of their fathers. In 1670 Sanvitores was obliged to resort to the force of arms in propagating the faith on some of the northern islands. The same year Father Medina was killed, for forcibly or stealthily baptizing infants on Seypan; a riot broke out on Guaham, and many were killed. Two forts were built, and it appears there were thirty-two troops to defend them. War raged forty days, and peace was made on condition that the natives came to Sunday services, observed the festivals of the church, and received Christian instruction. In 1672 Father Sanvitores himself was killed by a man, enraged that he should have baptized his infant stealthily and against his long known desires. Le Gobien reports 50,000 as baptized by the martyred father. Two hundred troops were soon after sent from the Philippines, and still others five or six years after, who were employed in quelling the various revolts of the people.

In 1680 Quiroga became governor, a man of great energy and zeal, who had served with honour in the wars in Flanders—a most ominous fact for the natives. This governor continued in power, with one or two slight interregnums, as late as 1695, when, according to Le Gobien, the work was finished, and no opposition remained.

The natives, it need scarce be said, were, according to Le Gobien, reduced by Quiroga's military power. By 1695 they were so reduced and subdued that they were all removed to the two islands of Seypan and Guaham. Many, it is said by others, committed suicide from despair, and many fled southward to the Caroline Islands, where they spread such reports of the white man's cruelties that communication between the two archipelagoes ceased, till in our own century it was again renewed.

An epidemic or two attacked the depressed remnant of the people soon after the commencement of the eighteenth century, and in 1710 it is reported there were only 3,539 left of that race who, forty years before, were so numerous and flourishing. In 1722 the English Clipperton reported the population as only 1,985.

Commodore Anson visited Tinian in 1742, and found not a solitary permanent inhabitant where there had been, it is said, 30,000. Kotzebue visited Guam in 1817, where he found a population of 5,386, only one family of which was of pure blood. Freycinet more thoroughly explored the group, in 1819, than it had ever before been. He gives in his voyage a detailed and elaborate account of the group. Since then, in 1828 and in 1839, D'Urville visited Guano, of which he gives graphic sketches.

The governor of Guam is in subordination to the governor of the Philippine Islands. His general policy is not to encourage much intercourse with the foreign world, though whalers have gone there in considerable numbers within a few years. In 1855 or 1856 the small pox raged there, and swept off many.

The Caroline Islands—were first seen by Rocha, in 1526, and again in 1528. Saavedra, who first made the suggestion of a canal across the isthmus of Darien, saw islands of this range, which have been supposed to be the Ulithi or McKenzie Group; but, like the last discovery, their location is uncertain. In 1543, Villalopos discovered what may have been the Palaos, or Pelew Islands, and in 1565 Legaspi saw still other islands. Drake saw islands in 1579 that he called the Islands of Thieves, South of Eap. Querosa saw what was very probably Ponapi in 1595. In 1625 the so-called Nassau fleet discovered what is supposed to be Eap and Fais. In 1686 Admiral Lazeano saw islands in this region whose position is unknown, but which he called the Caroline Islands, after the royal consort of Charles II of Spain; and the whole range consequently received this name as it became known, though for a time there was an attempt to call it the New Philippines.

Knowledge of these islands grew upon the Spaniards of the Ladrones and Philippine Islands by proas which drifted to them; and in 1696 Father Clain, of Guam, wrote a short account of the Caroline Islands, which is found in the fourteenth volume of the *Lettres Edifiantes*. In 1705, Serano, on a visit to Europe, presented a chart of the range to Pope Clement XI., who consequently wrote to the kings of France and Spain, urging that the natives might be Christianized.

The Jesuit College at the Philippine Islands therefore sent out a vessel with eighty-six men on board in November, 1710. They first discovered a small coral island to the S.W. of Palao (Pelew), named Sansoral. Here Fathers Duberron and Cortel, with fourteen lay missionaries, were in such haste to plant a crucifix that they went on shore contrary to the captain's desire. The vessel was currented off, and did not return for more than a month, when nothing could be learned of these first Christian martyrs on the Caroline Islands. Twice the succeeding year were vessels sent in search of the missing ones: the first time the island could not be found; the second, the vessel sunk in a tornado, and only two escaped.

In 1722, Father Cantova, of Guam, wrote a letter describing several Caroline Islanders who had drifted to his island during the year, and who had been converted by him, accompanying it with a chart and a detail of all he could learn of the Caroline Islands from his converts. This letter and chart were the best authorities regarding these islands until the voyage of Lutke in 1828.

Fathers Cantova and Walter at last in 1731 accomplished their desires, and went on a mission to the Ulithi (generally spelt Oulouthy) Group. They remained here together three months, when Walter returned to Guam for assistance. Winds were adverse, and he did not again reach Ulithi for more than a year, and when he did, he found that Cantova and all his attendants had been killed, from fear, it is said, on the part of the natives that their faith would be overturned. Doubtless the knowledge of what had been so ruthlessly accomplished on the Ladrones Islands affected the reception of whites on the Caroline Islands.

Palao, though long known to the Spaniards, had no place on the charts of the world till after 1783, when Captain Wilson, of the *Antelope*, belonging to the East India Company, was wrecked there. He was received and cared for by Abe Thule, the king of the principal part of the group, with great kindness. Captain Wilson remained here a year, and then left, with his crew, in a vessel of their own construction. The king's son accompanied them to England, and there attracted much attention, but soon died. A large and very interesting volume was published by Dr. Keate, which to this day contains nearly all we know of that group; though more cannot in this connection be told than that the islands are basaltic, surrounded by a large reef, and that they sustain a population of perhaps 4,000.

In 1790 the East India Company sent M'Clure to Palao to reward the natives by taking them rich presents of foreign manufacture, of animals, and seeds of valuable fruits. M'Clure became enamoured of the island, and returned twice afterwards and made a stop of several months. But the romance soon subsided, and he returned. The natives have since gone from bad to worse by their contact with the traders and few whalers that have touched there. Had the Bible been sent them in 1790, with proper ones to teach it, how different might have been their condition!

In 1832, the ship *Mentor*, of New Bedford, Captain Barnard, was wrecked on Palao. After remaining a few months, a part of the ship's company left in two frail crafts, and, after suffering much, were drifted on the small coral island of Tobi (Lord North Island), which is the most S.W. island of Micronesia, and lies close to the Melanesian Islands. The captain soon effected his escape in a vessel, but seven were left to suffer almost incredible hardships for nearly two years. Five or six died of starvation and cruelty. Only two escaped, one of whom was Mr. Horace Holden, who afterwards published an interesting but harrowing narrative.

Eap (lat. $9^{\circ} 35' N.$, long. $138^{\circ} 8' E.$) is the second of the high islands of the Caroline Range, counting from the West. It is a beautiful island, twenty miles in length. It was probably discovered by the Nassau fleet in 1625, and was only occasionally visited till 1836, when a vessel from Manila was cut off there. Roman Catholic missionaries from Guam, it is said, have settled there within a very few years. Much of interest is told about this group by Captain Cheyne, in a volume published in 1852.

Wolea (Ul'ie, $7^{\circ} 21' N.$, $143^{\circ} 58' E.$) is the most noted of all the coral islands to the South of Guam. The lagoon is only about six miles across, and the population perhaps 600. In 1788 a native of this group set out with the purpose of re-discovering Guam, nearly 600 miles distant, which had been known to their ancestors, and, strange to say, he found it. In 1797, Captain Wilson, of the missionary vessel *Duff*, passed this, with several neighbouring groups, on his return to England, *via* Hongkong. The king visited Guam in 1807, and was there received so well that a colony of his people have since established themselves on Seypan, to the North of Guam, and

each year they make a voyage back and forth. These people are the navigators of the western Caroline Islands. The trade they receive from the Spaniards at Guam is taken as far East as Truk (Hogoleu), in lat. $7^{\circ} 20' N.$, long. $151^{\circ} 43' E.$ Much of interest is told of these people; and they would be a favourable centre for missionary efforts among a scattered but interesting people on low islands East and West, who, though feared, have not, so far as I am aware, ever cut off a vessel. Their language is different from that of Eap, on the West, and of Truk, to the East.

Truk is a collection of basaltic islets surrounded by a large and distant reef. Its population is perhaps 5,000 to 10,000, divided into many adverse tribes. Several low islands to the South and East speak nearly the same dialect, and hold more or less frequent communication with it. There are also several large atolls to the North of Truk, but very sparsely peopled.

A large lagoon is found between Truk and Ponapi (Ascension Island), variously named on the charts, but called by the natives Oraluk, which should be explored, as several vessels have already been wrecked upon it, it being the most dangerous, because the least known, of the Caroline Island reefs.

Ponapi.—Ponapi, also called Ascension Island, is perhaps the third in importance of the "high" or basaltic groups of the Caroline or West Micronesian Islands. The centre of the island is in lat. $6^{\circ} 55' N.$, and long. $158^{\circ} 25' E.$ It may have been first seen by Quiros in 1595, on his voyage to the Philippines from Santa Cruz, after the abandonment of the unfortunate attempt to settle there. M. de Freycinet supposes the island seen to have been Hogoleu, but the description given seems to be that of one large island with a circumference of thirty leagues, which much better corresponds to Ponapi than to Hogoleu, to which M. Duperrey inclines.

Subsequently to Quiros, the island was no doubt occasionally seen, but not reported. There is a native tradition of a boat's company having landed on the South side of the island, who had such peculiar skins that they could only be killed by piercing their eyes. They were probably Spaniards clothed in mail. Several accounts speak of ships having been seen; when they were supposed to be islands rising up out of and subsiding into the sea. Such phenomena were much feared, and while they were in view people fled from the shores and the priests drank ava for the spirits' interposition until the dreaded objects disappeared. Twenty years ago there was in the Metalanin tribe a figure-head much resembling that of a junk; and the natives told the whites who saw it that it belonged to a vessel wrecked here, which first brought fowls to the island, and even to this day they give the names of the foreigners who landed from the vessel. One old chief of the Kiti tribe, not long since deceased, when but a young man, with more than usual boldness, went on board a passing vessel and received a China bowl and a copper teapot, which have been seen by an Englishman still resident on the island. A few Spanish silver coins and a silver crucifix were some years since discovered in the

vaults of the celebrated ruins at Metalanin. A pair of silver dividers was once found in the ruins of an old house at Kiti, and inland from there a brass cannon was some time since discovered, and taken from the island. Yet Ponapi cannot be said to have been discovered till Lutke, of the Russian corvette *La Seniavine*, first saw it, January 2nd, 1828.

The Ponapi Group consists of several islands, surrounded by a reef seventy or eighty miles in circumference. The large island, named Ponapi, is about sixty miles in circuit, and engrosses nearly the whole of the enclosed area, while twelve or more basaltic points, slightly detached, form as many lesser islands; and upon the coral reef itself are more than fifteen coral islets, in every respect similar to those of the purely coralline groups.

The geological character of Ponapi is well expressed by the term basaltic, while there is about it an important but more recent coralline element. The island must once have been a dreary waste of rock, but the processes of decomposition have mellowed large portions of the surface, and thus changes have been wrought full of scientific interest and poetic beauty. Short, rapid streams are active in forming alluvial deposits round the shores of the whole island, where the coral reef, like a silver plate containing the emerald gem, most conservatively preserves the precious debris, a rich source of vegetable wealth. Openings in the outer reef are frequent, by which several excellent harbours are formed.

Except on its northern aspects, where the scattered islands and the bold hills are delightfully picturesque, there is nothing marked about the landscape, yet all is warm with a beauty most serene. The mainland shore steps freely, gracefully, down to where ocean ebbs and flows. Between the ever-green shore and the outer reef many a patch of coral whitens near the surface, though not protruding, save at lowest tide, and attracts the eye to tracing the winding channels and spreading bays of the deeper blue. All along the outer reef the foaming line of white shows where hoary ocean casts up, as tributes of love, many a deep sea gem, and where he is ever surging out his admiration of Nature and his anthem to Nature's God.

Ponapi is clothed with vegetation from its highest peaks quite into the ocean, where extensive mangrove swamps flourish in perfection. So dense is the vegetation that a passing vessel can scarcely discern a house of the hundreds that are scattered around its entire circumference; and but for the smoke of domestic fires, and the canoes gliding with paddle and magic sail within the encircling reef, the island might readily be thought uninhabited. The whole surface of the island is covered by an uninterrupted forest, with the exception of a few spots on the leeward slopes covered with a short coarse grass, whose green is of quite a yellow cast, and contrasts strongly with the intensely deep, almost black, green of the surrounding thickets.

This luxury of vegetation gives a peculiar softness to the scenery. The absolute uniformity of the unbroken sultry green detracts perhaps from its picturesque romance to a widely-travelled eye; though

to one with a purely Micronesian eye and heart it is the highest type of island beauty. Nor does the uniformity pertain only to colour; even the circumstances of varying height and form are apparently denied to the different tribes of trees, so completely does the mantling canopy of vines bind tree to tree, bridge every slight hiatus, and blend every peculiarity in one gently undulating flood. With the exception of two or three varieties of palm that occasionally skirt the shore, like the cocoanut, or stand in princely distinctness, like the sago, nothing in form or altitude relieves the luxurious scene.

Though enveloped in the same deep green with Kusaie, Ponapi is strikingly different from it. Its highest point is by Lutke given as 2,858 feet, but its area is so much greater—nearly double—that its height is one of the less noticeable of its features. As seen from the East and South, it slopes with much regularity from the central hills to the shore, presenting none of those jagged lines and fewer of those pinnacle rocks so prominent in its eastern sister. Along the more abrupt northern shores a beautiful sisterhood of eight or ten basaltic islets sport among the coral reefs, unlike anything on Kusaie, save the solitary islet of Leta.

Unlike that of Kusaie, the magic line of the encircling reef, through which the sea-gods themselves dare not pass, surrounds the Ponapian tableau at an average distance of perhaps two miles. Ponapi is a graceful mother-queen, resting in state on her ample coral throne, while close about her clusters a family of modest maiden isles. The islet hills of Truk, to the West, scattered widely within their immense rambling reef, are a beauteous youthful group, bereft of father and mother. Kusaie, with her deeply serrated and comparatively unmellowed hills, and with her silver zone close about her, is a solitary beauty—a romantic, unwedded, unmultiplied one.

Few of the island races have a more pleasing physiognomy than the Ponapian. There is a something in the sprightly eye and in the refined features of many of them that differs much from the gross, unmarked animality of a large number of the inhabitants of Oceanica. The men, dressed in their skirt of the leaflets of the cocoanut, neatly bleached and attached to a string tied about the hips, exhibit their whole body, of which they are in general justly proud. The human frame is seldom seen to better advantage than when a Ponapian stands firmly erect on the quivering prow of his slight canoe, fearless and proud as a captain on his quarter-deck, his eye peering the waters ahead, and every muscle tense, in readiness to launch a long spear-like stick, held in one hand and poised on the opposite forearm, at some inhabitant of the deep. Nor are the attractions of the females at all inferior. Not that all are beauties, but many are of a high order of grace; their former order of dress consisted of only a piece of cloth about the hips.

There is, as many have remarked, a great variety of countenance. One is often reminded of some familiar face in the distant home-land of the white man. The high forehead, large in the regions of causality, the delicate eyebrow, the piercing black eye, the long, slender aquiline

nose, the thin, expressive lip, and gently rounded chin, are not uncommon, particularly among the younger and more delicately raised. The complexion of many, especially among the females, is frequently of a light olive colour, scarcely deeper than that of many a brunette. This appearance is heightened by daily applications of the expressed juice of the tumeric tubers, which, combined with long, jetty tresses, tastily knotted up and retained by a fragrant wreath, prepared by the gently tapering fingers of the beauty herself, completes the beau ideal of a Ponapian nymph.

The children are often remarkably attractive. The thin, pale skin, the bright, dancing eye, the exquisite mould of body and limb, with the instinctive grace, guiltless of bashfulness even when nude, make one's heart yearn to guide them to something higher and purer than they can possibly receive from dark-minded parents.

But to be more particular and to state the more generally prevalent characteristics:—

The hair of the Ponapian is jet black, generally quite straight, but often somewhat curly and occasionally very much so. His skin is that which I should think is properly called copper-coloured. It may be of a slightly lighter shade than is the prevalent one through Polynesia, but M. Lesson's term "citron-yellow" is too strong either for the inhabitants of this island or of the other Micronesian groups; though, when protected, the complexion does indeed lose its deeper tints, as is also true of all the Malays—Polynesian races. And, to complete the parallel, there are individuals, born before the discovery of the islands, and not in the slightest degree more exposed than the mass, whose skin is so very much darker as to suggest the possibility of a negritic infusion from the large Melanesian islands so few degrees to the South. I cannot think these varieties of tint anything more, however, than that which is always found in the different members of almost every race, and particularly those of the Pelagian family.

In stature, the Ponapian is slightly below the European average, which comes, as in the New Zealander, from a shortening of the leg. There are many large, strongly-built men, but the prevailing type is that of wiry agility. I think it palpable that the size of the males, in particular, is decreasing from contact with civilization.

The cerebral developments are good. The frontal region seldom retreats in any marked degree, and it is often finely protuberant. The parietal diameter is, I think, rather small, and the anterior posterior somewhat prolonged, yet not so decidedly so as to require that they be termed more than slightly prognations.

There is something pleasing in the general cast of their countenances. The jet black eye, the regularly formed face—but slightly broader than with ourselves, the nose somewhat heavy, low, and coarse, though but seldom repulsive, the perfect teeth, and the small, delicately-attached ear, save when artificially deformed, is the portrait of an islander possessed of more than usual attractiveness and intelligence.

The mental characteristics of this people are as favourable as their physical. Like their bodies, their minds are more quick and sprightly

than strong and forcible. There is very little of that stolidity so frequent among the degraded races, and very little of that power found among others. Their temperament is mercurial. In matters of any interest at all to them they readily acquire knowledge,—as, for instance, the acquisition of the English language. Very many of them are quite familiar with that sailor's "lingo," which is almost the only one they have heard. Those few individuals who have been to sea are among the very quickest of islanders in picking up facts and making themselves useful. They are usually favourites wherever they go abroad from their native island. In teaching them to read, though there are various grades of sprightliness and readiness, there is a general quickness of apprehension that makes the task most pleasing. In training youths to domestic services, they find scarce any difficulty in performing all the various duties of cooks and stewards, the only drawback being that all but invincible independence of feeling which scorns to be a servant for any one towards whom they can contrive to exercise any feeling of equality. The processes of education have not yet been carried sufficiently far to test the supposition, but there is no reason to suppose that this readiness will extend to the abstruse sciences; probably, as in all similar races, their minds stop short of the deeply ratiocinative.

It is hardly just to decide upon the full power of the native mind from the generation now on the stage, so greatly has it been deteriorated from contact with the civilized world during now nearly thirty years. Being so small a body of people, they have very severely felt the full stream of foreign contaminations, and have not had the requisite vigour for re-acting under it. The process of decay has been very marked during the last seven years. Occasionally, even now, exhibitions are, however, made of no contemptible power and ingenuity; but it is an evidence from former times that is conclusive of no mean measure of enterprise and ability.

The largest of their present canoes will carry from ten to fifteen men, but during the generation before their discovery their larger craft as well deserved the name of *prcas* as do those now made at the Marshall and the western Caroline Islands. There still remain a few fine specimens of native architecture in a large feast-house and a royal dwelling or two; and the finish of very many of their houses speaks of more than ordinary nicety and mechanical resource; but the exhibitions in this line are very much less remarkable than formerly, both in magnitude and finish. An examination of the noted so-called "ruins" on Ponapi amply demonstrates that this people had originally no slight measure of laborious energy; and the voyages they once performed to Mookil, Pingelap, Ngatik, and perhaps even to Kusaie, tell of bold nautical knowledge and enterprise not a whit behind that of any of the Micronesians.

Morally, the Ponapian has many pleasing characteristics, though dashed by defects and obliquities that indubitably establish his moral unity with the human family in other zones.

It may quite safely be said they are destitute of pure moral prin-

ciple. When truthful, honest, and virtuous, it is because present interest constrains; and generally the strongest of even present interests will not secure such high-principled action. Their minds have but the smallest traces of that magnanimity so often the attribute of savages. All is contracted, like their island itself. Liberality in sharing food is forced upon them by Nature's liberality in giving it; but in little else is generosity seen. Gifts are, it is true, constantly made with great prodigality, but they are either semi-forced contributions to a superior, or even larger returns are without fail to be expected. There is a something which might be hastily termed transparent candour and openness of character, incapable of deep, dark crimes, necessitating concealment; but that they cannot keep secrets comes from a want of mental character sufficient to retain them. All seems loosely bound, and a secret escapes simply because there is no mode of detaining it. They are affectionate and kind within the bonds of close relationship; but outside of it their hearts are in general as callous as those of the so-called civilized world that visit them, from whom they have learned to be especially unkind and unsympathizing to all foreigners. Their minds are extremely prone to suspiciousness and displeasure; but there seems to be no basis for the darker shades of sullen moroseness, and consequently they are placable, and their alienations are healed with comparative ease, only however to disengage the mind for other frivolous contentions. Seldom do we hear of ferocious revenge, but the art of contriving adroit slights and insults is carried on to very considerable perfection. The Malayan trait of deception is carried on as far as their loose characters permit. They might be termed a cheerful people, agitated by no fervent passions, but there is a constant simmering of low intrigue and jealousy through every grade of their limited society that as effectually destroys the exuberant effervescence of pleasure as of deeper passion.

Let us look at infancy and childhood. But imagine a babe, unceremoniously born in the corner of an unpartitioned hut. During the first moments of its life it feels the application of a dirty, moist sponge, and is shortly taken, probably by the mother herself, to some neighbouring pool or stream. Further imagine its earlier months of nakedness, in the naked arms and bosom of its mother, no process of nature concealed, no desire unrestrained. As its needs grow past the supplies of nourishment its mother affords, imagine that mother filling her mouth with pure water, or water of the cocoanut, and then applying her lips to those of the child, gently squeezing the fluid in an intermittent stream into its passive organs, each intermission being a notice to the child that now is the time to swallow the amount received. If it be something more substantial the child is supposed to need, a yellow plantain is judged peculiarly healthy. It is chewed by the mother or nurse, and then passed by a similar process into the child's mouth. Still further imagine this child advancing in years, humoured in all its whims, crawling, then walking, in nothing but Nature's costume, in unrestrained acquaintance with all the instincts and necessities of both the human and the brute creation. Picture it the subject of some

ill-tempered disciplinary blow, sprawling on the ground and venting its anger in outrageous screeching, while one of the parents probably takes its part and upbraids the other, who administered the blow. Many a day will that child have nothing to eat till its parents have returned from fishing or from feasting. Imagine, then, this "father of the man" searching the beach for some sweet morsel, slug or shell-fish, or wandering into the neighbouring bush after some crab, bird, or berry. But see it squat like any beast and tear or pound its prey to pieces, as it has seen its parents do: then see it chewing and smacking its lips over the raw quivering fish, or over the slightly roasted crab, parts of which yet struggle on the smoking childish fire.

Or, again, imagine it now that its parent is about to kindle an oven far towards noon or near evening, after what we should call a fast of several days. The child is now six or eight years old, and, if a boy, can begin to render considerable assistance in all the lighter departments of labour. The fire being kindled and the fuel arranged by older hands, the younger ones may assist in piling up the stones over the wood. The stones are blackened with the smoke of many fires, and of course hands and feet, and any parts to which they are applied, are begrimed with the tokens of a coming meal. The stones being sufficiently heated, all hands are in requisition, first to pull the pile to pieces and remove the unconsumed sticks, then to spread out the stones and arrange the food on them, and finally to cover the whole with leaves and grass. Our ideal youth is probably by this time thoroughly besmeared. He may possibly rinse himself in some puddle or stream, but much more probably you will find him returned to his sports or, bestreaked with smut, sitting under the oven shed, perched on a stone or log, regaling himself on the delicious vapours issuing from what seems a flattened rubbish heap—vapours that are fast causing the secretion of gastric fluids in delicious expectancy of the half of a bread-fruit or the end of a yam.

Many a phase of Ponapi infancy must be left untouched, but the above may furnish some glimpses of that initiatory period during which all the important elements of its education are received. This period passed and that mind is for ever brutish. As well change the Ethiopian's skin as reconstruct its mental and moral, not to say physical condition. Raw fish will ever after be for it the choicest of delicacies, nudity its natural habiliment, and sensuality its involuntary temper. Its naked-bosomed mother will indeed ever be something of an object of instinctive affection, but how different from that refined homage the child of civilization pays her—

" Pictured in memory's mellow glass, how sweet
Our infant days, our infant joys to greet! "

But what awful chasms separate the retrospective joys of a Ponapi savage from those of a Henry Kirke White. Let the philanthropist and the friend of missions but vividly realize the heathen's infancy, and his wonder will cease that generations must lapse ere a race can be civilized, and his interpretations of missionary reports will be ren-

dered much more rational. How difficult is it generally for the missionary to report any progress without conveying to his patrons and readers the idea of a much higher rise in the intellectual and Christian scale than at all comports with fact, or with what is possible in those whose whole infancy has been but an arid blank—a period of gross animality. A rise of a degree is reported, and each reader fixes the point from which the rise took place according to the measure of his knowledge of the heathen's degradation. Even the missionary himself almost invariably places it too high, and is consequently often miserably disappointed in his *protégés*. The home Christian thinks himself very sagacious in putting the level of heathen degradation at freezing point; while he who studies heathen infancy in its native hovel reduces the point to zero of Fahrenheit, and even his estimates frequently prove all too sanguine, so difficult is it to plumb the depths of degradation from the heights of Christian civilization. As in the earlier deep sea soundings, our plumb lines part, or the specific gravity of the nether waters interrupts the lead's descent, or the deeper currents sway our lines.

(*To be continued.*)

ON SUMNER'S METHOD,—*By James Gordon, A.M., Nautical Author and Teacher.*

Sumner's Method for finding a ship's position at sea has acquired almost universal celebrity among nautical men, and is also patronized by the Board of Trade, as a candidate for the extra class must verify the problem known as the double altitude by means of it. It is therefore of importance to inquire as to its merits.

In the first place it is not original. Even arithmetical books a century old gave the rules for single and double position; the former being worked by one supposition, the latter by two, as in the double altitude problem, where two latitudes are assumed by Sumner and the corresponding elapsed times found; from which the required latitude is calculated by the rule of three, on the principle that the elapsed time at that latitude must agree with the given elapsed time, just as in the old rule of double position. Of course if the latitude thus found differs much from the latitude by account other suppositions must be made.

Commodore Owen, R.N., in a pamphlet, published at Deal in 1812, applied the method of double position to a more useful and practical purpose, viz.,—when the latitude is uncertain he directs to take an altitude of the sun both in the forenoon and afternoon, and gives rules for deducing the correct latitude and longitude. This is done on exactly the same principle as Sumner's Method.

American writers have boasted so much about this Sumner's Method

that we deemed it necessary to clear it of its halo of originality before proceeding to show its utter uselessness as a practical problem.

For an example, we shall take one from *Norie's Examples*, Exercise No. 2, 17th edition, 1860.

February 25th, 1862, in latitude $49^{\circ} 36' N.$, by account, at Oh. 33m. p.m., the observed altitude of the sun's lower limb was $28^{\circ} 53'$, and at 2h. 43m. p.m. it was $19^{\circ} 44'$, the height of the observer's eye being 14 feet: required the true latitude.

Note.—This example is certainly stated very inaccurately, as there is nothing to show what the Greenwich time is. We shall assume that the given times are apparent times at ship and also at Greenwich, and calculate as is done at the examinations of the London Marine Board, viz., by taking all arcs to the nearest second, but logarithms to the nearest minute only. The elements will be,—sun's declination, $9^{\circ} 3' 27'' S.$; 1st altitude, $29^{\circ} 4' 1''$; 2nd altitude, $19^{\circ} 54' 5''$.

The latitude by account being $49^{\circ} 36' N.$, we shall, according to Sumner's rules, assume

1st latitude, $49^{\circ} N.$ This will give—

	h. m. s.
Time of 1st alt.	1 24 4
„ 2nd alt.	2 59 24
	<hr/>
Elapsed time	1 35 20

2nd latitude $50^{\circ} N.$ This will give—

	h. m. s.
Time of 1st alt.	1 8 35
„ 2nd alt.	2 53 39
	<hr/>
Elapsed time	1 45 4

Hence,—

	h. m. s.		h. m. s.
1st elapsed time ..	1 35 20	Given elapsed time ..	2 10 0
2nd „ ..	1 45 4	2nd „ ..	1 45 4
	<hr/>		<hr/>
	0 9 44		0 24 56

m. s.	:	1	::	m. s.	:	24 56	:	2 34
9 44								50 0
								<hr/>
								52 34

2nd lat.

Lat in.

As the latitude thus found differs $2^{\circ} 58'$ from the latitude by account, we must make another trial:—

3rd latitude, $51^{\circ} N.$ This will give—

	h. m. s.
Time for 1st alt.	0 47 15
„ 2nd alt.	2 47 26
	<hr/>
Elapsed time	2 0 11

Hence,—

	<i>h. m. s.</i>		<i>h. m. s.</i>
Elapsed time for lat. 50°	1 45 4	Given elapsed time	2 10 0
„ „ 51°	2 0 11	Elapsed time for lat. 51°	2 0 11
	<hr style="width: 50%; margin: 0 auto;"/>		<hr style="width: 50%; margin: 0 auto;"/>
	0 15 7		0 9 49

$$\begin{array}{r}
 m. s. \\
 15 \ 7 : 0' : : m. s. \\
 : 9 \ 49 : 0' \\
 : 51 \ 0
 \end{array}$$

51 39 Lat in.

As the latitude thus found differs 55' from that last found, we must try again:—

4th latitude, 52°. On trying this latitude we find the calculation is impossible, the latitude being too high. We must therefore try—

5th latitude, 51° 30'. This will give—

	<i>h. m. s.</i>
Time of 1st alt.	0 30 55
„ 2nd alt.	2 44 8
	<hr style="width: 50%; margin: 0 auto;"/>
Elapsed time	2 18 13

Hence,—

	<i>h. m. s.</i>		<i>h. m. s.</i>
Elapsed time for lat. 51° ..	2 0 11	Given elapsed time	2 10 0
„ „ 51° 30'	2 18 13	Elapsed time for lat. 51°	2 0 11
	<hr style="width: 50%; margin: 0 auto;"/>		<hr style="width: 50%; margin: 0 auto;"/>
	0 18 2		0 9 49

$$\begin{array}{r}
 m. s. \\
 18 \ 2 : 30' : : m. s. \\
 : 9 \ 49 : 0' \\
 : 51 \ 0
 \end{array}$$

51 23 Lat in.

As this latitude differs 16' from that last found, we must try again:—

6th latitude, 51° 15'. This will give—

	<i>h. m. s.</i>
Time of 1st alt.	0 40 31
„ 2nd alt.	2 45 57
	<hr style="width: 50%; margin: 0 auto;"/>
	2 5 26

Hence,—

	<i>h. m. s.</i>		<i>h. m. s.</i>
Elapsed time for lat. 51° 15'	2 5 26	Given elapsed time	2 10 0
„ „ 51° 30'	2 18 13	Elapsed time for lat. 51° 15'	2 5 26
	<hr style="width: 50%; margin: 0 auto;"/>		<hr style="width: 50%; margin: 0 auto;"/>
	0 7 47		0 4 34

$$\begin{array}{r}
 m. s. \\
 7 \ 47 : 15' : : m. s. \\
 : 4 \ 34 : 0' \\
 : 51 \ 15
 \end{array}$$

51 24 Lat. in.

As this agrees within 1' of the last latitude, we assume it is correct.

The above shows that to work a double altitude by Sumner's Method may cause so much calculation as to render it unfit for practical use. We beg however, to suggest that a double altitude worked by Ivory's Method, as given in *Norie*, may be usefully verified as follows:—

Correct Method of Verifying a Double Altitude.

Calculate the latitude by Ivory's Method. Then, with the latitude thus found, find from the altitudes the corresponding times at the ship; if the time elapsed between these is the same as the given elapsed time, the latitude may be presumed to have been correctly calculated.

This mode of verification is not useless labour, as from the ship's time of one of the altitudes and the time at Greenwich, found from a chronometer, the longitude of the ship may be ascertained as in the chronometer problem.

Sumner's Single Altitude.

To make a low island when the longitude is uncertain, it is usually recommended to sail into the parallel of latitude of the island, and then run down the longitude. As the latitude may be ascertained within 1' from day to day, this method must give a probable certainty as to finding the island. Sumner professes to give, instead of a parallel of latitude, a line, which he calls a line of equal altitude, in the direction of which, if a ship steers, the land will be made at the point where the line cuts the coast on the chart, even when the latitude is erroneous.

This method has been extensively recommended as a safe mode of steering with the certainty of sighting the land at a known point. This, however, is very fallacious, as, in the first place, the line of equal altitude, when drawn on a chart, is not a straight line; besides, were it so, its position as to East or West depends entirely on the correctness of the chronometer.

Consequently, although the method abovementioned of making a low island has been extensively practised with success, as the parallel of latitude in which the ship is sailing may be depended on with sufficient accuracy, Sumner's method might lead to disastrous consequences, as the parallel of equal altitude is quite uncertain.

Remarks on Norie's Exercise, No. 4.

The mode of expressing the times in this exercise is even more objectionable than that in No. 2. We can only guess that the given times are intended for apparent times at ship; but we would expect them to be sufficiently approximate to find the declination of the sun. They are, however, two hours fast of ship time, which could not possibly happen in practice. There is, moreover, a greater mistake in the statement of the exercise, as the altitude, $66^{\circ} 9' 30''$, is said to be taken at 1h. 13m. 30s. p.m., whereas it could not have been taken

under the other conditions in the afternoon,—it should have been stated as an a.m. altitude.

To verify by Sumner, we assume latitude as 11° , and then as 12° .

1st latitude, 11° S. This will give—

	<i>h. m. s.</i>
Time of 1st alt., Aug. 30th	0 50 40
„ 2nd alt. „	1 18 3
Elapsed time	0 27 23

2nd latitude, 12° S. This will give—

	<i>h. m. s.</i>
Time of 1st alt., Aug. 30th	0 43 40
„ 2nd alt. „	1 13 44
Elapsed time	0 30 4

Hence,—

	<i>h. m. s.</i>		<i>h. m. s.</i>
1st elapsed time ..	0 27 23	Given elapsed time ..	2 1 42
2nd „ „ ..	0 30 4	2nd „ „ ..	0 30 4
	0 2 41		1 31 38

<i>m. s.</i>	:	1	::	<i>h. m. s.</i>	:	34 0	2nd Lat.
2 41				1 31 38		12 0	
						46 9	Lat. in.

Whereas the latitude by Ivory's Method is $11^{\circ} 37'$ S., differing $34^{\circ} 32'$.

If, however, we assume the 1st altitude as being taken a.m., and calculate as before, we shall have the times of that altitude, August 29th, 23h. 9m. 20s. and August 29th, 23h. 16m. 20s., making the given time about two hours fast, as formerly stated. The times of the 2nd altitude will remain the same as by first calculation; the elapsed times will be 2h. 8m. 43s. and 1h. 57m. 24s.: hence the latitude, $11^{\circ} 37'$ S., agreeing with the answer in *Norie*.

Such mistakes as we have pointed out in a standard work like *Norie's* are apt to mislead learners, and make them abandon their studies in despair of obtaining correct results.

WINDS AND CURRENTS OF THE GULF OF GUINEA.

[The winds and currents of the Gulf of Guinea throughout the year have formed the subject of investigation by Lieutenant de Brïto Cappello, of the Portuguese Royal Navy, the result of which has been

published in five charts, with a memoir, at Lisbon. In forwarding a copy to this journal, that officer has sent with them the following letter, which contains some information that will be found of use to our readers. We hope hereafter to announce the appearance of these charts and memoir in their English dress.—ED.]

Sir,—As one of your subscribers and a persevering reader of your excellent journal, I take the liberty of offering you a collection of charts of the winds and currents of the Gulf of Guinea, which I have just published, and which I send you by the Southampton packet.

You know very well that the Gulf of Guinea is occupied by zones of winds from different quarters, and by very strong and opposite currents,—both of which change their conditions according to the seasons.

These charts have been constructed for the most difficult part to cross over to our possessions on the western coast of Africa, called the “Northern” or rather the “Eastern Passage.” There are two distinct routes by which the passage is made from Lisbon to Angola. Thus:—

First Route—Passes to the West of the Cape Verd Islands and, continuing southward, crosses the equator between 26° and 28° W. long. from Greenwich, according to the season, traversing thus the zone of calms in the narrowest part; then standing across the S.E. Trades, and on losing these making to the eastward for the coast, and thus reaching the point of destination from the southward. This being generally the southern route. The other is entirely different.

Second Route.—The ship should pass East of the Cape Verd Islands, running to the S.E. parallel to the coast to double Cape Palmas and afterwards to proceed with the starboard tacks on board until making the land, generally to the southward of Cape Lopez. The distance then to gain the port is to be done by working close to the shore, profiting by the land as well as the sea breeze, thus avoiding the current which sets to the N.W. and North outside. This is called the northern route.

This latter route, although much shorter in point of distance, is often much longer in point of time. The southern route, in fact, is more favoured by the winds by crossing the two Trade winds in all their strength; whilst ships by the northern route are obliged to cross the zone of calms in its greatest breadth, and the winds of the gulf and the coasts are weak. Nevertheless, a vessel, taking every advantage of circumstances and being a good sailer, is more certain, at any time of the year, of making the passage by the northern than by the great southern route. What lengthens these passages consists in not knowing the limits of the winds and currents of these parts.

In each of the five charts you will perceive South of the equator a zone, lying W.N.W. and E.S.E., in which the wind blows from South, separating the Trades from the S.W. winds of the gulf and the coast. To the eastward of this zone the wind gradually diverges from the South, becoming S.W. To the West of it, on the contrary, the wind

gradually becomes S.E. This circumstance decides the favourable course, which takes a ship successively by winds off shore on the starboard tack. The S.E. winds of the other, on the contrary, are directly opposed to the course which the ship would take.

In respect of currents, there is also a line to the North of the equator, lying nearly East and West, which separates the Equatorial from the Guinea Current. This circumstance prevents us from crossing the parallel of 2° N. until after passing the meridian of 6° or 4° W. of Greenwich, and sometimes even further East, according to the season.

Above all things what lengthens these routes is, first, crossing the region or triangular space of calms (largest or smallest, according to the season) in the winter months (that is from October to May) pretty far from the land, and thus to go where the light southerly and S.S.E. winds prevail, and in a part where a strong current is setting N.W. and W.N.W.

The most favourable route, after crossing the parallel of 14° N., in the winter months, is to follow the direction of the coast as far as Cape Palmas. True, the winds are very light, but, as a recompense for this, the current is always favourable, the route is very short, the ship gets into the region of southerly and S.W. winds, and never finds S.E. winds or N.W. currents. In the months of July, August, and September, when the S.W. monsoon reaches to 12° and 13° N. lat., it is right to keep further out (23° or 24° W., Gr.) to double Cape Palmas without the trouble of tacking, and the ship will have nearly a side wind.

The second cause of lengthening these passages arises from working in the regions South of the equator when the wind may chance to be S.S.E. and S.E. It is easy to see that it is impossible to get to the southward with these weak southerly or S.E. breezes while under the influence of a strong westerly or W.N.W. current.

On this last account, in all seasons, a vessel should not abandon the starboard tack off Cape Palmas up to the very coast, at least if the wind does draw from E.S.E. to N.E., as it often does in tornadoes. After reaching the coast the vessel should work very close to the shore for her port, as already observed.

The charts, constructed from a number of journals—not so many as could have been desired,—are nevertheless worthy of confidence from the circumstance that one observes in the intertropical regions the great regularity of the meteorological elements in their transformations, especially with respect to the direction and strength of the wind.

The velocity of the wind is expressed in the charts, and is considered as the mean, as near as can be, of the ships, the logs of which have been examined. In practice, generally it will be found that the strength of the wind is greater for the ships whose logs have been used which are not good sailers. Nevertheless, the numbers are proportional, which will be sufficient for the navigator.

Before concluding this, I will call your attention to the interesting subject which these charts make very evident,—I allude to the origin

of the Guinea Current. Kerhalet and other authors who notice this current make it depend entirely on the Polar Current of the coast of Africa, which, they say, to the southward of the Cape Verd Islands turns to the S.E., following the coast, and at Cape Palmas turns East and E.N.E., thus constituting the Guinea Current.

I think that the origin of the Guinea Current is not due to that; at least, in the months of July, August, and September, when this current shows itself with its greatest force, an easterly current is observed from 35° or 40° W. of Greenwich. This mass of water comes between the parallels of 5° and 10° N., running on the coast between the Bijoogas and Cape Palmas, and so far from forming a junction with the Polar Current, it is this which keeps it to the southward, obliging it to take its S.E. course.

At the periods when the Guinea Current is comparatively weak, it is very true that the Polar Current reinforces the Guinea Current along the coast; but nevertheless the charts show a kind of source independent of it, situated at the apex of the triangular space of calms, where the wind, very weak, changes its direction from S.E. to S.W. and from N.E. to N.W.

May not the atmospheric pressure have some reference to this source of the Guinea Current? In the zone of the calms the barometric pressure is five or seven less than in the adjacent parts;—might not this diminished pressure be the cause of an elevation of the waters nearly thirteen times more, as has been already remarked in tidal observations? The precipitation also in this region would surely tend to raise the level. But I leave the solution of these matters to those who are competent to decide.

THE ISLAND JAN MAYEN.

Jan Mayen is a rocky islet off the eastern coast of Greenland that has been honoured in its bleak and dismal loneliness by the visit of an English yacht. Nay, more than that, it is distinguished above all others by the possession of her old figure head. Not that the pleasure vessel was wrecked there; she was too well managed for that; but this having been replaced by a new one, was presented by its owner in *propria personâ* and duly installed in its solitary grandeur among the puffins and stormy petrels of the bleak North! It is a queer place for a pic nic, without grassy glades enlivened by sunshine, and having no very high reputation, except for the gales that are attended with snow and hail, skies that are loaded with heavy clouds, and those boisterous seas, which are occasionally covered with ice floes varied by clear leads as frequently covered with fog. Indeed, so completely is it shrouded with all these attendants of its intemperate climate, that it seldom has an opportunity of showing itself in its entire pristine

grandeur. But Lord Dufferin in his yacht found his way there, and landed too, in spite of all these difficulties. Surely he must be the first yacht sailor in the whole world, and well deserved the title of Lord High Yacht Admiral of Great Britain. Our readers are aware that Lord Dufferin visited Iceland and Spitzbergen in 1859, one of the most interesting voyages on record. His account of the Geysirs of Iceland, in our December number of 1861, is a specimen of his familiar style. Here is his account of Jan Mayen and why he went there.

It was during one of these fogs that Captain Fotherby, the original discoverer of Jan Mayen, stumbled upon it in 1614, while sailing southwards in a mist too thick to see a ship's length off, he suddenly heard the noise of water breaking on a great shore, and when the gigantic bases of Mount Beerenberg gradually disclosed themselves, he thought he had discovered some new continent. Since then it has been often sighted by homeward bound whalers, but rarely landed on.

About the year 1635, the Dutch government wishing to establish a settlement in the actual neighbourhood of the fishing grounds, where the blubber might be boiled down and the spoils of each season transported home in the smallest bulk, actually induced seven seamen to volunteer remaining the whole winter in the island. Huts were built for them, and having been furnished with an ample supply of salt provisions, they were left to resolve the problem, as to whether or no human beings could support the severities of the climate. Standing on the shore, these seven men saw their comrades' parting sails sink down beneath the sun, then watched the sun sink, as had sunk the sails,—but extracts from their own simple narrative are the most touching records I can give you of their fate:—

“The 26th of August our fleet left us and set sail for Holland with a strong North-east wind, and a hollow sea, which continued all that night. The 28th, the wind the same; it began to snow very hard; we then shared half a pound of tobacco betwixt us, which was to be our allowance for the week. Towards evening we went about together, to see whether we could discover anything worth our observation; but met with nothing.” And so on for many a weary day of sleet and storm.

On the 8th of September they “were frightened by a noise of something falling to the ground,”—probably some volcanic disturbance. A month later it became so cold that their linen, after a moment's exposure to the air, became frozen like a board.* Huge fleets of ice

* The climate, however, does not appear to have been then as inclement in these latitudes as it has since become. A similar deterioration in the temperature both of Spitzbergen and Greenland has also been observed. In Iceland we have undoubted evidence of corn having been formerly grown, as well as of the existence of timber of considerable size, though now it can scarce produce a cabbage or a stunted shrub of birch. M. Babinet, of the French Institute, goes a little too far when he says in the *Journal de Debats* of the 10th of December, 1856, that for many years Jan Mayen has been inaccessible.

beleaguered the island, the sun disappears, and they spend most of their time in "rehearsing to one another the adventures that had befallen them both by sea and land." On the 12th of December they kill a bear, having already begun to feel the effects of a salt diet. At last comes New Year's day 1636, "After having wished each other a happy new year, and success to our enterprise, we went to prayers to unburthen our hearts before God." On the 25th of February, (the very day on which Wallenstein was murdered,) the sun reappeared. By the 22nd of March scurvy had already declared itself; "For want of refreshments we began to be very heartless, and so afflicted that our legs are scarce able to bear us." On the 3rd of April, "there being no more than two of us in health, we killed for them the only two pullets we had left; and they fed pretty heartily upon them, in hopes it might prove a means to recover part of their strength. We were sorry we had not a dozen more for their sake." On Easter Day Adrian Carman, their clerk, dies. "The Lord have mercy upon his soul and upon us all we being very sick." During the next few days they seem all to have got rapidly worse; one only is strong enough to move about. He has learnt writing from his comrades since coming to the island, and it is he who concludes the melancholy story. "The 23rd of April, the wind blew from the same corner with small rain. We were by this time reduced to a very deplorable state, there being none of them all, except myself, that were able to help themselves, much less one another, so that the whole burthen lay on my shoulders,—and I perform my duty as well as I am able, as long as God pleases to give me strength. I am just now a-going to help our commander out of his cabin, at his request, because he imagined by this change to ease his pain, he then struggling with death." For some days this gallant fellow goes on "striving to do my duty," that is to say, making entries in the journal as to the state of the weather, that being the principal object their employers had in view when they left them on the island; but on the 30th of April his strength too gave way, and his failing hand could do no more than trace an incompleated sentence on the page.

Meanwhile succour and reward are on their way toward the forlorn garrison,—on the 4th of June up again above the horizon rise the sails of the Zealand fleet; but no glad faces come forth to greet the boats as they pull towards the shore, and when their comrades search for those they had hoped to find alive and well,—lo! each lies dead in his own hut,—one with an open Prayer Book by his side; another with his hand stretched out towards the ointment he had used for his stiffened joints; and the last survivor, with the unfinished journal lying by his side.

Here is a plain "unvarnished tale" of reality. The devotedness of these unhappy Dutch sailors to the duty they had imposed on themselves,—the sufferings they must have undergone,—how little has all this attracted the attention of our own arctic voyagers. The very island itself, a mere dark speck on the face of the ocean, is one that

has scarcely been known by name in our times. And yet this, too, has had its share of attention. But it had never before been honoured by the presence of a British nobleman's yacht, nor has it fallen to the lot of any such gem of the ocean to have been preeminently distinguished by receiving as a present the figure head of that same yacht as a memento of her visit. That yacht was the *Foam*, and that visit is thus related by Dord Dufferin.

Up to this time we had seen nothing of the island, yet I knew that we must be within a very few miles of it; and now, to make things quite pleasant, there descended upon us a thicker fog than I should have thought the atmosphere capable of sustaining; it seemed to hang in solid festoons from the masts and spars. To say that you could not see your hand, ceased almost to be any longer figurative; even the ice was hid—except those fragments immediately adjacent, whose ghastly brilliancy the mist itself could not quite extinguish, as they glimmered round the vessel like a circle of luminous phantoms. The perfect stillness of the sea and sky added very much to the solemnity of the scene; almost every breath of wind had fallen, scarcely a ripple tinkled against the copper sheathing, as the solitary little schooner glided along at the rate of half a knot or so an hour, and the only sound we heard was a distant wash of waters, but whether on a great shore, or along a belt of solid ice, it was impossible to say. In such weather as the original discoverer of Jan Mayen said under similar circumstances "it was easier to hear land than to see it." Thus hour after hour passed by, and brought no change. Fitz and Sigurd—who had begun quite to disbelieve in the existence of the island—went to bed, while I remained pacing up and down the deck, anxiously questioning each quarter of the grey canopy that enveloped us. At last, about four in the morning, I fancied some change was going to take place; the heavy wreaths of vapour seemed to be imperceptibly separating, and in a few minutes more the solid roof of grey suddenly split asunder and I beheld through the gap, thousands of feet over head, as if suspended in the crystal sky—a cone of illuminated snow.

You can imagine my delight. It was really that of an anchorite catching a glimpse of the seventh heaven. There at last was the long sought for mountain actually tumbling down on our heads. Columbus could not have been more pleased when—after nights of watching—he saw the first fires of a new hemisphere dance upon the water; nor, indeed, scarcely less disappointed at their sudden disappearance than I was, when—after having gone below to wake Sigurd, and tell him we had seen *bonâ fide terra firma*, I found on returning upon deck, that the roof of mist had closed again, and shut out all trace of the transient vision. However, I had got a clutch of the island, and no slight matter should make me let go my hold. In the mean time there was nothing for it but to wait patiently until the curtain lifted; and no child ever stared more eagerly at a green drop scene in expectation of "the realm of dazzling splendour" promised in the bill, than I did at the motionless grey folds that hung round me. At last the hour of

liberation came; a purer light seemed gradually to penetrate the atmosphere, brown turned to grey, and grey to white, and white to transparent blue, until the lost horizon entirely reappeared, except where in one direction an impenetrable veil of haze still hung suspended from the zenith of the sea. Behind that veil I knew must lie Jan Mayen.

A few minutes more, and slowly, silently, in a manner you could take no count of, its dusky hem first deepened to a violet tinge, then gradually lifting, displayed a long line of coast—in reality but the roots of Beerenberg—dyed of the deepest purple; while, obedient to a common impulse, the clouds that wrapt its summit gently disengaged themselves, and left the mountain standing in all the magnificence of his 6,870 feet, girdled by a single zone of pearly vapour, from underneath whose floating folds seven enormous glaciers rolled down into the sea. Nature seemed to have turned scene shifter, so artfully were the phases of this glorious spectacle successively developed.

Although by reason of our having hit upon its side instead of its narrow end—the outline of Mount Beerenberg appeared to us more like a sugarloaf than a spire—broader at the base and rounder at the top than I had imagined, in size, colour, and effect, it far surpassed anything I had anticipated. The glaciers were quite an unprecedented element of beauty. Imagine a mighty river of as great a volume as the Thames—started down the side of a mountain—bursting over every impediment—whirled into a thousand eddies—tumbling and raging on from ledge to ledge in quivering cataracts of foam,—then suddenly struck rigid by a power so instantaneous in its action that even the froth and fleeting wreaths of spray have stiffened to the immutability of sculpture. Unless you had seen it, it would be almost impossible to conceive the strangeness of the contrast between the actual tranquillity of these silent crystal rivers and the violent descending energy impressed upon their exterior. You must remember, too, all this is upon a scale of such prodigious magnitude, that when we succeeded subsequently in approaching the spot,—where with a leap like that of Niagara one of these glaciers plunges down into the sea,—the eye, no longer able to take in its fluvial character, was content to rest in simple astonishment at what then appeared a lucent precipice of grey-green ice, rising to the height of several hundred feet above the masts of the vessel.

As soon as we had got a little over our first feelings of astonishment at the panorama thus suddenly revealed to us by the lifting of the fog, I began to consider what would be the best way of getting to the anchorage on the West or Greenland side of the island. We were still seven or eight miles from the shore, and the northern extremity of the island, round which we should have to pass, lay about five leagues off, bearing W.b.N., while between us and the land stretched a continuous breadth of floating ice. The hummocks, however, seemed to be pretty loose, with openings here and there, so that with careful sailing I thought we might pass through, and perhaps on the farther side of the island come into a freer sea. Alas! after having

with some difficulty wound along until we were abreast of the cape, we were stopped dead short by a solid rampart of fixed ice, which in one direction leant upon the land, and in the other ran away as far as the eye could reach into the dusky North.

Thus hopelessly cut off from all access to the western and better anchorage, it only remained to put about, and—running down along the land—attempt to reach a kind of open roadstead on the eastern side, a little to the South of the volcano described by Dr. Scoresby! but in this endeavour also we were doomed to be disappointed; for after sailing some considerable distance through a field of ice which kept getting more closely packed as we pushed further into it, we came upon another barrier equally impenetrable, that stretched away from the island towards the southward and eastward. Under these circumstances, the only thing to be done was to get back to where the ice was looser, and attempt a landing wherever a favourable opening presented itself. But even to extricate ourselves from our present position was now no longer of such easy performance. Within the last hour the wind had shifted into the N.W.; that is to say, it was now blowing right down the path along which we had picked our way; in order to return, therefore, it would be necessary to work the ship to windward through a sea as thickly crammed with ice as a lady's boudoir is with furniture. Moreover it had become evident, from the obvious closing of the open spaces, that some considerable pressure was acting upon the outside of the field; but whether originating in a current or the change of wind, or another field being driven down upon it, I could not tell.

Be that as it might, out we must get,—unless we wanted to be cracked like a walnut-shell between the drifting ice and the solid belt to leeward; so sending a steady hand to the helm,—for these unusual phenomena had begun to make some of my people lose their heads a little, no one on board having ever seen a bit of ice before,—I stationed myself in the bows, while Mr. Wyse conned the vessel from the square yard. Then there began one of the prettiest and most exciting pieces of nautical manœuvring that can be imagined. Every single soul on board was summoned upon deck; to all, their several stations and duties were assigned—always excepting the cook, who was merely directed to make himself generally useful.

As soon as every body was ready, down went the helm,—about came the ship,—and the critical part of the business commenced. Of course, in order to wind and twist the schooner in and out among the devious channels left between the hummocks, it was necessary she should have considerable way on her; at the same time so narrow were some of the passages, and so sharp their turnings, that unless she had been the most handy vessel in the world, she would have had a very narrow squeak for it. I never saw anything so beautiful as her behaviour. Had she been a living creature, she could not have dodged, and wound and doubled, with more conscious cunning and dexterity; and it was quite amusing to hear the endearing way in which people spoke to her each time the creature contrived to elude some more than usually threatening tongue of ice. Once or twice, in spite of all our exertions, it was impossible

to save her from a collision; all that remained to be done as soon as it became evident she would not clear some particular floc, or go about to avoid it,—was to haul the staysail sheet a-weather in order to deaden her way as much as possible; and—putting the helm down—let her go right at it, so that she should receive the blow on her stem, and not on the bluff of the bow; while all hands armed with spars and fenders rushed forward to ease off the shock.

And here I feel it just to pay a tribute of admiration to the cook, who on these occasions never failed to exhibit an immense amount of misdirected energy, breaking—I remember—at the same moment both the cabin skylight and an oar, in single combat with a large berg that was doing no particular harm to us, but against which he seemed suddenly to have conceived a violent spite. Luckily a considerable quantity of snow overlaid the ice, which, acting as a buffer, in some measure mitigated the violence of the concussion; while the very fragility of her build diminishing the momentum, proved in the end the little schooner's greatest security. Nevertheless, I must confess that more than once, while leaning forward in expectation of the *scrunch* I knew must come, I have caught myself half murmuring to the fair face that seemed to gaze so serenely at the cold white mass we were approaching, "O Lady, is it not now fit thou shouldst befriend the good ship of which thou art the pride?"

At last after having received two or three pretty severe bumps,—though the loss of a little copper was the only damage they entailed,—we made our way back to the northern end of the island, where the rack was looser, and we had at all events a little more breathing room.

It had become very cold;—so cold, indeed, that Mr. Wyse,—no longer able to keep a clutch of the rigging,—had a severe tumble from the yard on which he was standing. The wind was freshening, and the ice was evidently still in motion; but although very anxious to get back again into open water, we thought it would not do to go away without landing even for half an hour. So having laid the schooner right under the cliff, and putting into the gig our discarded figure-head, a white ensign, a flag-staff, and a tin biscuit box, containing a paper on which I had hastily written the schooner's name, the date of her arrival, and the names of all those who sailed on board, we pulled ashore. A ribbon of beach not more than fifteen yards wide, composed of iron-sand, auzite, and pyroxene, running along under the basaltic precipice—upwards of a thousand feet high—which serves as a kind of plinth to the mountain, was the only standing room this part of the coast afforded.

With considerable difficulty, and after a good hour's climb, we succeeded in dragging the figure-head we had brought ashore with us up a sloping patch of snow, which lay in a crevice of the cliff, and thence a little higher, to a natural pedestal formed by a broken shaft of rock; and where,—after having tied the tin box round her neck, and duly planted the white ensign of St. George beside her,—we left the superseded damsel, somewhat grimly smiling across the frozen ocean at her feet, until some Bacchus of a bear should come to relieve the loneliness of my wooden Ariadne.

VOYAGE OF H.M.S. "CYCLOPS" FROM ENGLAND TO THE CAPE.—
Captain W. J. S. Pullen.

(Continued from page 140.)

About six o'clock on Monday morning (21st) a very light air sprung up from S.W., and getting up to the 35th parallel of latitude, the ship was steered round for deviation, as well as soundings got for temperature.

Fathoms.	Times.	Intervals.	Diff.	Remarks.
0	h. m. s.	m. s.	s.	Therm. 10: surf. temp. 75°.
100	9 21 40	Let go.		
200	9 23 55	2 15		Therm. 6: surf. temp. 74°
300	9 29 15	2 45	10	
400	9 32 20	3 5	20	
	9 38 20	Let go.		
500	9 36 36	3 16		Therm. 4: surf. temp. 75·5°.
600	9 39 47	3 11	5	
700	9 42 58	3 11	0	
800	9 46 31	3 30	22	
	9 47 35	Let go.		No bottom, 1,200 fathoms.
900	9 50 25	2 50		
1000	9 53 28	3 3	13	
1100	9 56 35	3 7	4	
1200	9 59 45	3 10	3	

By this table, and any previously when the line has been stopped to attach thermometers, how the regularity of the intervals has been destroyed, thereby rendering it very difficult to decide when weight reaches bottom in thus combining the experiments. If it is wished to get them at the same spot, then first get soundings, afterwards temperature.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 363	Surface.			10255 at 74·5	
A 4	400 fms.	76·5	43·5	1026 at 76	At surface showed 75·5°.
A 6	800 "	73·2	40	10255 at 76·2	" " 74°.
A 10	1200 "	73·6	38·2	1026 at 76	" " 75°.

By this I find that the indices in all the maximum columns have shifted, and the first one gone up, slightly certainly, but sufficient to shake faith in the instrument.

The water brought up from 400 fathoms was of a pale yellowish colour,—in fact, similar to that of the 14th, in lat. 19° 34' N., long. 27° 19' W.; but here, with a less temperature, the density is less.

What can be the cause of this difference in the colour of the water? I detect nothing with the microscope. The density at that depth, as well as 1,200 fathoms, is the same at the same temperature, although the minimum is 5.3° more at the former; and the density at surface and 800 is the same, with nearly 2° difference of temperature at which the water was tried, and the minimum 34.3° less at the latter.

The same line (whale-line) was used here as in the former experiment for temperature, with a weight of 40lbs., each bottle weighing $4\frac{1}{2}$ lbs.,—the three equal to $13\frac{1}{2}$ lbs.,—making the whole weight $53\frac{1}{2}$ lbs. The line was made up as follows:—whale-line, tapered from $1\frac{1}{2}$ in. to $2\frac{1}{2}$ in, 820 fathoms; common h.l., two coils, $1\frac{1}{2}$ in., 240 fathoms; common h.l., two coils, $1\frac{1}{2}$ in., 200 fathoms; total, 1,260 fathoms.

To the end of this was spliced a length of forty fathoms common deep sea (cable laid), for the purpose of testing whether by the different twists they would tend to unlay each other. No sign was detected, on coming in, of any change in either.

During the operation the sea was quite smooth, with a very light air from S.S.W., in fact nearly calm, which I do not think of advantage in deep sounding: I would prefer a moderate breeze where the sail comes in. Calm continued all day.

From a series of experiments carried out on board on the capabilities of the mackerel line supplied, it was found to be rather defective—that it does not bear the same strain throughout. If this defect could be got over, which I do not doubt but it can, I consider that it would be a very efficient line, and much less expensive than the silk one, that is for sounding, when bringing up the bottom is not an object. Even that too by adopting a smaller detaching apparatus of less weight than those used when the line was experimented on, as shown in the table, say of 30lbs.

The manner in which these experiments were carried out was by merely suspending a weight and noting how long the pieces of line held without breaking, which pieces were taken without reference to any particular part of the line. This is not the way, I believe, in which ropes are tried in the dockyards,—there it is done horizontally; but it must be recollected in our case the lines always hang vertically, and therefore more applicable to the purpose for which they are required. It showed plainly where the defect lay, in the whole three strands as they untwisted not bearing a like strain. Now, in the French silk line it showed better, and how much more carefully it had been made; yet I think the other would be equally good if laid up with equal care.

The 4-yarn spunyarn would I think be a very good line with a whipping on at every fifty fathoms, but I would prefer untarred rope, as the strength exceeds the other. Thus the strength of untarred common cordage h.l. $1\frac{1}{2}$ in. exceeds the strength of deep sea line in the proportion of 87 : 60.

With respect to our whale-lines, we should have found the benefit of the white rope, and it would have lasted us quite as long, for now the tar is so squeezed out in the strain the line has been subjected to,

that it looks as if it had just come out of the bucket. The marks, too, get so covered that they are difficult to be seen, and the line has to be marked again.

With respect to the deep sea lines now in use, I think a line would be much better if not cable laid, inasmuch that it does not untwist and is not so liable to kink, and would last quite as long as necessary for deep sea work. I believe the object is, that from its not being laid up so close, it is more likely to suffer from wet; but in this case it is not likely that the line would lay by so long, when we take into account that dependence cannot be placed in the line after about the sixth cast. The breaking strain of the regular deep sea line is about 800lbs.,—our whale-line from $1\frac{1}{4}$ to 2 tons. The breaking strain of the *Dolphin's* line was about 67lbs., and when weighted with 64lbs. it reached a depth of 2,700 fathoms in 1h. 7m. Now, with our sounding line and 120lbs. weight, or 124lbs., taking into account the weight of thermometer and water bottle, rather more than one-seventh of its breaking strain, passed through the same depth in one hour.

<i>No. of Trials.</i>	<i>Weight.</i>	<i>Results of Trials in open air.</i>
1	90lbs.	The piece broke in 10 minutes.
1	90lbs.	" " 32 "
7	90lbs.	" " 3 hours.
1	100lbs.	" " 19 minutes.
1	100lbs.	" " 2 hours.
1	110lbs.	" " 8 minutes.
1	120lbs.	" " 15 $\frac{1}{2}$ "
1	120lbs.	Did not break in 2 hours.
1	130lbs.	The piece broke in 40 seconds.
1	130lbs.	" " immediately.
1	140lbs.	" " "
1	140lbs.	" " in 50 seconds.

The silk line (French), with a weight of 150lbs., broke in twelve minutes. The 4-yarn spunyarn held 190lbs. for an hour. By this we may call the breaking strain of mackerel line ranging from 80lbs. to 140lbs. Therefore, as I have before said, could the line throughout be made so as to suspend a weight of 90lbs. in air for an hour, it would be sufficient for sounding to use a weight of 60lbs., which of course would weigh much less in water.

The weight we have generally used in sounding with this line has been 60lbs., finding it sufficient to overcome the resistance or friction in passing through such an immense body of water as 2,100 and 1,080 fathoms, the cast we got with the line; therefore get it made to bear throughout the 90lbs. and we might possibly use it for getting specimens of bottom with a detaching weight not exceeding 30lbs. This 90lbs. weight was suspended in the open air, which I take as a standard, but the line, by the table, has held much more; yet confidence is lost when you know that it may break in a moment.

Early on Tuesday morning a very light air came up from S.W., and hauling more westerly in the evening, with clouds banking up, led me to hope for a breeze, and I was induced to bank fires and dis-

connect; but, under all sail we could crowd on, the ship would not get up to four knots an hour, which appears to be about her maximum speed under canvas alone. However, at nine the wind was nearly all gone again, so that steam was got up.

The weather throughout the day has been beautifully fine, the temperature, too, getting more moderate, and not such oppressive heat as we have felt for the last few days in this calm weather. Several small brown gulls, with black tipped wings and white beaks, seen to-day.

On the afternoon of the 23rd the wind increased a little from W.N.W., so that I again ventured to disconnect, but kept the fires banked, not using them again until the afternoon of the 24th, for swinging for deviation. The wind at the time was from the N.W., with every appearance of an increase, which it gradually did; and on the morning of Christmas Day it was so strong from N.N.W. that the ship was going along, under topsails and courses, ten knots an hour. Unfortunately, it did not last long with such strength, or from the same quarter, for at 1h. p.m. it was West and very light; when, getting steam and connecting again, at three o'clock the island of Tristan d'Acunha was seen right ahead. About an hour afterwards its lofty peak was visible just above the clouds; soon again obscured in a thick driving vapour or mist. Both Inaccessible and Nightingale Islands were plainly seen.

The wind was veering to S.W. when, at ten o'clock, having run a distance of forty-one miles since seeing the island, we hove to, bearings placing us eleven miles off. Banked fires for the night.

26th.—At 3h. 30m. this morning drew the fires forward, and steamed in towards the island, and soon got sight of the settlement. Several American whalers were also running in with the light N.W. wind; learnt afterwards that they were standing off and on, either waiting for supplies or looking out for whales, which are sometimes even close into the kelp which belts the island. At 5h. 45m. we came to in forty-two fathoms water, with the stream anchor and hawser, with the following bearings:—Waterfall, S. 14° W.; West extreme of island, S. 54° E.; ship's head, S.W. These bearings place us about 1½ miles from the shore, further off than there was occasion for us to lay, but, wishing to try the index error of Massey's machine, depth was necessary.

Soon after anchoring, the islanders came off in their boat, and I communicated to them the purpose for which we were here; and as they could supply us with fresh meat and vegetables, they left immediately to get their oxen in and be ready on the beach to receive the stores we had for them.

I followed in the gig, and landing at the waterfall, found the islanders ready to receive us. The cutters coming in soon after with the stores, they were handed over to them, and I informed John Green, who appeared to be a leading man, that these stores, &c., were a present from H.M. Government, as an acknowledgment of the services they had rendered to distressed British subjects. They appeared

gratified, but thought much more of the boat than anything else, as the one they came off in was not in a very serviceable condition,—a condemned one they had only succeeded in purchasing the day before from one of the whalers standing off and on. As for the medicine, they all remarked they did not want that—no one was ever sick here; but the chest containing it was a good one. Three young children requiring to be christened, I had brought the Chaplain on shore with me; and at the performance of the ceremony, when nearly all were assembled, I got the following information.

The inhabitants now consisted of thirty-five souls, divided into six families, as follows:—

Alexander Cotton, an English sailor, and the oldest inhabitant, has a wife and four children. The wife, a black woman from St. Helena, did not at all like the idea of her husband wishing to go to England.

Thomas Swain, senior, the oldest man on the island, also an English sailor (man of-war's-man), with a wife and seven children. Three grown up daughters had gone to the Cape with the Rev. Mr. Taylor; but, getting tired, I suppose, had returned to their island home.

Andrew Hagan, an American, with a wife and four children.

Peter Green, a Dutchman, speaks English well, and appears to be a leading man among them: has a wife and five children. This man has been to the Cape of Good Hope, but said he was very glad to get back again, bringing with him the three daughters of Swain. Two of Cotton's daughters (young women) were expected shortly from there also.

William Green, son of Peter, married to one of Cotton's daughters.

Thomas Swain, son of T. Swain, senior, has a wife and two children. Thus making thirty-six, including Cotton's two daughters expected.

Peter Green says that when the American whalers cease to visit the island they will all have to go, for it is from them that they get their supplies of clothing, tea, and sugar.

All appeared to be in good health, laughing at the idea of sending a medicine-chest, and were apparently satisfied with their lot. The climate, judging from the looks of all we saw, and their own account, must be good; and its temperature such that they never change their clothing, wearing the same sort throughout the year. The men were all dressed in light blue cotton, and some with a cloth coat or jacket; the women in printed cottons, which they get in exchange from the American whalers visiting the island for their farm produce; besides tea, flour, sugar, and tobacco, and I am sorry to believe, spirits besides, for some appeared at the close of our stay to be in rather an excited state from something stronger than water.

The ground under cultivation is very limited; and, comparing the soil with that of other parts of the world, I should say that it is capable of producing much more than potatoes, cabbages, and onions; besides there is plenty of it, a thick grassy sward where not visited by cattle. Some of the officers who made some rambles during our short stay, and consider there is sufficient pasturage for a thousand

head of cattle; and, judging from the fine condition of the bullocks gathered in the stock-yard for us to choose from, I should say their feed could not be better, and would not disgrace our English pasturages.

The sheep are pretty fair, but where there are so many geese running about they cannot be much better. Fowls, ducks, and pigs in plenty among the stock.

In December the potatoes are in bloom, when a destructive black grub makes its appearance, attacking the upper part of stem and flower. It has not yet got to the roots.

Firewood appears to be a scarcity, only to be got from the summit of the island, from the low stunted bushes sometimes brought down by the torrents.

Water is plentiful; supplied from a spring at the back of the settlement and running through it; thence tumbling over the cliffs from between fifteen to twenty feet in height,—a miniature waterfall, and so marked on the chart.

About three miles from the settlement apple and peach trees have been planted; but at our visit the fruit was not fit for gathering—only the size of walnuts.

I cannot say that I have a very favorable opinion of these islanders, for they do not seem so united as you would expect in so small a community and former visitors have led us to expect. The whalers' visits, in a moral point of view, are, I think, injurious, and now that their Pastor, the Rev. Mr. Taylor, has left, I fear they will not improve. They certainly were at the time of our departure a little the worse for liquor, and I was sorry that I had sent to them the few bottles of wine the women had asked for in the morning. But perhaps it might be that it was Christmas, and their delight at the visit of a man-of-war with such a present.

I only took one bullock, a few sheep, and a quantity of potatoes, being anxious to get away as soon as possible. After settling with them the charges (in money), we left under three cheers from Peter Green and his boat's crew, returned as heartily by us as given by them.

(To be continued.)

PACIFIC RAILWAY—*and the Claims of Saint John, New Brunswick, to be the Atlantic Terminus. Proposed by T. T. Vernon Smith, C.E.*

(Continued from page 140.)

We have seen that in any scheme for a Pacific Railway through American territory, the works can only be commenced from each end; each section as it is finished being necessary to forward the supplies

for the next, so that operations can only be carried on from mile to mile as each is completed. But in the Canadian route a few unimportant links only are wanting to at once open a through communication; and the works may be commenced in any district, or, if necessary, be carried on simultaneously over the whole length of the line, wherever the most difficulty presents itself. Another communication will probably be completed this next season, partly by portage road and partly by steamer, between St. Paul, on the Mississippi River, and the Red River settlement,* which will form an important feeder to the Saskatchewan route, and open by far the shortest route from New York and the Mississippi Valley to California and the Pacific; and it is understood that arrangements are completed whereby the Hudson Bay Company will import their supplies the next year by way of St. Paul.

I have, I fear, tired your patience in the comparison of the United States and Canadian routes before the subject is exhausted. There

* At a meeting of the Chamber of Commerce of St. Paul, Minnesota, held last week, a geographical report was made on the Red River and Saskatchewan country, with a view to the development of navigation on the great rivers there abounding. The Red River is said to have a depth of six feet for a considerable distance above the mouth of the Cheyenne, and below that nine to twelve feet down to Red Lake River, and thence to Lake Winnipeg of sixteen feet. The current is moderate, being only about two miles per hour. The Cheyenne is navigable 100 miles, and the Assiniboine probably 200. The Red River is navigable 575 miles, and its tributaries about 350, making over 900 miles of navigable water in this valley alone. Lake Winnipeg is 250 miles in length, and the Saskatchewan is navigable upwards of 700 miles in a direct line, but by the course of the stream nearly twice that distance.

It is mentioned as a singular fact that the sources of Frazer River are separated from those of Peace River by only 817 yards, the first running into the Pacific, and the latter north-eastwardly into Mackenzie River. The area reached by the navigation of the rivers abovementioned is estimated at 400,000 square miles of fertile soil, favorable climate, useful minerals, and fur bearing and food yielding animals.

The meeting concluded by offering a bonus of 1,000 dollars to any one who would put a steamboat of 100 tons on the Red River, and run her during the navigable season of the present year, commencing on or before the 1st of June.

Proposals were subsequently received from a party who now has a steamboat on the waters of the Crow Wing River, near the mouth of the Gull River, which point is only 90 miles from Breckenridge, the head of navigation on the Red River. This is the first steamboat that ever ascended the Mississippi as high as Crow Wing, and was taken over the Little Falls during the very high water of last spring. The owner offers for a bonus of 2,000 dollars to transport on sleds, immediately, the machinery and such portions of the boat as is practicable, and, by the 15th of May next, to launch the boat at Breckenridge, or some other point thought best for the purpose. The requisite amount has been raised by private subscription, and the Board of Trade of St. Paul offers, in addition, a bonus of 500 dollars each for three boats, to be delivered in the Red River any time during the summer of 1859.—*New York Tribune, February 4th, 1859.*

are numerous well established facts and observations that I have been compelled to omit, tending to confirm beyond the possibility of question the infinite superiority of the northern route—the one in which alone St. John is interested—over any of the southern lines, which would feed, without a British rival, New Orleans and New York. I omit, too, a more particular description of the great N.W. prairies, and the territorial advantages to every section of British America, in particular, to be derived from opening this magnificent expanse of land to settlement and civilization, and filling with a busy population this back country of our province. A consideration of the route forward will be found to have equal advantages in its favour. Neither for freight nor passengers would there be any saving, either in time or expense, by leaving the British waters for a route through the United States, or, preferring Boston or New York as the point of embarkation for Europe, over Montreal or St. John.

At the head of Lake Winnipeg, the point of debouche of the Red River of the North, and 1,400 miles from the Pacific, the traffic divides, part turning South by way of the Red River and the Mississippi to St. Paul, where it meets the United States railway system, stretching from that point over the whole Union; whilst the other stream of traffic from the Saskatchewan Valley will continue on Canadian waters, or by a railway, already proposed, across the watershed of the Lake Superior Rivers, to Fort William or Thunder Bay, on the navigable waters of the St. Lawrence. The distance to St. Paul is about 700 miles from Lake Winnipeg, against 500 to Fort William, the proportion of navigable water about the same, and the cost of carriage in favour of the British line. Fairly afloat on Lake Superior, the chain of canals is completed to the ocean, and heavy goods, during the open season of the year, will probably not leave the vessel in which they are deposited on Lake Superior until they reach the foot of Lake Erie, where the rivalry between the Canadian and American canals will again form a question, the solution of which is of the greatest importance to ourselves as well as to the whole of British America. Permit me to state the position as briefly as possible, and take the analogous case of a ton of flour brought from Chicago, to be delivered at Liverpool.

From Lake Michigan or Lake Superior British and American shipping sail side by side to the terminus of the Welland or Erie Canal, at the foot of Lake Erie, arriving either by sail or steam, under precisely similar circumstances, the flats of Lake St. Clair limiting the size of the vessel more than the locks of the Sault Ste Marie Canal, connecting Lake Superior to the others. If intended for Montreal, the vessel passes through the Welland, the locks of which admit steamers of 400 tons measurement, drawing nine or ten feet water into Lake Ontario, and thence down the St. Lawrence and its noble canals to Montreal, arriving at the head of ocean navigation with unbroken bulk in three days.

If, however, the cargo on Lake Erie is intended for New York, two courses are open, either to tranship at Buffalo into the boats of

the Erie Canal, or, passing through the Welland, proceed in the same vessel to Oswego, on Lake Ontario, and there be transhipped into the barges of the Oswego branch of the New York State Canals; in either case reaching Albany, on the Hudson River, by the Erie Canal, and being towed thence by steamers to New York. The enlarged locks of the Erie Canal are adapted only for boats of about seventy tons burden, intended to be drawn by horses; and to make the comparison of routes clearer, we will suppose all the enlargements to be complete, and the consequent reduction in freights to have taken place.

The Montreal route saves, first, the cost of transhipment into these barges, either at Buffalo or Oswego, which is worth twenty cents per ton; secondly, the use of large vessels instead of small ones for one-third of the distance, which involves great economy; and thirdly, the use of steam the whole way, instead of 300 or 400 miles of horse traction. Besides this, there is the towage of barges down the Hudson from Troy to New York; and last, but not least, the longer time taken on the route. It takes three days to tranship the cargo at Buffalo, occupies eight to traverse the Erie Canal, and two in the towage down the Hudson, against three days, the total time to Montreal by the Canadian route.

The lowest cost that all this can be done for, according to Clark, in the Appendix to the Board of Works Report to the Legislature of Canada for 1856, from Chicago to New York, for a ton of ten barrels of flour, is 8.64 doll. *via* Buffalo, and 6.3 doll. *via* Oswego. Another authority, Mr. M'Alpine, formerly Engineer to the State of New York, estimates, in his Report to the Harbour Commissioners of Montreal, that when the Erie and Welland Canals are both enlarged, and every facility afforded for the employment of the largest class of boats, the distance from Chicago to New York, per ton of 2,000lbs., may be worked for 6.36 doll. by steamer, and 4.46 doll. by sailing vessels.

The same authority gives the corresponding cost to Montreal at 4.69 doll. by steamer, and 2.78 doll. by sailing craft, or a saving to Montreal of eight shillings currency per ton by either class of vessel. This saving to Montreal is, however, lost on the ocean passage to Liverpool, in consequence of the high freights ruling from Montreal in comparison with New York. The average freights from the latter port to Liverpool, as taken from a pamphlet by the Hon. John Young, gives 5 doll. per ton against 9 doll. from Montreal, as the average of the nine years preceding 1855. During the last three years several circumstances have tended to bring down ocean freights to something more like an equality between the two ports, but physical and natural causes will always prevent Quebec or Montreal competing on equal terms with New York, Boston, or our own St. John.

There is, however, one vital advantage which New York at present enjoys that the construction of a railway from the St. Lawrence to St. John would enable us to share in, and, by so doing, assist to that extent Quebec, Montreal, and the Canadian route generally. Until

lately both these cities, and the St. Lawrence itself, for a portion of the year were in the position of a cul-de-sac, and flour arriving too late in the fall remained on hand the winter. The construction of the Grand Trunk Railway partially removes this disadvantage, and flour can now be forwarded to Portland cheaper than it can be laid down in New York. But Portland cannot answer the purpose of a *dépôt* as St. John can. The great market for western produce is not so much England as the eastern states and these lower provinces. Out of equivalent to 3,000,000 barrels of breadstuffs arriving at New York annually, only 1,000,000 is exported, the rest is consumed on this side of the Atlantic, and principally eastward of New York.

As a distributing port for the Atlantic seaboard, St. John has advantages that can be shared only by Boston, were that port available to compete for this western trade by equal railway facilities from the St. Lawrence. Commanding, by the Shediac Railway, the supplies to the gulf shore fisheries and the whole of Nova Scotia, running through the lumbering districts of New Brunswick and Lower Canada, tapping the portage routes to the best timber of Maine, and commanding the coasting trade of the Bay of Fundy, St. John occupies a position as the flour-mart of the East, such that could not be conferred on any other port on the Atlantic sea-board.

When a vessel has reached Montreal, 1,300 miles from Chicago, or 1,400 from the head of Lake Superior, she has come through every canal, passed every light, and paid all the dues of an extended voyage to Riviere du Loup or Trois Pistoles. At the same rate as the cost of lake navigation per mile, she can land her cargo for sixty cents per ton additional over the cost to Montreal, which is 1.10 doll. less than the utmost reduction that the improvements to the Erie Canal will enable the same to be delivered in New York. The transshipment to the railway and carriage to St. John will not increase the price over the present cost to New York, and even with all the Erie improvements will not exceed the freight to that port by more than 1.50 doll. per ton, or 15 cents per barrel.

Our position here, then, with a direct railway to the Riviere du Loup, is equal to that of New York as an exporting point for the Atlantic trade, and equal, if not superior, for a distributing one. In these calculations there is nothing assumed on the British side for the immense improvements yearly making in the Canadian canals, all intended to reduce the cost of transit; nor is the Ottawa route brought into the question at all, a project that, if completed on the scale commenced, *must* command the whole of the through traffic from the upper lakes.

The only position that may not appear clearly established, is the comparison of our own projected railway and the present line from Montreal to Portland; paradoxical as it may appear, a direct line from St. John can compete from Montreal even to a western port, such as Boston or New York, with the Portland line, for the through St. Lawrence traffic. The additional cost of freight to the Riviere du Loup, over stopping at Montreal, is, as before noticed, (at six mills

per ton per mile,) sixty cents per ton, loading and transshipment twenty cents, freight two hundred and seventy miles at one and a half cents, four dollars five cents; total, four dollars eighty-five cents per ton of 2,240 lbs., or forty-four cents per barrel.

Last winter (1858) the Grand Trunk carried flour from Montreal to Portland for forty-five cents, making our position apparently equal to theirs, but in reality the rate per mile on that line cannot be as low under the same circumstances, as in New Brunswick to be equally remunerative. The Portland section of the Grand Trunk cannot compare in efficiency and economy with a first class line through this province, or with the other portions of their own magnificent railway. Contracted for by local corporations in the cheapest and most niggardly manner, the greater portion of the capital raised in town bonds and debentures of the most unmarketable character, the work like the pay was not very good, and the general arrangements were by no means equal to the average of second rate American roads, and not to be compared with the subsequent execution of the other portions of the Grand Trunk. The route is by no means easy, and the crossing of the White Mountains is more picturesque than practical, more attractive to lovers than locomotives, and though interesting to tourists, is lost in the romance of a flour barrel, or the æsthetics of a truck.

The nearest possible distance from Portland to Longueuil is two hundred and three miles; the actual distance is two hundred and ninety-two, or nearly fifty per cent. more. The air line from Montreal to the crossing of the Province line is ninety-two miles; the railway makes it one hundred and twenty-seven. The true direction from the St. Lawrence terminus to the boundary is fifty degrees East from the meridian; the road starts off for thirty miles at an angle of 78°. In the Canadian portion of the road, which is by far the best of the two, eighteen per cent., or nearly one fifth, has grades exceeding forty-five feet to the mile. The curvature in the same length is equally objectionable, one quarter of the whole line is on a curve, and the total deflection gives a complete circle about every twelve miles, whilst a large proportion of these deviations from the straight or tangent line, are at an angle so acute as to seriously increase the cost of maintenance and the expense of operating.

Nor is the alignment the only deterrent to the economy of working, the execution of many of the works was extremely deficient in the first instance, and must ever entail a frightful expense. The breadth both of cuttings and embankments, was insufficient for the stability of the road, and a worse lot of wooden bridges were probably never erected. Since the present company have had possession of the railway, the repairs in many instances have amounted almost to a reconstruction, and from Mr. Keefer's report to the directors, the outlay on new bridges alone for the next four or five years will probably absorb the nett earnings of the whole section South of the St. Lawrence. It is with no unkind feelings, or with any disparagement to the works of the Grand Trunk Company, that these defects of one portion of

their line are pointed out. The greater part of that section forms no portion of a British Pacific Railway, and the exceptional gradients of the Portland branch, will not interfere with any traffic in which we are concerned.

The routes from the Great West and the Pacific to Baltimore, Philadelphia, Boston, and New York, are so nicely balanced, that a few cents turn an enormous traffic, and to compete at all, a new line must be as complete as possible in its details, and as perfect as can be constructed. Whatever natural advantages a fine harbour or a secure roadstead may present as an ocean terminus, bad gradients and objectionable curves will tell upon the carriage of heavy goods, and the poorest economy in the world is a shabby cheap railway, unreliable and incomplete. Were Halifax as near to the St. Lawrence as St. John, and as available as a distributing depot for western produce, the execution of the Nova Scotian Railways, their bad curves, enormous gradients, and deficient arrangements, would go far to destroy any possible advantage that can be urged in favour of their capital.

The construction of Lord Bury's line, if it were adopted, must commence at Halifax, and not at Truro, before the Pacific carrying trade could be deviated from the United States railways. As a passenger terminus and for the military purposes of Great Britain, no one can fail to appreciate the advantageous position of Halifax! but as a freighting port for the American continent, or even British America, it possesses not one single advantage.

The same reasons that militate against Montreal in comparison with New York as the importing and exporting depot of the West, tell with much greater effect against Halifax in comparison with St. John. Without a large export trade it is impossible to secure an importing one, and the vessels that carried the rails for the Nova Scotian Railway from the same consignees in Great Britain to Halifax for 28s. per ton, and to St. John for 12s., did not necessarily make a worse bargain in one case than in the other. Ocean freights at Halifax rule too high to permit her to enter the lists against St. John, Boston, and New York; and now that the chimera of ice in the winter season at St. John has been cleared away from the imagination of railway projectors over the water, the only place where it ever existed, it is to be hoped that the *bon fide* value of our noble harbour, and its position as the key to the winter trade of the Canadas, may receive their due meed of appreciation.

I have endeavoured to trace the course of the Pacific trade from Vancouver to St. John, following the lines of water communication principally, and attempted to establish this as the most available for freighting purposes for time, expense, and outlay. A railway to suit a more valuable traffic follows, especially in Canada, a somewhat different route, and Halifax as one of the Atlantic termini, and for military purposes, must not be neglected. Starting from a point between St. John and the bend on the present line of railway, available for freight traffic seeking the shortest land route, and for passengers avoiding as much as possible the water, and embarking at the nearest

port to Europe; through the heart of New Brunswick to the St. Lawrence, along the Grand Trunk Railway to Montreal, up the Ottawa Valley to Lake Nipissing, thence round the heads of Lakes Superior and Winnipeg to the great North-west valley of the Saskatchewan, the Rocky Mountains, and the Pacific, makes a total stretch from St. John to the harbour of De Fuca of 3,200 miles.

The local advantages previously referred to as the nearest and cheapest outlet from Lake Superior to the Atlantic, and the immense territorial possessions in the North-west prairies, in the valley of the Ottawa, and in our own province, thrown open to settlement and civilization, are a small part of the whole question. They serve merely to indicate the importance of each separate link in the series, and to establish the local necessity for the construction of each section of the system. They convince us of the propriety of an expenditure the interest of which is provided by an existing traffic, and the principal will be almost extinguished by the land sales of 60,000 square miles of fertile territory, devoid of an available outlet, and waiting only for the introduction of the locomotive and the steamboat to teem with life and energy; and to link under one sovereign the whole noble expanse of these British possessions, stretching from ocean to ocean, and spanning the North American continent, where that continent is the broadest, its lands the most valuable, its rivers the most magnificent, its future the most promising, and its destiny the most elevated.

(To be continued.)

EVENINGS AT HOME AT THE NAUTICAL CLUB:—*Report of the Annual Meeting of the Royal National Life-Boat Institution—Progress of Events in the American States: President Lincoln's Abolition of Slavery—Loss of H.M.S., "Conqueror": Result of the Court-Martial—Rum Island and Filibustiers—Curaçoa—Passages to and from California.*

The Chairman opened the proceedings of the Club with some highly satisfactory observations on the prosperous condition of the Royal National Life-boat Institution, which he was glad to perceive, by the report of the Secretary, was supported as it should be. He trusted that it would continue to be so, and that it would be patronised by his friends around him. The following is the Secretary's report of—

The *Annual General Meeting* of the friends and supporters of this Institution that was held on Tuesday the 18th of March, at the London Tavern; the Right Hon. the Lord Mayor of London in the Chair. The meeting was influentially and most numerous attended. There

were present—Right Hon. Earl of Hardwicke ; E. Grimwade, Esq., Mayor of Ipswich ; Sir Edward Perrott, Bart. ; Mr. Sheriff Cockerell ; W. Banting, Esq. ; Capt. the Hon. Francis Maude, R.N. ; Sir Alexander McNab ; General Dixon ; Charles Seeley, Esq., M.P. ; Thomas Chapman, Esq., F.R.S. ; E. Belleruche, Esq. ; W. Tite, Esq., M.P. ; Montague Gore, Esq. ; Admiral Cator ; Capt. Allen Young ; Colonel Palmer ; E. C. Tuffnell, Esq. ; Capt. Henning, R.N. ; Capt. De St. Croix ; Sir J. B. Johnstone, M.P. ; William Cotton, Esq., F.R.S. ; George Grant, Esq. ; Admiral Bowles, C. B. ; Captain Washington, R.N., F.R.S., Hydrographer to the Admiralty ; Benaiah Gibb, Esq. ; and many others.

The Chairman, in a few words, opened the proceedings. The object they had met to promote, he said, was of a truly philanthropic, national, and patriotic character. Any efforts which could be made to encourage the brave men residing on our coasts in their endeavours, by means of life-boats and otherwise to rescue from death those who, but for their exertions, would inevitably be lost, was worthy of the most liberal support. As the chief magistrate of the first commercial city in the world, he felt it an honor to preside over such a meeting. He concluded by moving that a list of gentlemen whose names were read by the secretary, should be the committee for the present year.

The motion was duly seconded, and it was carried unanimously.

It may be stated that the Duke of Northumberland was unanimously re-elected president of the institution, and that among the list of the re-elected vice-presidents were the names of the Archbishop of Canterbury and Earl Russell.

The report, which was read by the secretary, commenced by congratulating the supporters of the institution on its continued prosperity, and its still further advancement in public favor. The committee alluded in feeling terms to the loss which, in common with the whole nation, the institution had sustained by the lamented death of its illustrious Vice-Patron, the late Prince Consort. During the past twelve months three more of the old local life-boat establishments have been transferred to this society, viz., those at Dundee, Scarborough, and Dublin Bay. In the same period the institution had placed, or was about to place, fifteen new life-boats on the coast, viz., at Whitby, Selsey, St. Ives, Llanddwyn, Southport, Irvine, Campbeltown, Winterton, Great Yarmouth, Dungeness, Scarborough, Aberystwyth, Plymouth, Kingsgate, Blakeney, and Kirkcudbright. Others are in course of construction for Kingstown, Poolbeg, Howth, and Dundee. New carriages and boat-houses had been, or were being, built for all these boats. The institution now possessed 120 life-boats on the coasts of the United Kingdom, and one on the island of Guernsey. These boats had, during the year 1861, saved *two hundred and eighty-nine* persons from different wrecks, nearly the whole under circumstances of peril which could not have been encountered by any ordinary boats. On *seventy-nine* other occasions they had gone off to the aid of vessels in apparent danger, or in reply to signals of distress, but when their services had not eventually been required.

For these several life-boat services upwards of £1,000 were granted. On one occasion only had the committee to report accident, attended with the loss of life, at Scarborough. The institution had placed forty-five barometers at the different life-boat stations of the institution. Attached to each barometer is a chart, on which the daily indications of the instruments are registered. Although the committee deeply regretted to report that 884 lives had perished last year from shipwrecks on our coasts, yet every friend of humanity must rejoice with them in the gratifying fact that 4,624 lives were rescued during the same period from these disasters. Of these 743 owe their lives immediately to the services of life-boats. The total number of persons saved from shipwreck from the establishment of the society in 1824 to the end of the year 1861, either by its life-boats, or for which it has granted rewards, was 12,272.

During the past year the institution had granted :—39 silver medals, 17 votes of thanks inscribed on vellum, and the sum of £1,287 14s. 2d. in pecuniary rewards for rescuing 416 poor creatures from shipwreck on our coasts. The operations of the institution may be thus briefly stated :—Since its formation it had expended on life-boat establishments £57,000, and had voted 82 gold and 705 silver medals for distinguished services in saving life, besides pecuniary awards, amounting together to £15,384. The total receipts of the institution during the year 1861 had been £15,092 10s. 10d. Of this sum no less than £1,509 19s. 6d. was given by benevolent persons to defray the cost of life-boats. Miss S. H. Bertie Cator had collected from her friends and others £210 towards the cost of a life-boat. Mrs. Hartley, of Bideford, had continued her indefatigable exertions on behalf of the life-boat cause, and had collected altogether £410, to be appropriated in aid of the cost of the Dundee life-boat and the Braunton life-boat house.

The committee expressed their acknowledgments to the Newbiggin Branch, and other friends of the institution in Northumberland, for their valuable co-operation in holding, last summer, a bazaar at Newbiggin in aid of its funds, the net proceeds of which realised the large sum of £300. The town and neighbourhood of Ipswich had also contributed nearly £500 to defray the entire cost of a life-boat station, through Mr. W. Bateman Byng, of the firm of Messrs. Ransomes and Sims, of Ipswich. The following legacies had been received during the past year :—The late Mrs. Wilhelmina Watson, of Berwick-on-Tweed, £450; Miss Ann Easter Barber, of Warwick, £50; Thomas Fisher Hemington, Esq., of Uplyme, Devon, £100; J. R. Judkin, Esq., of Hackney, £105; Miss E. S. B. Palmer, of St. Ann's Gardens, St. John's Wood, £45; Edwin Cuthbert, Esq., of Camberwell, £50; and Capt. Bowerbank, R.N., £90. The expenditure of the institution during the past year on life-boat establishments and rewards for saving life was £13,955 2s. 10d.

The committee had incurred further liabilities amounting to £2,824 for various life-boat establishments, &c. The operations of the institution now extended all over the British isles. To maintain

and perpetuate these operations was a matter of earnest and constant solicitude to the committee. They had incurred a grave responsibility; but they did not shrink from it, and were determined, with the continued blessing of the Almighty, and the sympathy and liberality of the British public, to leave no effort untried that could in any way tend to lessen the annual loss of life from shipwrecks on our shores.

Admiral the Earl of Hardwicke moved the adoption of the report, and in doing so pronounced the institution the most really valuable one in the country. No less than 12,200 lives had been saved by its life-boats and other means since 1824; and it was a singular fact that in many cases the life-boats were worked most efficiently by landsmen trained to the use of oars. It was also very gratifying that some ladies were exercising their great influence on behalf of the life-boat society. Most of the special gifts of life-boats had emanated from them.

William Tite, Esq., M.P., seconded the motion, and being spoken to by Sir John Johnstone, the member for Scarborough, and another gentleman, who handed in a donation of £100 from a lady of his acquaintance, it was unanimously passed.

Montague Gore, Esq., moved—"That this meeting, having heard the very satisfactory report just read of the continued success attending the proceedings of the National Life-boat Institution, pledges itself to use every effort to maintain and extend the truly philanthropic and national operations of an institution which has rendered such signal services to the cause of humanity, by means of its large fleet of life-boats and otherwise, and which is year by year taking such deep root in the sympathies of the British nation," So important a consideration as the saving of human life required the assistance of organised societies around the coast, and the construction of the best boats, which would live in any sea. He was glad to see that meeting held in the great city of London, and presided over by its distinguished Lord Mayor.

Edward Grimwade, Esq., (Mayor of Ipswich) seconded the motion, and announced the determination of the people of his town to promote an institution so truly valuable and useful in saving human life. He stated that he had examined that morning the accounts of the institution, and he found that its working expences only amounted to 7½ per cent. They had collected £500, which would be quite sufficient to establish a life-boat in their own county.

Sir E. Perrott moved the next resolution, which was to the effect, that the thanks of the 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 National Life-boat Institution. Also to the Commodore Controller-General, the Deputy Controller-General, and the officers and men of her Majesty's Coastguard service, for their continued valuable assistance to the society.

Admiral Cator seconded the motion, and it was unanimously adopted.

Mr. Sheriff Cockerell moved the next resolution, which was—
“That this meeting tenders its cordial thanks to Thomas Baring, Esq., M.P., F.R.S., V.P. (the chairman), to Thomas 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 to the important affairs of the institution. Also to the honorary local committees of the several branches of the institution for their zealous co-operation with the central committee in promoting the efficiency of the life-boat establishments intrusted to their superintendence and management.”

Hon. Capt. Maude seconded the motion, and it was also agreed to,

Mr. Chapman returned thanks, and expressed his deep regret at the sad loss sustained by them in the death of Lord C. Beauclerc and his gallant companions, who lost their lives in an endeavour to preserve those of others. He alluded to the absence of the Duke of Northumberland in feeling terms, and said that the interest of his Grace in the institution continued unabated. The committee felt deep acknowledgment to the officers of the institution. In conclusion, he proposed a vote of thanks to the Lord Mayor.

It was seconded by Admiral Bowles, and his lordship having returned thanks, the proceedings terminated.

Turning from that report to the matters which formed the subjects of their own discussion there was no dearth of events. They fell plentifully around whichever way we looked, at home or abroad, said the Chairman; but certainly the most remarkable, and one which but a very short time ago would have been looked on as an impossibility, was the plan just proposed by the President of the United States (Federal) for throwing off the stain of slavery from his land. Although it had come suddenly and unexpectedly from President Lincoln, it has already been adopted by the House of Representatives, having been carried by a majority of three to one.

It will, therefore, soon be the law of that land. Indeed already are the government measures in operation for treating the already free negroes that have been liberated by the results of the war, as free subjects.

In respect of the whole measure, it has been well observed by an American correspondent of that well informed paper the *Daily News*, that:—

The most efficient blow yet inflicted upon the Southern demagogues was given them yesterday in Mr. Lincoln's "compensation" message to Congress for their slaves; beyond all question the most important document ever issued from the presidential chair. Mild as is its language, and timid as is the "bated breath" of its suggestions, when viewed from an abolition stand-point, yet in comparison with all executive documents that have preceded it, from Washington's "inaugural" until to-day, Mr. Lincoln's communication to his Congress stands forth

in solitary, proud pre-eminence as a thoroughly sincere attempt to grapple with the real cause of "all our woes." For fifty years the American government has never touched or alluded to slavery except to strengthen and establish it. Only a year ago, before the rapid and stern anti-slavery education of this civil war, such a message would have met a storm of angry defiance from North, West, and South alike, and Mr. Lincoln would have been branded as a pestilent agitator for ever so decorously, gradually, and tenderly trying to remove that deadly cancer which has seized the heart of the republic, and in the present struggle almost destroyed its very existence. But now the message appears to meet cordial support from all the Free States. Radicals hail it as the dawning of a brighter day, while conservatives adopt it to stave off any more decisive measures.

The proposal is none the less welcomed for its roughly-hewn, earnest, and unstatesman-like phraseology. Every line speaks its author, and tells unmistakably that none of the more polished pens of Mr. Lincoln's State Secretaries have meddled with it. It is Abraham Lincoln's own appeal to the American people; the plain straightforward speech of that "honest" backwoodsman, whom a nation, sick of the miserable party-hacks and pettyfogging politicians that have "ruled to ruin" her destinies for the past half-century, sent from his Western prairies to Washington to save the republic. God bless him for it!

But the measure is completed thus, as described in the same paper, adding another to the many instances in which Providence works good out of evil.

The case is this. When the fugitive and forsaken slaves of the Carolina coast and islands threatened to be an embarrassment to the Federal commanders, military and naval, the government despatched Commissioners to Port Royal and the islands in the possession of the Federal forces. These Commissioners were directed to examine into and report upon the condition of the negroes, and to propose plans for the disposal of them. One of these Commissioners, Mr. Pierce, a Massachusetts lawyer, has presented a report of great value and interest. We have no room here for even the slightest glance at the two hundred plantations, and the twelve thousand released slaves. It must suffice that the men and women are at work for wages and rations; and that the children are at school (and many of the adults also); and that good people at the North are sending them clothes and agricultural implements, and means of instruction in all ways, from the improved Church services to the reform of household management in the cabin. Our business now is with the share of the government in the project. Mr. Pierce's report proposes a scheme of industrial organisation which fully recognises the freedom of the negroes; and the government has publicly and expressly sanctioned the proposal. It directs that everything that is wanted for the school education and industrial training of the negroes, shall be supplied at its expense; that not only food and clothes shall be sent, but books, and teachers, and guardians, in any number considered desirable. We read of one vessel conveying forty of these missionaries of education, and many more will follow.

Thus the whole measure is one of so extraordinary a character, that one is almost inclined to doubt its reality. But it is done, and will not be undone. The "gentlemanly calling of slavery," as it is the fashion now to designate it, is doomed at last.

He would, however, turn from this subject, for, coupled as it was with the *aristocratic* slave-holders of the South, time would fail even to allude to the desperate condition of that mistaken party, mistaken indeed they were in their expectations, that either this country or France would take up their cause, and he would turn to other matters. We had lost one of the finest ships in our navy; as this had been already noticed at their last meeting, the result of the enquiry which had taken place might be usefully preserved in the minutes.

The finding of the Court was—"That the loss of the *Conqueror* was attributable to the following causes:—1st. An insufficient allowance having been made for a westerly current setting between the hours of 9 p.m. of the 28th December, and 5h 10m a.m. of the 29th of December. 2nd. No sufficient allowance having been made for leeway. 3rd. No efficient night glass being on deck. 4th. The ship not having been promptly put about on the first appearance of land. The Court was, however, of opinion, that the current which was running on the night of the 28th December, and which mainly caused the loss of the ship was unusual, and of a kind that could not have been anticipated from any study, however careful of the *West India Pilot* or the charts; they, nevertheless, considered that if Lieutenant Gammel as officer of the watch, had been provided with an efficient night glass, he would have sooner discovered the land; and had he shewn more promptitude in putting the helm down on the first appearance of land, the ship might have been tacked into safety. Further, the Court are of opinion that Mr. J. M. Share, the master, was to blame for not having made allowance for a westerly current in the line laid down on the chart, as that of the ship's course as the guidance for the Captain and officers of the watches, and the possibility of which, if represented to the Captain, might have induced him to have made a short tack; and that Mr. Share was also to blame for not having made sufficient allowance for leeway, and for not having provided himself with an efficient night glass; and further, for showing a want of promptitude in not requesting the helm to be put down on the first appearance of land. For reasons alleged by Captain Sotheby, the Court could not attach any blame to him for not having passed between Crooked Island and Rum Cay under steam.

"Further the Court was of opinion that every exertion was made by Captain Sotheby, the officers, and men of H.M. late ship *Conqueror*, and that they did their utmost to save the ship and get her off, and that the crew had since the wreck generally behaved themselves well and had been obedient to their officers, and that it was highly creditable to the captain, officers, and men, that under the circumstances all the guns and a proportion of the stores were saved without loss of life or serious accident of any kind. In consideration of the foregoing

the Court fully acquitted Captain Sotheby, Lieutenants St. Clair and Tomkins, and Mr. Hays, midshipman, and the seamen named, and further the Court adjudged Lieutenant H. T. Gammell to be admonished and cautioned to be more careful in future, and Mr. J. M. Share, master, to be reprimanded and cautioned to be more careful in future.

That Rum Island, observed the Commodore, was a favorite place in the time of the freebooters, (or, as the Spaniards called them in imitation of our words *los filibustieros*, and thence the Americanized word filibustering expeditions,) and seems to have derived its name from the rum casks of a West Indian being wrecked on it. All that can be found there is good water, at least so says report, whatever the *Conqueror's* crew might have found. Some remarks on Curacoa had been placed in his hands which might be interesting information.

Curacoa, the island where the Confederate pirate, the *Sumpter*, so comfortably refitted and obtained supplies, lies in the Caribbean sea, near the coast of Venezuela, in lat. 12° N. and long. 69° W. It belongs to the Dutch Government, and has been for many years a depôt from which the Spanish Main and many of the surrounding islands have been supplied with provisions and manufactures, mostly carried thither from America. The island is very favorably situated for a very convenient centre of trade, a fact which was long ago known to the freebooters and filibusters of the West Indian seas, who made it one of their head quarters. Many of the present inhabitants are descended from these earlier pirates.

The trade of Curacoa is at present entirely in the hands of Dutch Jews, who find here fine opportunities for getting wealth, and have for some years driven out the staid and honest old Dutch merchants who formerly carried on the commerce of the island. These Jews are traders who have no scruples, and will be glad to furnish the Confederate pirates with all they need. They have full sway on the island, hold the most important places, have their creatures in the courts, and themselves fill the Governor's council. The Governor is necessarily their creature, because if he should resist their will, they would have him removed. There is no small doubt that this people are favorably inclined towards the insurgents, being, like these, slaveholders, and unscrupulous and eager for trade of whatever kind. They have in their stores all the coal and provisions which Southern privateers need. The island has long been the principal depôt in those seas for powder and shot, and large quantities of warlike materials are always in store here, in the hands of these merchants. And the Southern vessels will find no difficulty in enlisting seamen there for their piratical business.

It is stated that the *Sumpter* was received in Curacoa under protest from the American Consul. The person is named Moses Jessurun, a native of the island. He is not, so far as is known, a naturalized American citizen. His family is one of the wealthiest in the place, and he is himself one of the prominent merchants of the island. If

as is stated, the *Sumpter* was repaired at Curaçoa, it must have been at a ship-yard owned by the Jessuroon family, because they own all the ship-yards in the port. The coal depôts are also in the hands of the Consul's relations, if not in his own.

Under these circumstances, the government will do well to send out as quickly as possible a trusty agent, with full power to look after our rights in this island and its dependencies. The officers of the Hollandish men-of-war are not under orders of the Governor, and are not, according to all accounts, favorably disposed towards the rebels. It would be well to station an American man-of-war near the island, to enforce all the just demands of a government agent. Curaçoa is only two days and a half sail from Aspinwall, with a fair wind and current. It would answer excellently for the Confederates as a point whence to strike at the California treasure ships; and this is an additional reason why immediate action should be taken to keep the pirates out of that neighbourhood.—*N. Y. Post.*

Considering the subject of the passages made by mercantile sailing vessels as one of highly useful reference, the secretary proposed the following addition to their papers from a Californian print :—

The average run of vessels from Domestic Atlantic ports, it will be seen upon reference to the details given below, varies but little from the figures of the preceding year. It is a better exhibit than that of the three that went before, although the shortest passage was again made by the *Andrew Jackson*, in 102 days. This vessel floats with a good grace the Commodore's broad pennant, having taken the lead for four successive years. She has won it well, and may she wear it long. Nineteen other vessels have made the passage in less than 120 days, viz. :—

From *New York*—the *Reporter*, 103; *Great Republic*, 104; *Black Hawk*, 107; *Twilight*, 109; *Mary L. Sutton*, 110; *Golden Eagle*, 110; *Talisman*, 112; *Sierra Nevada*, 114; *David Crockett*, 114; *Flying Childers*, 115; *Morning Star*, 118; *Challenger*, 118; *Don Quixote*, 119; and *Flying Mist*, 119 days; and from *Boston*—the *Romance of the Sea*, 107; *Ringleader*, 115; *Flying Dragoon*, 116; and *Storm King*, 118 days.

From *England* we note three very short passages, viz. : the *Panama*, in 112, and the *Oracle*, in 113 days, from Liverpool; also, the *Equator*, in 113 days, from London. The others worthy of remark, were the *Benefactor*, from Hongkong, in 86 days; *H. W. Almy*, from Sydney, in 59 days; *Achilles*, from N.S.W., in 54 days; and *Comet*, from Honolulu, in 10 days, 19 hours—the latter the shortest on record, we believe, from that port to San Francisco.

The number of vessels arriving here from Domestic Atlantic ports was 105, of which number 8 have been obliged to touch at way ports. Last year the number was 12, out of a fleet of 115 sail. We append the following particulars :—

In the year 1861, there were 60 arrivals direct from *New York*.

The average time was 133 days, 4 hours. The shortest run was made by the *Andrew Jackson*, in 102 days, the same vessel having in the preceding year made the passage in 89 days; in 1859, in 102 days; and in 1858, in 101 days.

Fourteen other vessels, enumerated above, averaged $112\frac{1}{2}$ days—the shortest passage being that of the *Reporter* in 103 days. The average time in 1860 was $133\frac{3}{4}$ days; shortest, 89 days. Average in 1859, $139\frac{1}{2}$ days; shortest, 102 days. Average in 1858, 134 days; shortest, 104. Average in 1857, 126; shortest, 91. Average in 1856, 131 days; shortest, 94 days. Of the quick passages, that of 1856 was made by the *Sweepstakes*; that of 1857, by the *Great Republic*; and those of 1858, 1859, 1860, and 1861, by the *Andrew Jackson*. From Boston, in 1861, there were 33 arrivals direct. Average time, $137\frac{3}{4}$ days. Shortest, by the *Romance of the Sea*, in 105 days. Four other vessels, enumerated above, averaged 114 days' passage, the shortest of which being that of the *Spitfire*, in 107 days. The average time in 1861 was $141\frac{3}{4}$ days; shortest, 97. Average in 1859, $140\frac{1}{2}$ days; shortest, 112. Average in 1858, 136; shortest, 107. Average in 1857, 126; shortest, 101. Average in 1856, 131; shortest 106 days.

From other *Eastern ports* there were 3 arrivals direct. From Philadelphia, 2, averaging 141 days; shortest, 130 days. From New Bedford, 1, 139 days.

From *Great Britain* there have been 23 arrivals, direct, 11 from Liverpool, averaging $156\frac{1}{2}$ days; shortest, by the *Panama*, in 112 days. The *Oracle* made the run in 113 days. From London, 2 arrivals, averaging $136\frac{1}{2}$ days; shortest by the *Equator*, in 113 days; 6 from Cardiff, averaging 158 days; shortest, 139 days. From Glasgow, 2, averaging $154\frac{1}{2}$ days; shortest, 148; 2 from Greenock, averaging 176 days; shortest, 166 days.

From *France*, there were 7 arrivals direct. From Bordeaux, 5, averaging 150 days; shortest, 139 days; made by two vessels—the *Emile Pereire* and *Jean Guajon*. From Havre, 2, averaging 155 days; shortest, 145 days, made by the *St. Anne*.

From *Hamburg*, there were 3 arrivals direct, averaging 161 days; the shortest by the *A. brecht O' Swald*, in 142 days.

From *Mulaga*, there were 2 arrivals direct, averaging 130 days; the shortest by the *Curlew*, in 125 days.

From *China*, there were 25 arrivals direct, averaging $47\frac{1}{2}$ days; shortest by the *Benefactor*, in 36 days. The *Mary Whitride* made the passage in $39\frac{1}{2}$ days, and the *White Swallow*, in 40 days.

From *Manilla*, 3 arrivals direct, averaging $70\frac{1}{2}$ days; the shortest by the *Benjamin Howard*, in 56 days.

From *Japan*, 9 arrivals; 6 from Kanagawa, averaging $28\frac{3}{4}$ days; shortest, 21 days; 2 from Hakodadi, avering $40\frac{1}{2}$ days; shortest, 27 days; 1 from Nagasaki, in 45 days.

From *Rio Janeiro*, 4 arrivals, averaging $103\frac{1}{2}$ days; shortest 100 days.

From *Australian ports*, 28 arrivals direct; 13 from Newcastle, averaging $83\frac{3}{4}$ days; the shortest by the *Achilles*, in 54 days; 10

from Sydney, averaging 80½ days, the shortest by the *Helen W. Almy*, in 50 days; 3 from Auckland, N.Z., averaging 58½ days; the shortest by the *Constance*, in 51 days; 1 from Melbourne, the *Sea Nymph*, in 61 days; 1 from Port Phillip, the *Camilla*, in 65 days.

From *Montevideo*, 3 arrivals, averaging 98½ days; shortest, 83 days.

From *Chili*, 24 arrivals; 11 from Coronel, averaging 64 days; the shortest, 50 days; 10 from Valparaiso, averaging 62½ days; shortest, 43 days; 2 from Talcahuana, averaging 52 days; shortest, 40 days; 1 from Lota, in 78 days.

From *Peru*, 9 arrivals; 6 from Callao, averaging 56 days; the shortest, 40 days. From Cerro Azul, 2, averaging 56 days; shortest, 55 days. From Pisco, 1, in 50 days.

From the *Sandwich Islands*, 22 arrivals; 21 from Honolulu, averaging 17¾ days; the shortest by the *Comet*, in 10¾ days; 1 from Hilo, in 26 days.

From the *Society Islands*, 15 arrivals, averaging 38 days; the shortest, 28 days, made by two vessels.

From *Central America*, 7 arrivals; 5 from Puntarenas, averaging 42½ days; the shortest, 33 days; 1 from Acajutla, in 80 days; and 1 from Tigre Island, in 70 days.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from vol. xxx., p. 694.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist in Mls.	[Remarks, &c. Bearings Magnetic.]
44. Castries Bay, South part	KlosterCamp Point	51° 26' N., 140° 52' E.	F.	250	18	Est. 1861. In Strait of Tartary. Visible from N.E.¼ E. to S.E.¼ S.
45. River Bug	Vollisk Spit	46° 44' N., 31° 54' E.	F.	30	6	Est. 10th Oct., '61. Visible from N.¼ E. to S.E.b.S. On end of spit.
Iale Constan- tine	River Amur	58° 7' N., 140° 41' E.	F.	40	7	Est. 1861. Opposite Nicolaevsk.
1. Zafarana Pt.	Gulf of Suez	29° 6' N., 32° 44' E.	F	88	14	Est. 1st Jan., '62.
2. Corton Gat	S.E. entrance	Light-ship	R.	38	10	In 15 fathoms. A red light, three times a minute.
3. Cape Frio	S. extreme of island	23° 1' S., 41° 58' W.	R.	522	25	Est. —. Interval every half minute.
Outer Dow- sing	.....	.....	..	..	..	Distinguished by an additional half globe.
4. St. Abbs Hd.	Coast of Ber- wick	.....	Ffl.	234	30	Est. 24th Feb., '63. Flash every 10 seconds.
5. Botafogh Inlet, Ivica	Balearic Isles	38° 54' N., 1° 31' E.	F.	102	9	Est. 30th Nov., '61.

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

PHILIPPINE ISLANDS:—*Manila to Iloilo, Panay.*

We find the following in a recent number of the *Shipping Gazette*, and preserve it for our own readers. With the chart of the coast recently published by the Admiralty, it will be very serviceable to ships bound to those parts, &c. The remarks are said to be made by Mr. Nicholas Loney, H.M. Vice-Consul for Panay:—

In the N.E. monsoon vessels from Manilla, or ports to the northward, safely proceed towards Iloilo through the Mindoro Passage, and on through the chain of islands off the N.E. coast of Panay, for which the charts of the Spanish "Comission Hidrografica," compiled by Don Claudio Montero in 1857, would be useful. After passing Tablas and Romblon (which latter island possesses an excellent harbour, where coasting vessels complete wood and water) steer for the group of small islands, collectively the Silanga, off the N.E. coast of Panay, a good mark for which is the high conical island named Pan de Azucar, or Sugar-loaf, visible from a great distance. Approaching these islands in the N.E. monsoon, vessels should pass between the islets of Jintololo and Zapata-mayor; and, during the S.W. monsoon, more in towards the Panay shore, between Olutaya and Zapato-menor.

After leaving the Zapatos, pass to the South or Northward of the Gigantes, as preferred, and take the channel through the group of islands between Sicogon and Calaguan, from whence proceed between Culebra and the main, Pan de Azucar and Malangaban, inside Bulubadiangan and Tagubanhan islands, though for vessels of heavy draught of water, and strangers, it may be found preferable to adopt the outside and broader passage between the group of islands and the island of Negros, keeping a good look-out for the shoal water marked on the chart above referred to. If the inner route among the islands be taken (which is always adopted by coasting vessels of all sizes) ships will find safe anchorage throughout the whole passage, more particularly at Pan de Azucar, and at Bacauan, or La Concepcion, where assistance and supplies may be had, if needed, through the commandant of the district; and at Apiton good water and live-stock may also be obtained.

After passing Tagabanan, and emerging into the broad channel between the coast of Panay and the island of Negros, the best course is to steer direct for the highest land visible on the island of Guimaras, taking care to clear the Pepitas rocks. In case the outside and broader passage should be taken, the North Gigante should be passed at a distance of at least two miles, as discoloured water has been reported at from one to one and a half mile. After passing the Gigantes, steer in for the island of Pan de Azucar, passing to the eastward of the islands of Malangaban, Bulubadiangan, and Tagubanhan, and between the latter and the small island of Anauayan, which has a clear channel of a mile and a half wide, entering the straits between Negros and Panay, keep on by the land, avoiding the Pepitas Rocks, which lie some distance from the shore, and are awash: giving Point Tomouton, on the island of Negros, a berth of at least three miles.

After passing the Calabazas Islets and Pepitas Rocks, and sighting the blockhouse of Banate (erected, like many others, along the Philippine coasts, for defence against the pirates of the Suloo Sea), the course is due south, until sighting a group of seven remarkable rocks, called the Siete Pecados (Seven Sins), which lie between the north end of Guimaras and the Panay shore; a direct course for these should then be made, taking care to keep the lead going, to avoid the Iguana bank.

On approaching Point Dumangas take care to avoid the shoal water, some distance off it, and steep to. On opening the channel between Guimaras and Iloilo, when the Siete Pecados Rocks bear W. $\frac{1}{4}$ N., steer direct for them, passing on either side close to. This course will clear the Iguana Bank. to the S.E. of the Pecados (with one to two fathoms water on it). The lead is a good guide in entering this channel, the depths of water being 6, 7, 8, 11, and 15 fathoms until the Pecados Rocks are passed to the Northward, when the water deepens to 18 and 19 fathoms. Having passed the Pecados Rocks, the South shore should be kept on board, to avoid the shoal water on the Panay side. When the fort, which is one mile to the West of the entrance of the river Iloilo, bears W.S.W., steer for it, anchoring as convenient, in 10 or 12 fathoms, $\frac{1}{4}$ of a mile off shore to the eastward of the river.

The best anchorage, and least exposed to the tides, is with the guard house on the south point of the river bearing W. $\frac{1}{4}$ S., a short half mile from it, avoiding the extensive mud flat to the Northward. The Dutch barque *Billeton* completed her loading with the fort bearing S.W. $\frac{1}{2}$ W., and the Bantay (small bamboo watch-box), near the port entrance of the river, N.W. $\frac{1}{2}$ N. The ship was out of the strongest currents, with the advantage that the cargo boats could always easily reach her and return. During the S.W. monsoon, when the surf is sometimes heavy, it is desirable for boats not to keep too near the starboard entrance of the river.

Strangers, during the S.W. monsoon, generally proceed through the Mindoro Straits, and along the West coast of Panay (coasting vessels, however, always use the passage to the East of that island), close along the coast of Antigue, because the West monsoon is not very regular, and does not often blow strongly between Guigos Archipelago and Panay, or to the North of Basilan. To the North, and along the East coast of Mindora, the passage is safe and easy; and if vessels meet with strong S.W. winds near Tablas, there is time then to keep off and proceed along the East coast of Panay. The West coast of Panay may be approached with safety anywhere to the Southward of the Isle of Batbatan (which is very steep, near which, and under Point Lipata, is the only safe anchorage for large vessels during the S.W. monsoon), and the Isle of Maralison, which has a reef to the East and West.

The South coast of Panay is free from danger, except near the village of Otong, and the wind scarcely ever blows on the land. The coast of Guimaras, to the North of Point Balingasag, or to the North of Port St. Ana, is also safe. The bays along the coast have deep water, and vessels can work close in shore, or from point to point, with

perfect safety ; but generally there is no good anchorage, as the coast is steep, and the holding ground is not good. In passing the S.W. point of Panay during the night, do not close the islands of Luegas and Ura-Jurro, as both these islands have reefs round them to the southward. When clear of these islands round the S.W. point of Panay, and not too much to the South, vessels may then safely steer N.E. by E. 32 miles without any danger, but after running that distance they should heave to during the night, or if the night be very clear, run by the coast of Panay, keeping the lead going, and, as soon as the water shoals, anchor till daylight, because, by keeping over to the Guimaras shore (particularly during the N.E. monsoon), there is no anchorage, and you will lose ground.

It is necessary to follow the above instructions very carefully, because the Otong bank stretches out more to the W. and S.W., than is shown on the chart, and is yearly increasing, and also because the tide runs very strongly on both sides of it. With the flood-tide (against a N.E. monsoon) vessels can easily work up in short tacks under Guimaras shore. The best mark at present (1860) to clear the West edge of the Otong bank, is the village of Otong, on the Panay coast, not brought to the West of North, until the fort of Iloilo bears N.E. $\frac{1}{2}$ E., from which bearing steer straight for the fort, or a little to the South of it, but be careful in working up never to bring the fort to the East of N.E. $\frac{1}{2}$ E.

In thick or hazy weather, when you cannot see the fort, which is very seldom the case, do not bring the point of Bondulan, on the coast of Guimaras, to the East of N.E. $\frac{1}{2}$ E. Keeping the fort a little open from this point is the best leading mark with a fair wind. When past Point Bondulan, with a fair wind, keep the fort a little on the port bow, but in working up, never bring the fort to the East of N.E. $\frac{1}{2}$ E., because the bank is steep, and shoals suddenly from 9 to 2 $\frac{1}{2}$ fathoms.

The island of Guimaras forms in front of Iloilo a sheltered passage, running nearly North and South, of a breadth varying from two and a half to six miles, with deep water and good anchorage. The southern entrance to this passage is much narrowed by the Otong Bank, which extends a considerable distance from the Panay shore, and contracts for about a mile the available channel at this part to the breadth of about two miles and a half. The shoal is fast becoming an island. There is, however, no obstacle to large vessels during the S.W. monsoon (especially as the channel is to be buoyed), the passage being quite clear, and in the N.E. monsoon they can work or drop through with the tide, keeping well over towards Guimaras (the coast of which is clear, with deep water quite close to), anchoring, if necessary, on the edge of the shoal, which affords good holding ground, and may be safely approached. The whole of this part of the coast is, in fact, safe anchorage during the N.E. monsoon. If bound to the port of Iloilo, and it should blow hard in the southern channel, a vessel may proceed to the port of Buluangan, or Santa Ana, on the S.W. side of Guimaras, which is easy of access, and capable of ad-

mitting vessels of the largest tonnage, and affording good shelter under almost any circumstances.

Tides.—It is high water at Iloilo, full and change, at 12h. Springs rise nearly six feet. The stream runs at quite two knots through Iloilo Channel. The flood sets to the northward. Variation scarcely perceptible.

Port Iloilo, situated on the southern shore of Panay Island, is well protected and naturally good. Provided with a good chart, large vessels may enter with safety. The depth of water on the bar, at the entrance to the River Iloilo, is about five fathoms at low water, but at a short distance within it decreases to fifteen feet, and then deepens again. The rise of tide being five feet, a vessel drawing 16 to 18 feet can easily enter or leave; and when, as is proposed, a dredging machine is employed to clear away the mud which has been allowed to accumulate at the shallow parts near the entrance, vessels of almost any draught will be able to complete their cargoes inside. Vessels of 700 tons register have loaded part cargoes alongside the jetties. The custom is for vessels to load to 14½ to 15 feet in the river and complete their cargoes outside.

To Enter the River and Inner Port of Iloilo—Although the land is low at the entrance, the mouth of the river is distinctly seen, being marked by four large beacons, one on the port, the others on the starboard side. On entering keep the port beacon close on board, after passing which, steer for the point on the starboard hand, giving it a berth of 40 feet, and keeping the East bank close on board, until after the second point is passed, then close the port side to the wharf or anchorage. The banks of the creek being of soft mud there is little or no risk to be apprehended from grounding. Proceeding about a mile and a half up the creek, which varies in breadth from a half to three quarters of a mile, vessels bring up at the jetties, and have the great advantage of discharging and loading at the stores without employing boats. Beyond this point the creek reaches as far as Molo, to which place coasting vessels formerly could proceed by passing through a drawbridge. A new bridge has lately been constructed, but the moveable drawbridge designed for allowing vessels to proceed to Molo, is not yet completed. Fresh beef is cheap and very good, and by giving a few days' notice 200 or 300 bullocks could be procured, each weighing about 200 lbs., at the rate of about seven dollars a bullock. Good water can always be got to the North and South of the village called Tilat, on the opposite shore of Guimaras, or N.E.b.E. of the anchorage, where there are both streams and springs. The best plan is to take up the casks at high water on the beach, and with the help of the natives fill them ready to go off with the next tide, taking care to leave a little before high water, so as to be sure of reaching the ship near the fort, as the tide changes very suddenly, and runs down very strong.

Repairs.—The American ship *Mountain Wave*, of 693 tons, was hove down, coppered, caulked, and supplied with a new bowsprit, in 1860.

Port Dues.—On foreign vessels arriving and leaving in ballast, 18½ cents per ton; with cargo inwards or outwards, 34½ cents per ton; with cargo both inwards and outwards, 37½ cents per ton.

Bill of Health.—A fine of 200 dollars is exacted in all cases on ships arriving without this document properly certified by the Spanish authorities.

The wages of labourers average from 12½ cents to 18½ cents a day; carpenters 18½ cents to 25 cents a day; caulkers, 25 cents to 37½ cents. The weights and measures in use for produce are:—The quintal of four arrobas, or 100 lbs. Spanish, equal to 101½ English; pecul of 100 cattie, or 139 $\frac{8}{100}$ lbs. English; the aroba of 25 lbs. Spanish, equal to 25 $\frac{36}{100}$ lbs. English. The currency is chiefly confined to Spanish and South American dollars, and their subdivisions. Gold is circulated with difficulty, though a moderate quantity of doubloons can be disposed of at about thirteep dollars each.

The country around Iloilo is well cultivated; the inhabitants quiet and industrious. The chief exports are sugar, principally to Australia; total export of sugar to Manila and Australia, in 1860, was 7,048, and in the first six months of 1861, 3,904 tons; sapan wood, tobacco, hides, hemp, rice, and native-made piece-goods. The women make large quantities of goods from the fibres of the pineapple leaf, and from cotton, silk, and hemp. The country in the neighbourhood and on the opposite coast of Negros, is very fertile and well adapted for sugar plantations, the number of which has much increased of late years, particularly since the opening of the port to foreign trade. Population of Panay, 750,000; and consumption of foreign manufactures imported at Iloilo for Panay and the surrounding islands, is becoming very considerable.

March 17th, 1862.

New Books.

MANUAL OF TIDES AND TIDAL CURRENTS,—By the Rev. J. A. Galbraith, M.A., and the Rev. S. Haughton, M.A., F.R.S. Liverpool Philip and Son, 1862.

We are always glad to welcome any attempt to familiarize our naval and mercantile commanders with the mysteries of the tides that beset the coasts of these islands. For what is really so much wanted is to inform these important personages, often charged with life and property to a large extent, what the tide is doing with them at any time and on any part of our coasts where they happen to be passing. This, whenever out of sight of land, is information of the highest importance, and especially so in bad weather, when rain and fog obscure the view for days together. We have always considered the late Admiral Beechey's attempt to remedy this want as one made in the right direction. His device of showing, from previous observation, the direction and strength of the stream of tide in either the English or Irish Channel according to the state of the tides then at Dover and Liverpool (as normal positions for those channels respectively) appears to us all that could be desired.

The plan of divisions of these seas, and tables adapted to them accordingly, is sufficient, if carried out properly, to inform the seaman, wherever he may be in these channels, what the tide is doing with his ship—all that he wants to know; and we perceive the Admiral's tidal lines in the charts of this brochure, although we do not discover his excellent system, to which we allude.

There is some very good information in this handbook, founded on the Admiralty tide-tables, but we much doubt the seaman troubling his head about tidal clocks or a repetition of tidal charts, as recommended, for each month, of the same sea, all tending to encumber the simple question solved by Admiral Beechey. These remind us of a chart for correcting the deviation, where all that is to be done with it is to allow it to the right or left, like the variation, according as it is East or West. These are superfluities that bewilder the mind of the seaman, who wants the best and shortest practical mode of finding what he wants at all times.

THE ENGINEER, ARCHITECT, AND CONTRACTOR'S POCKET-BOOK FOR 1862. Lockwood, London.

A handy little volume, supplying at a glance practical answers to the enormous mass of practical questions continually occurring to the gentlemen for whom it is intended on professional subjects. It consists, in fact, of the condensed results of the various volumes with which they must be familiar, placed in the most accessible and useful form for immediate reference.

FORETELLING WEATHER: Description of a Newly Discovered Lunar Weather System,—By S. M. Saxby, R.N. Longman, London.

Mr. Saxby treads, with all the confidence of a veteran in the art, the treacherous ground of weather prophecy. The readers of the *Nautical* will have already observed this, and will bear him out in the justness of his announcements frequently, notwithstanding that we know less here of what is going forward in that way than those who frequent the coast. From our pages, however, in which he first appeared, Mr. Saxby has embodied his theory on this subject, as well as his prognostications, in a little pamphlet, and one which is well worthy of attention. Therein Mr. Saxby goes into the *causes* of the high and low barometer, which he considers to arise from a variable height of the column of air above it, ignoring altogether the effects of temperature on our atmosphere! He also goes into the theory of cyclones, which, in our own opinion, have not much respect in *their* progress for the direction of the curves of equal magnetic variation, as supposed by Mr. Saxby. But we quite agree with him in attributing to our changeable satellite those influences over the weather which she has over the tides, and through these much of them may be safely attributed. But we must let Mr. Saxby speak for himself, which he is well able to do; and as he does not withhold his reasons for all that he advances, he must be considered reasonable,—a quality which he considers should be found in other theorists as well as himself. The shilling cost of his pamphlet can prevent no reasonable person from looking into it and testing its prophecies by his own observation.

ERRATA.

Page 110, line 19, for £5 read 5 dollars.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

MAY, 1862.

HOW TO HANDLE LUNARS,—By Captain H. Toynece, F.R.A.S.

Having been led to make further research into the constant error to which lunars are liable, and the best method of dealing with it, some of the results seem sufficiently important to be embodied in a paper; especially as I find there are still many commanders of ships who are good lunarians, but not aware of this constant error; so that after going through all the labour of observing the distance and calculating the Greenwich time, they only derive a very small part of the advantage which lunars are capable of yielding.

This opinion is borne out by that of the Astronomer Royal, who was so kind as to look through this paper and to send me a letter on the subject.

He says,—“The general rules that you lay down are important: that is—that on any night the moon should be compared with objects East and objects West—and that observations should be made before full moon and after full moon—and that these observations should be kept constantly going for the rating of the chronometer. These rules should, I think, be put in a pithy and short and impressive form. * * The books on navigation seem to be the proper place for them.”

Something of this kind has been done in the seventeenth edition of *Norie's Epitome*, but more having been learnt since that book was published, I shall be happy to supply any writer on navigation with a short article on the subject.

It may be well to remark that the constant error dealt with in this
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paper is the combined effect of several errors, which causes each observer to make the lunar distance either too great or too small. Now it is plain that if a distance West of moon be observed greater than truth, it will give the Greenwich time too much, and the reverse if it be observed less than truth; but the same error would give a contrary result, and to the same amount, with lunars East of moon: therefore, by combining East and West lunars the true Greenwich time will be obtained.

The several errors of which this constant one is formed are caused by defects in the screens and other parts of the sextant, together with any that may exist in the observer's eye. These, the writer of this paper has found, always resolve themselves into one constant error after an observer has established a habit of observing with the same instrument, on which hinge all the advantages of the following method, now fully proved by several observers.

In October, 1859, the Astronomer Royal suggested to me that one source of error in lunars might be that the semidiameter of the moon (as given in the *Nautical Almanac*) is not applicable to sextant telescopes. This led me to take some measures of the moon's semidiameter with a sextant, which, agreeing very nearly with those given in the *Nautical Almanac*, showed that we must look elsewhere.

In the course of this paper it is proposed to give the errors of a chronometer on Greenwich mean time as found by lunars during part of a passage from Calcutta to England, and the best use that may be made of them. It may be well to mention that it is supposed that the time by the chronometer (or by a job watch previously compared with the chronometer) is taken when the lunars are observed; This does away with the necessity for the latter part of the lunar calculation which finds the time at ship.

For convenience the paper is divided into five parts, viz.:—1. *How to Handle Sun Lunars*; 2. *Remarks on Sun Lunars*; 3. *How to Handle Star Lunars*; 4. *Rating for Temperature*; 5. *Final Remarks*.

1. *How to Handle ☉ Lunars.*

We will commence by stating that the same screen has been always used for these sun lunars, and the sextant has been placed in as nearly as possible the same state for each observation; for instance, the telescope has been screwed to the same distance from the plane of the instrument. Again, the same screens have been always used for measuring the index error.

It would not perhaps be well to chain each observer to the habit of keeping his sextant in this fixed state for each observation. Still, as in many cases each screen, from unavoidable imperfection of surfaces, has its particular error, and as the distance of the telescope from the plane of the instrument affects the brightness of the sun, which, with most eyes, affects the angle, it will be actually requisite to have a column in the table of results for registering the state of the sextant at the time each distance was measured. Then, if the sextant has

been in the same state for an equal number on each side of the moon, good results may be expected from their mean.

It does not seem at all necessary that an inverting telescope should be used; but as the inverting and direct telescopes generally give different results, either one or the other, or an equal number with each should be used on opposite sides of the moon. Captain George Case, a passenger with me from the Cape, being a well practised lunarian, was kind enough to try several sets of distances on the same days, using the inverting and direct telescopes. The Greenwich times resulting from them generally differed nearly a minute.

Not requiring the inverting telescope to be used takes away the chief difficulty in learning to observe lunar distances.

During my present voyage I have, for the sake of experiment, used a plane telescope. Still the difference between my East and West lunars, as given in another part of this paper, is nearly the same as before, when an inverting telescope and another sextant were used; which leads to the supposition that my error is chiefly in the eye.

With these precautions, the deductions from the following tables show how a little combination will annihilate error.

☉ E. ☾.

				<i>m.</i>	<i>s.</i>
1861.					
Feb. 2,	by the mean of 3 dists.	No 2735	chron. was	18 47·8	fast of Gr. M.T.
" 2	"	"	"	18 49·8	"
" 3	"	"	"	18 54·5	"
" 3	"	"	"	18 28·5	"
" 4	"	"	"	18 41·2	"
" 4	"	"	"	18 28·3	"
<hr/>					
6)18				6)250·1	

Feb. 3, by mean of 6 sets of ☉ E. ☾ lun. No. 2735 was 18 41·7 fast of Gr. M.T.

☉ W. ☾.

				<i>m.</i>	<i>s.</i>
Feb. 13,	by the mean of 3 dists.	No. 2735	chron. was	16 30·8	fast of Gr. M.T.
" 13	"	"	"	16 51·0	"
" 14	"	"	"	16 36·7	"
" 14	"	"	"	16 53·7	"
<hr/>					
4)54				4)171·7	

Feb. 13·5, by mn. of 4 sets ☉ W. ☾ lun. No. 2735 was 16 42·9 fast of Gr. M.T.

February 18th, anchored in Table Bay. Noted the drop of the ball on the 18th, 19th, and 20th, which gave, Feb. 20th, No. 2735 was gaining daily 1·8s., and it was 17m. 55·0s. fast of Greenwich mean time.

☉ E. ☿.

				<i>m.</i>	<i>s.</i>	
Mar. 4,	by the mean of 3 diats.	No. 2735	chron. was	19	14·7	fast of Gr. M.T.
" 4	"	"	"	19	33·2	"
" 4	"	"	"	19	13 0	"
" 4	"	"	"	19	17·0	"
" 5	"	"	"	19	35·8	"
" 5	"	"	"	19	39·3	"
" 6	"	"	"	19	7·2	"
" 6	"	"	"	19	12·0	"
" 7	"	"	"	19	20·9	"
" 7	"	"	"	19	15·0	"
<hr/>				10)	208·1	

Mar. 5, by mean of 10 sets ☉ E. ☿ lun. No. 2735 was 19 20·8 fast of Gr. M.T.

Note.—It will be seen that although the error of the chronometer is *increasing*, the error by ☉ W. ☿ lunars on the 13th February is *less* than that by ☉ E. ☿ lunars on the 3rd February. This difference between E. and W. lunars has been constant throughout the voyage.

These tables require no explanation; we will therefore proceed to show what the navigator may deduce from them. On Feb. 3rd, 1861, he is in possession of an error for his chronometer by the mean of six sets of ☉ E. ☿ lunars. We will suppose that these were the first lunars taken since leaving Calcutta on Dec. 22nd, 1860, and that he wished to deduce from them how the chronometer had been behaving.

If he were using his sextant for the first time he can do no more than consider this error to be a very rough approximation to the truth; but if, as in my case, he had taken many previous lunars on both sides of the moon, and thereby found the constant difference between his sun lunars East and West of moon to be 2m. 8s. of Greenwich time, half of this will be the error of the lunars on each side of the moon, and the ☉ E. ☿ error being always too great, he may proceed as follows:—

Feb. 3,	by mean of 6 sets ☉ E. ☿ lun. No. 2735 was	18	41·7	fast of Gr. M.T.
	Half the constant difference between ☉ lunars			
	E. and W. of ☿	—	1 4	
<hr/>				
Feb. 3,	by the mean of ☉ E. and W. of ☿ lunars			
	No. 2735 was	17	37·7	"
<hr/>				
Then, to try its rate—				
Dec. 22,	by the Calcutta ball, No. 2735 was	16	3·6	"
<hr/>				
Elapsed time from Dec. 22 to Feb. 3 is 43 days	43)	1	84·1	
<hr/>				
Daily rate since leaving Calcutta	0	2·2	gaining.	

Dec. 22nd, by the Calcutta ball, this chronometer was 16m. 3·6s. fast of Greenwich mean time, and gaining 2·3s. daily, which gives its error on Feb. 3rd to be 17m. 42·4s. fast of Greenwich mean time.

Here is an error agreeing with the Calcutta ball to 5s., or $1\frac{1}{4}$ mile of longitude, and the same rate to one-tenth of a second. The same method showed that the other chronometers were changing their rates; hence the navigator had good reason to be satisfied with the performance of No. 2735.

To proceed:—Feb. 13·5, he has another error for 2735 by the mean of four sets of \odot W. \llcorner lunars. He is approaching Table Bay. and wishes to deduce all the information he can from them, so proceeds as follows:—

	<i>m.</i>	<i>s.</i>
Feb. 3, by mean of 6 sets \odot E. \llcorner lun. No. 2735 was	18	41·7
„ 13·5, by mean of 4 sets \odot W. \llcorner lun. No. 2735 was	16	42·9
2) 16·5	2)	35 24·6
Feb. 8, by mean of \odot E. and W. of \llcorner lunars No. 2735 was	17	42·3
Feb. 8, by Calcutta error brought on by Calcutta rate	17	53·9
Feb. 8, by Cape error brought back by Cape rate..	17	33·4

The near agreement between the Calcutta and lunar errors gives the navigator confidence in steering to make L'Agulhas Light. The Cape error agrees with the mean of \odot E. and W. of \llcorner lunars to 9s. of time, or $2\frac{1}{4}$ miles of longitude, which proves the lunars to be right; but, knowing that chronometers are sometimes differently affected in port from what they are at sea, he does not throw aside his lunars because he has a Cape error and rate, but goes on.

March 5th, he has the mean of ten sets of \odot E. \llcorner lunars, which gives him the power of deducing an error and rate for his chronometer from lunars only, and of finding the difference between his sun lunars East and West of the moon. This may be done as follows:—

1st.—To Find a Rate.

	<i>m.</i>	<i>s.</i>
Feb. 3, by the mean of 6 sets of \odot E. \llcorner lunars No. 2735 was	18	41·7
Mar. 5, by the mean of 10 sets of \odot E. \llcorner lunars No. 2735 was	19	20·8
30 days the elapsed time.	30)	0 39·1
Daily rate of No. 2735 deduced from \odot E. \llcorner lunars	0	1·3

2nd.—To Find an Error by combining \odot E. and W. of \sphericalangle Lunars.

	m.	s.	
Feb. 18 ⁵ , by the mean of 4 sets of \odot W. \sphericalangle lunars			
No. 2735 was	16	42.9	fast of Gr. M.T.
The above daily rate 1.3s. \times 19.5 days gives			
the gain in that time to be	+	25.4	
Mar. 5, by mean of 4 sets of \odot W. \sphericalangle No. 2735 was	17	8.3	,,
" 5, " 10 " \odot E. \sphericalangle " "	19	20.8	,,
2) 10	Sum ..	36	29.1
Mar. 5, by the mean of \odot E. and W. of \sphericalangle lunars			
No. 2735 was	18	14.6	,,
Mar. 5, by the Cape error brought on by the Cape			
rate we have No. 2735	18	18.4	,,
And the daily rate by the Cape ball was ..	0	1.8	gaining.

Here the errors agree to 4s. or 1 mile of longitude, and the rates to five-tenths of a second. But as other lunars showed this chronometer to have been gradually decreasing its rate, he may very fairly think that the lunar rate is deserving of equal dependance with the Cape rate, especially as the Cape ball was only taken for three days, and the ship was at anchor instead of being at sea.

Of course the next distances gave the means for finding another rate by \odot W. \sphericalangle lunars, and so on throughout the voyage.

The other daily rates found during the homeward passage were:—
 March 18th, by \odot W. \sphericalangle lunars, 2.3s. gaining; March 26th, by * lunars E. and W. of \sphericalangle 2.1s. gaining.

Some sailors are so schooled into the impression that lunars are not to be depended upon within fifteen miles that they scout the idea of rating chronometers by them. But here we have proof that individual lunars which are more than fifteen miles in error will, when collectively taken, rate chronometers very well, because this error is a constant one. Having explained the best method of handling sun lunars, we proceed to make a few remarks upon them.

2. Remarks on \odot Lunars.

Before leaving the subject of \odot lunars and going on to *, a few words may be said respecting an objection which seemed to have much weight in it. I was asked, "How can you annihilate a constant error in the angle, for the value of that error in Greenwich time must vary according as the moon moves quicker or slower, which is shown by the difference of the proportional logs. in the *Nautical Almanac*?"

This seemed to be a powerful objection; but there was so little change in the differences between the chronometer errors by \odot E. \sphericalangle and \odot W. \sphericalangle lunars that I was led to think that this error must be annihilated by the combination of several observations. For instance,

during this voyage the following have been the differences of chronometer errors by ☉ E. and ☉ W. ☾ lunars brought to the same date.

	<i>m. s.</i>			
☉ E. ☾	2 18	less Greenwich time than	☉ W. ☾	
"	1 53	"	"	
"	2 12	"	"	
"	2 11	"	"	
"	2 12	"	"	
"	2 9	"	"	
Sum.. 6)	12 55			
Mean ..	2 9			

The above lunars were taken with a sextant by Cary, using the inverting telescope. Between July 1861 and April 1862, my lunars were taken with a sextant by Troughton and Simms, using the plane telescope, the differences between those East and West of moon were as follows:—

	<i>m. s.</i>			
☉ E. ☾	1 43	less Greenwich time than	☉ W. ☾	
"	1 46	"	"	
"	1 42	"	"	
"	1 29	"	"	
"	1 30	"	"	

With my second-officer, Mr. Studdert, the difference between his lunars was,—

☉ E. ☾	2 20	less Greenwich time than	☉ W. ☾	
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Here is a plain proof that the effect of this error is pretty constant; but as a further trial the value of ten seconds of lunar distance, in Greenwich time, was tried when the proportional logs. were the greatest, and again when they were the least, during this voyage, the result was that with the

Pro. log. 3476...^{s.}10 of distance = 22·5 of Greenwich mean time.
and with the

Pro. log. 2417...10 " = 17·0 "

But the proportional logs were generally about 3,000 during the voyage, which gave 20s. of Greenwich mean time to 10" of distance, or 2s. of time to 1" of distance. Now, to suppose an extreme case, let all one set of distances be taken when the proportional log was 3,476, and all the next when it was 2,417, may we not argue as follows:—

The mean difference of my sun lunars East and West of moon is 2m. 9s. of Greenwich time, then half this or 1m. 4s. represents the constant error of myself and my sextant, which at 2s. of time to 1" of distance equals 32" of arc; hence, after the ordinary index error has been applied, there is still an error of 32" to be subtracted; this has been a constant error during this voyage (part may belong to the

screen used, and part may be a defect in the eye, be this as it may,) if it continues constant, by subtracting it from the mean of my lunar distances the effect of any change in the proportional log will be annihilated.

But suppose that instead of doing this, the above, my ordinary method of finding a rate be followed; then,

When the pro. log. is 3476.32 of distance $\overset{m. s.}{=} 1\ 12$ of Gr. mean time;
but when the pro. log. is 2417.32 " $\overset{m. s.}{=} 0\ 54\cdot4$ "

and their difference or 17.6s. is the difference of value of this constant error; but it must be remembered that its effect has to be spread over an elapsed time of about thirty days, which would cause an error in the daily rate of the chronometer of 0.6s.. Surely this is not a sufficient argument against the method, when it is known that chronometers frequently change the daily rate given by the maker as many seconds as this is tenths. During my last voyage to Madras our best chronometer was out 50 miles or 200 seconds; and the other, 140 miles or 560 seconds, when the rates given by the makers were applied. Here is an average alteration of 5.6s. in the daily rate throughout a voyage of 100 days. And it must be remembered that the above error of 0.6s. in the lunar rate is a supposed extreme case. The lunar rates being applied to the above chronometers, they gave the correct Greenwich time to 4s. when we arrived in Madras.

There are, however, some sudden changes in the errors of chronometers by lunars which I should be glad to have explained. Since the above was written, the following table of errors has been deduced from ten lunars \odot W. ζ .

1861.	\odot W. ζ	m. s.	
March 16 by mean of 3 dists. No. 2735 chron. was		17 8.7	fast of Gr. m. t.
16	"	17 1.8	"
16	"	17 46.0	"
16	"	17 21.0	"
18	"	18 13.3	"
18	"	18 22.7	"
19	"	18 35.4	"
19	"	18 16.7	"
20	"	18 25.8	"
20	"	18 27.5	"

Now although by meaning and combining these errors as shown in the earlier part of this paper we have obtained an error within 13s., and a rate within 0.5s. of those found by the Cape ball, still I should be glad to discover the cause of the sudden change of error between March 16th, and 18th. The lunars of the 16th were taken in the variables near the equator; those of the 18th after getting the N.E. Trades. Can the different state of the atmosphere have been the cause? I have not noticed such an effect before.

In connection with this subject I may mention that in March 1862, my second officer, Mr. Robert Studdert, took lunars on the same days as myself, using the same instruments immediately after me,

and the difference between our lunars of different days was always in the same direction, showing that the cause of the difference was common to both of us, perhaps it was in the sextant or brightness of the sun.

Since the above observations were taken eight star lunars have been observed, which also give a great increase in the chronometer error. Now as star lunars E. and W. of ζ taken the same night annihilate any error in the sextant, this change must be in the chronometer, or there is an error in the position of the moon.

If the distances W. of ζ taken from the *Nautical Almanac* be increased about $23''$, and those E. of ζ be diminished by the same amount, then these lunars will agree with those previously taken.

I am quite at a loss to find the cause of this change, which, it will be noticed by referring to the above table, continued to the 20th, and then again in the * lunars.

The Astronomer Royal said, "Some of your discordances are undoubtedly to be attributed to the errors of moon's place in the *Nautical Almanac*, which errors were not only large but varying. This will be much avoided in future." I understand that the *Nautical Almanac* for 1862 contains the more correct distances of the moon deduced from Hansen's Tables.

3. How to Handle Star Lunars.

In spite of the sudden changes just alluded to, the results from \odot and ζ lunars are and have been very satisfactory; but there has been an error in my * and ζ lunars, which made them put the ship too far West. This error seems to have grown upon me since my pamphlet on lunars was written, for then they agreed well with the true position found by other means. Thinking over the subject brought to my mind that a friend, who is very fond of star lunars, told me that his results were better when he brought the star a little on to the edge of the moon, instead of trying merely to make them touch. I adopted his plan, thinking it easier, and supposing that taking them on both sides of the moon would eliminate any error which might arise from it. But as all my star lunars were taken before full moon, the * E. ζ distances were always the remote limb, and a moment's reflection told me that by bringing the star on to the edge of the moon the remote limb distances were decreased, whilst the near limb ones were increased, and the effect of this would be to make the Greenwich time too much and the longitude too far West.

Having acquired the habit, I continued drawing the star a little on to the edge of the moon; but to annihilate any error which might arise from so doing, determined to combine the results of an equal number of star lunars taken before and after full moon; thus the remote and near limb distances would be equally divided amongst stars East and West of the moon.

The following table contains the results.

Here it may be well to remark that with star lunars care has been taken to place the sextant in exactly the same state, using the

same or no screen for the distances on both sides of the moon, which, if possible, are taken the same night. Stars of similar size and brightness are selected on opposite sides of the moon. For instance, good results would not be expected from taking Jupiter one side and α Arietis the other. But Jupiter and Venus, and sometimes Mars, pair well together. Again, Aldebaran and a distant planet like Saturn may be selected. It is also desirable in selecting stars to choose those whose proportional logs. most nearly approximate, as by this means a plus or minus constant error will be annihilated. With these precautions the mean of star lunars East and West of moon is very correct, and their difference of about 4m. 38s. is nearly maintained throughout, the half of which or 2m. 19s., equal to about $-1' 10''$ of distance, represents the constant error of my star lunars when the sextant is in the state as registered in the following table.

1861.	Star observed.	Dist	Limb.	Screen used.	Error of No. 2735 Chron.	
January		o			m s.	
Before full M.	23 α Arietis W. ☾	50	Near.	Greenoverind gl.	14 15.2	Fast G. M. T.
	23 Regulus E. ☾	62	Remote.	"	19 9.3	"
	24 Aldebaran W. ☾	32	Near.	"	14 44.7	"
	24 Saturn E. ☾	59	Remote	"	18 59	"
	25 Aldebaran W. ☾	46	Near.	"	14 50.8	"
	25 Saturn E. ☾	45	Remote.	"	19 15.7	"
	26 Aldebaran W. ☾	60	Remote.	"	15 35.7	"
	26 Saturn E. ☾	31	Near.	"	20 22.2	"
	27 Pollux W. ☾	33	Remote.	"	15 57.5	"
	27 Spica E. ☾	59	Near.	"	20 58.2	"
After full M.	28 Pollux W. ☾	47	Remote.	"	15 57.5	"
	28 Spica E. ☾	44	Near.	"	20 12.3	"
12)306				12)210 18.1		
Jan. 25.5	{ By the mean of 12 sets of * lunars E. and W. of the ☾ half taken before and half after full moon. }				17 31.5	"
Jan. 25.5	{ The Calcutta error brought on by the rate } { found at that port. }				17 22.9	"

The error by these * lunars gives the same Greenwich time as that by the Calcutta ball to 8.6s. or $2\frac{1}{4}'$ of longitude.

By examining the above table we learn that lunars which differ from four to five *minutes* in the Greenwich time will, when meaned, give capital results; and that the effect of the remote limb being changed from eastern to western stars on January 26th is shown at once, for a corresponding difference in the errors continues to the end of the table.

From this table we may deduce the following results. Always supposing the same observer to be using the instrument in the same state.

- 1.—That in my special case a single * W. ☾ lunar taken *before* full moon gives the longitude about. 43 miles W. of truth.
- 2.—That a single * E. ☾ lunar taken *before* full moon gives the longitude about. 25 miles E. of truth.
- Hence their mean, which is what I had been using before the lunars of this table were observed, is about 9 miles W. of truth.
- 3.—That a single * W. ☾ lunar taken *after* full moon gives the longitude about. 26 miles W. of truth.
- 4.—That a single * E. ☾ lunar taken *after* full moon gives the longitude about. 44 miles E. of truth.
- Hence the mean of those taken after full moon is about. 9 miles E. of truth.

And it is at once manifest that two such observations before meaned with two after full moon, will give an error for the chronometer very near the truth.

As a proof of the correctness of this remark, the above errors of the 23rd and 28th, 24th and 27th, and 25th and 26th, have been meaned! the mean of these dates being the same; *i.e.*, January 25.5 the mean of the errors on those dates ought to agree. The results are given below.

	<i>m.</i>	<i>s.</i>	
Those of 23 and 28 make No. 2735 chron.	17	23.7	Fast G. M. T. Jan. 25.5
„ 24 and 27	17	39 8	„
„ 25 and 26	17	31.1	„
		<hr/>	
Now the mean of the 12 sets	17	31.5	„

Hence the lunars of any two of these dates give the longitude to 2 miles, supposing the mean of the whole to be correct.

Again, it may also be seen that a * W. ☾ lunar taken *before* full moon meaned with a * E. ☽ lunar taken *after* full moon will give a very near approach to the true longitude, and *vice versa*.

The great difference between the star lunars East and West of moon is partly caused by some defect in the green screen used, which I find in taking altitudes of the sun gives about a mile more than the blue screen, the latter being the one necessarily used for measuring the sun's semidiameter in determining the index error, which error is of course applied to all observations. In reference to this difference the Astronomer-Royal says—"The *Nautical Almanac* calculations are made on the supposition that the star is bisected by the limb of the moon." Since receiving his note I have endeavoured to observe after this method, and have better results from observations all taken before full moon. Still the above table shows that stars East and West of moon taken before and after full moon will annihilate any constant error.

A rate for the chronometer is deduced from star lunars by comparing the results of such a table as the above with that of another taken either a month before or after that date. It is further ex-

plained in a pamphlet on the subject published by Wilson, late Norie and Wilson. The great advantage of star over sun lunars is the power of getting them East and West of \mathcal{D} the same night.

4. Rating for Temperature.

As many chronometers vary their rates with changes in the temperature, returning to the same rate when the temperature is the same, they are almost useless unless the amount of this variation is known. This has been admirably proved by Mr. Hartnup, of the Liverpool Observatory, whose system of rating for temperature is a most valuable acquisition to navigation.

This subject may be usefully considered in rating by lunars, as shown below.

Noticing that one of my chronometers varied with the temperature, I took the mean of all the readings of the thermometer during the elapsed time between two series of lunars, and considered the rate found by the above method as that which belonged to the mean temperature. Thus it was shown that this chronometer—

Lost 2.6s. daily at a mean temperature of 67°			
„	5.0	„	72.5
„	5.3	„	73
„	5.3	„	75
„	8.2	„	77
„	8.1	„	80

This chronometer was given to me by the maker as *gaining* 2.2s. daily,—the temperature then was 62°. During our passage round the Cape the second difference of this chronometer with one that was very well compensated led me to suppose that it *gained* 4s. daily, when the temperature was 53°.

Whilst I am now writing, March 29th, 1862, we are approaching the Azores with colder weather, and its second difference with the well compensated chronometer again shows that it is losing less and less as the temperature falls. Having detected this fact, and rated it accordingly, it gives the longitude very near the truth. The well compensated chronometer is No. 1248, by Brockbank and Atkins.

5. Final Remarks.

The most important deduction from the above tables seems to be that lunars and chronometers working together make the longitude at sea a certainty, and that after an observer has become well used to his instrument, has established a habit of observing, and is especially careful to register the state of his sextant, using it as much as possible under similar conditions, there still remains a constant error which must be eliminated,—an error of much greater magnitude than any in the position of the moon before Hansen's Tables were used, and which will exist as long as there are imperfections in the human eye or in sextants. Hence books on navigation ought to show how

this may be done. This is the more required because the idea of rating chronometers by lunars sounds so impracticable to many experienced lunarians that they will not try it.

All to whom I have explained the method have succeeded well. Dr. Walter, of the Madras Medical Service (who to his other acquirements has added that of being a good navigator), returned from India with me; and being very skilful in the handling of a small pocket sextant, having a radius of $1\frac{1}{2}$ in., at my request took a series of lunars with it for the purpose of rating a chronometer, and succeeded in getting an error for it which was correct to 12s., or 3 miles of longitude, and a rate within two-tenths of a second of the truth, though at first he smiled at the idea of rating a chronometer by lunars taken with the best of instruments. Captain Case, another of my passengers, was equally successful, and Mr. Studdert's lunars agree in a remarkable way with my own, although he has only just commenced taking them; showing that much practice is not necessary to make lunars useful, though it gives confidence.

Having kept my lunar books for the last twelve years, with all the observations and deductions worked out, they are ready for inspection should any further information be required respecting them.

MICRONESIA—of the Pacific Ocean.

(Continued from page 182.)

Kusaie and the Kusaien.—Kusaie, or Strong Island, is the most eastern of those islands which may be comprehended in the Caroline Range. It is a basaltic island in lat. $5^{\circ} 20'$ N. and long. $163^{\circ} 10'$ W.

Let us suppose ourselves approaching it for the first time from the N.E., as our missionary company did on the 21st of August, 1852. Three small peaks appear, so far apart that it is difficult to resist the impression that more than one island is seen. But gradually as we approach the whole are united in one. Our winds are light, and we advance but slowly.

Sabbath morning we awake with the island only fifteen or twenty miles distant. The whole landscape is flooded with hues of deepest green. Such a perfect garment of vegetation we never before saw thrown over connected hills and vallies. The sharply serrated hills, stretching a distance of fifteen miles from North to South, some of which are near 2,000 feet in height, are romantic with verdure even up the greater part of the precipitous faces of the basaltic pinnacles. Unaccustomed as our eyes then were to such tropic scenes, this apparition of Kusaien romance on a peaceful sabbath morning was like a glimpse of the celestial hills—

“ Nor painter’s art nor poet’s skill can tell
 Half the enchantment of that vision bright,
 When first your green shores swell upon the sight.”

Ere long a whale-boat approaches with a white man in its stern and six or eight nearly naked natives seated on its gunwales, keeping admirable time with long, narrow paddles. They are soon aboard of us. Their dress is a *maro* woven from banana fibres. In stature they are generally small. All the features of their countenance are small and rather delicate. Their colour is a light copper. Their eyes have a slightly oblique and sunken position, which immediately reminds one of the Chinese; and their long, fine, black hair, all drawn backward and tied upon itself in a large knot on the back or side of the head, still further heightens their Chinese appearance. As on most of the Pacific Islands, there are individuals of a darker cast and coarser hair. Their ears are small, but the lower lobe is perforated, and flowers or other fragrant substances, together with tobacco pipes, are worn in them. A few perforate the upper rim of their ears as a more convenient place for the tobacco pipe they almost invariably carry with them. Though ignorant, degraded, and naked, they are among the most pleasing of savages.

At 4h. p.m. we are brought safely to our anchor in the so called Weather Harbour on the N.E. side of the island. A number of natives come off and loiter familiarly about our decks. Very many understand the common sailor’s English, and speak it with much distinctness. Within a few rods of us to the North, the king’s houses close to the beach peer out from under a cocoanut grove, exhibiting the huge Kusaian roof, with its ridge peculiarly concave upwards; and here and there around the bay the white glimmer of thatched roofs is seen amidst the deep green that mantled the whole amphitheatre.

The idea that this harbour is but a large extinct and partially submerged crater greatly enhances the interest of a scene already surcharged with novelty. Whether it has been in the first instance, during some of its earlier eras, a submarine volcano, afterwards elevated to the regions of day, and denuded in the process, and has again undergone a partial subsidence, during which the coral element was developed around and in it, must be left to others for final adjudication.

The rampart of basalt towers, with its sharp serrations, so near on the South, and the hill of Lella and Mount Bauche press so close on the North, while the lower mural line connecting them can be traced over the tree tops in the West, shutting off the later rays of the sun as the eastern spur of the southern mountains does its earlier, one feels, when safely moored in the placid lagoon, whose shores wave with a many-leaved thicket, and whose shoaler waters ripple over gardens of coral, that Nature here admits of a more than usually near approach to her maternal bosom. After floating uneasily for weeks on the restless sea, our vessel seems to fold its wings and nestle down

like any sea-bird upon the placid lagoon, thankful to the Beneficent One who elevates such rocky battlements among the waves by a mechanism that witnesses to his omnipotence.

How wondrous the chemistry, how countless the ages, required for crumbling these compact submarine rocks, that when first elevated above the denuding flood must have been more barren and naked than even an aerial crater! Upon what tablets shall we find the annals of the various successive creative acts that here called into being the high-waving forests and all the members of the lower thickets, the entangling vine and the shining mosses, and that gave life to so many of the lower orders of animal nature!

In the rich vegetable mould that has accumulated around the once bare basalt luxuriate several species of the terrestrial pulmoniferous shells. Very many molluscous shell-fish crawl over the coral wainscoating of this marine palace, a part of whose adornment they have from the beginning been; while others burrow in the acrid mud along the shore, and still others accomplish a life-long bath in the springs and streams that must have drenched the earliest of their race.

Many a sprightly crab rattles its shelly limbs over the pebbles of the shore and the rocks of the upland, dodging into its burrows and meeting in crustaceous assembly under the gentle moon, as did its progenitors on this their Eden, where the mandate was first laid upon them to "be fruitful and multiply." So do the various spiders here spin their web and watch their prey, as did their Kusaian Adams and Eves. Here the house-fly has buzzed, certainly, ever since fish began to decay and breadfruit to ripen. Generations upon generations of the consciously degraded cockroaches have with unceasing devotion accomplished their tasks; while the raptorial dragon-fly has glared upon its minute prey as its organic law required. Black, green, striped, and speckled lizards have dashed over the rustling leaf-bed, climbed the dizzly trees, and basked on the sunny slopes of their rocky homes. Sea-birds have for ages each morning sped arrow-like to fish on the distant horizon, and have nightly flocked babbling homeward to their undisturbed eyries in the tops of the sea-loving mangrove. Beautiful oceanic pigeons have cooed love to their mates with unfailing fidelity since the fifth Kusaian creation day.

But who shall arrange Kusaian chronology, and who shall name that interesting date when one of Adam's race first looked into this happy valley, where Rasselas might contentedly have wiled away a life. How entrancing must have been the sight of the green hills to the crew of the junk or the proa after its long, involuntary voyage from some far western island.

As they crawled up the beach it is not difficult to imagine their dread lest other unfortunate voyagers had preceded them and would dispute the right of the new comers to the paradise. But gradually, as they skulked from point to point and explored vallies and hills without finding fellow men—the only beings who could be their enemy,—their delight scarce knew a bound. They ate of the coconuts that so beneficently towered along the shore. Luscious bread-

fruit soon grew fragrant on the fire, made by rubbing together the first dry pieces of hibiscus that came to hand! Branches of trees furnished bowers until, with renewed energies, the refugees were able to build houses as near to the models of those from whence they came as the materials at hand allowed.

The colony may have been a considerable one, from a numerous fleet keeping melancholy company till they sighted their new-found home; and consequently the woods may have become rapidly vocal with the cries of infancy, the sports of youth, and the industry and festivities, and even the passions of manhood. The little community instinctively crystallises into a society, with chiefs and subordinates, after the manner of their fatherland; and all the repulsive train of petty jealousies and sharp rivalries to which man is heir are as surely developed as the fruit over their heads or the showers on their hills. The lowest of animal passions also walk as unblushing among them as their own naked bodies, with only this alleviation, that they are the natural developments of deranged moral natures unstimulated by the light and denunciation of direct revelation.

They have brought a mild heathenism that prompts them to selecting the most prominent rocks and ledges, and even trees, as incarnations of deities, and that deifies the dead, so that they avoid the grosser developments of pagan cruelty.

Ages lapse. The memory of the first arrival fades from even the traditions of the descendants. Their history is undiversified, save by the occasional arrival of lost mariners, like their forefathers, who either suffer immediate death or coalesce with those who have prior rights, or ultimately return to their neighbouring island homes. At intervals of generations a wondrous apparition, with mast and sail, is wafted past them, which so fires the imagination of some daring mind that he prophecies future intercourse with a race navigating the sea in canoes destitute of outriggers. And lo the wizard proves a seer!

In 1804 Captain Crozer discovers Kusaie and reports it to the civilized world as Strong Island, after the then governor of Massachusetts. In 1824 the French Commander Duperry visits Kusaie and thoroughly explores it.

Among the earlier of these long anticipated objects of Kusaie prophecy is the schooner *Waverley*, Captain Cathcart, fitted out from the Sandwich Islands, and who in the winter of 1835 anchored probably but a few rods from where we now lay. She is welcomed with eager curiosity and generous hospitality. But, hush! Can you not even yet hear echoing round this enchanted valley the screeching horror of murdered white men, and the yelling triumph of murdering savages? Kusaie friendship is horrid mockery—this beautiful landscape is red with treachery. A few months later in the same year Captain Stock, in the small trading schooner *Honduras*, lost his life in this harbour. All of his crew were killed but two, who effected their escape in the vessel to Ponapi.

Oh, for an avenging sword! Yet, hold! Your attention but for a moment to a few lines regarding the *Waverley* in the broken English

of a more recent Kusaïen king not engaged in the affair. "White man want to get gal go aboard ship. King no like. In night white man take plenty gal go board ship. In morning kanaka go board ship—every kanaka—big island small island, all go and kill every man board ship. White man kill some kanakas. Then kanakas take chests, small things ashore; then set fire to ship; burn sails, rigging, spars, casks, everything belonging to ship. Every white man was killed."

The Sabbath past, we will accompany the missionary company in their visit to the king, and their ramble on shore.

Close to the shore near which we lay was the king's enclosure, made of rattan-like reeds, within which were several large houses. At the door of one of these we found King George awaiting our arrival. As we each in order shook his hand, he wished us "Good morning" with a very pleasant smile. We stood about this door for a few moments and were then asked to enter by another. We took out seats on a number of foreign chests arranged on one side of the apartment.

The king's proper name was *Keru*. His native title, the Kusaïen term for king, is *Tokesau*—a term found in various parts of Micronesia, sometimes even applied to a deity. The title of George, by which alone he will descend to after times, came from foreign flatterers, such as are ever ready to infest even a court of naked savages. His reign must have commenced in 1837 or 1838.

Our eyes rapidly indulge their curiosity in glancing round the room, which constitutes the whole house. The frame is of large side posts of mangrove projecting about five feet above the ground, on which a largely disproportionate roof is erected, principally of hibiscus wood, and made to curve upwards at the two ends. It is thatched with a species of palm. The sides of the house, between the posts, are closely filled with slats or laths of hibiscus, very neatly tied one above the other, slightly lapping. In the centre is a square fire-place, slightly lower than the surrounding floor, of reeds regularly bound together. There is a very pleasant air of neatness and taste about the whole. The fastenings of cord, so very numerous and conspicuous, are rendered quite ornamental by using alternately black and white cordage. Valuables of native origin may be seen on long shelves along the sides of the room. There are woven *maros*, and pearl fish-hooks, and pieces of tortoise-shell, and stone adzes, and singular ornaments of shells to be carried on the canoes of chiefs.

Several guns stand conspicuously on one side, and a lantern, a few water-coloured prints, a cocoanut dipper, a lamp, and such other useful articles as form the furniture and decorations of a vessel, stood or hung in different parts of the room, arranged with the evident intent of exhibiting King George's foreign wealth, as Solomon might have exhibited his peacocks and monkeys from Tarshish.

Having successfully accomplished the missionary objects of our visit, which have been recorded in the *Missionary Herald*, we asked permission to look about. First we entered the king's cooking or feast-

ing-house, a huge building after the general model, where fifteen or twenty men were busily engaged over the various niceties of a **Kusaie** meal, the great staple of which is breadfruit, prepared in all the various ways that an ingenuity with few appliances, for long centuries confined to a few such channels of enterprise, has devised.

The next house within the royal enclosure, made of high reeds and floored with the same, was where the dead body of the king's daughter was kept, who had died three months before. Ten women, the king himself told us, as he escorted us about the premises, watched and anointed the body, and kept up a fire day and night. He requested us not to pass before the front door of the house, and his whole aspect in speaking of his bereavement, which he did in broken English, was with a refined sadness that quite won our hearts. The usual custom is, after death to anoint the body with cocoanut oil, then carefully to wrap it with mats and bind it from head to foot with coloured cordage. Within two or three days it is buried in a grave and left for about three months, when it is dug up, the bones carefully washed and tied together, and then sunk in a particular spot in the waters of the harbour. During the period of embalming and watching, all the high chiefs live and eat in the king's yard. It was from the king's special affection for his daughter that she was kept unburied.

It was about noon when we bade King George "Good morning," to visit Kanker, his eldest son, and wander among the novel scenes of Lela.

From M. D'Urville's reports, and from the accounts of sea captains, we had received glowing ideas of the architectural exhibitions on Lela; we were to find a native city handsomely laid out, with paved streets and, at frequent intervals, handsome piles of stone-cut masonry. On the contrary, we found nothing but muddy paths, zigzagging hither and thither over rubbish and stones. There were many stone walls three or four feet high, evidently of very recent origin; and scattered among the groves were indeed evidences of ancient labour, consisting of artificial islets, built up above high-tide level, and almost cyclopiian lines and enclosures of stone walls. Banyan-like trees had in many cases sent their roots into the very centre of these structures, and from some spots the stones have been entirely removed. A line of stone, varying in height in different parts, surrounds a considerable portion of the central hill of Lela. Not far from the king's and his eldest son's residences are several enclosures, about 200 feet by 100, with walls 20 feet high, and, in some places, at the foundations 12 feet thick. We partially traced at least one very much larger but less perfect enclosure. The walls are built of basaltic stones, occasionally filled in with coral. Some of the rocks are very large irregular masses, while others are beautiful pentagonal prisms. There is not the remotest trace upon any of them of a stonecutter's adze. Along the south-western shore are a number of canals communicating with the harbour, and in which the sea ebbs and flows. The sides of the canals are in some cases crumbled, but bear evident tokens of having been artificially built; and the islets themselves are evidently in a

considerable degree artificial, composed principally of coral stones, the rubbles, perhaps, of the canals themselves. These canals intersected each other, and so formed islets; on at least one of which is found a towering stone enclosure. Mangrove trees have in many cases choked up these watery courses, and, with other kinds of trees on the islets, have nearly buried the whole in a shade most congenial with the thoughts excited by these relics of a dimmer age than that which we might hope had now dawned upon them.

King George afterwards informed us that these walls were built by the former inhabitants. Many of the larger rocks were brought from the main island on rafts. When we asked how such heavy blocks could be elevated so high, he replied they were rolled up from one level to another on inclined planes of logs and stones. As to their uses, he said the wall about the hill was for defence from aggressors from the main island, and that many of the remaining walls were in honour of the dead. Nothing could be more probable and satisfactory; nor could anything be more improbable or unsatisfactory than to import a company of buccaneers, or any civilized people, to build what could not be at all to their purpose, nor to the credit of their architectural talents, and what it would have been morally impossible for them to have done. The inhabitants of Kusaie are even now skilled in wall building. We were told that one of their most decisive evidences of public grief is to rebuild the wall about the premises of a bereaved chief; and to this day chiefs are buried in the ancient enclosures, as though they were the mausoleums of the great. Possibly they may in the first instance have been built about royal residences, and on the decease of the builders, have become their magnificent sepulchres, though the analogy of present Micronesian customs decides against it.

The heart is deeply stirred on penetrating these damp thickets to find beneath cocoanut, breadfruit, orange, banyan, and other unknown varieties of trees, such worthy memorials of rude, bygone ages, when human force was no small element in diversifying the bowl of this romantic crater. No wonder living descendants of such efficient ancestors walk proudly in the shadow of such greatness—a greatness vastly more overpowering to them than to us, but respectable to any who consider with what meagre appliances these Kusaie Sennacheribs and Pharaohs executed their despotic wills. How interesting to find posthumous fame as potent on an island for ages separated from the mass of humanity as in any crowded centre of empire—to find it as true in a savage as a civilized race that—

“When souls take fire

At high presumptions of their own deserts,
One age is poor applause; the mighty shout,
The thunder by the living few begun,
Late time must echo; worlds unborn resound.”

The foreigner is tempted to suppose the present inhabitants uninterested and totally ignorant of the origin of these structures; and

though it must be confessed his interest partakes of the stolidity and frivolity of his whole mind, it is an error so to skim the surface as to be unconscious of the many links drawing them into daily contact with their mighty progenitors, All these illustrious dead are *anut* (spirits), more or less operative on the interests of their descendants. They must be respected—great care must be taken not to offend them. Some of the most potent of them are daily remembered in prayer and religious forms, and are at stated seasons honoured by laborious offering at or near these wondrous roofless tombs.

Thus do this people worship in common with all Micronesians. They do indeed recognize and worship very many self-originating deities, supreme over some one or other realm of nature. But those which are palpably but deceased ancestors are sometimes so highly exalted in the minds of their successors they are called self-existent; and the worship paid both classes partakes of the same general nature, certain peculiar objects, generally singular rocks, being selected as the points to which they direct the ceremonies intended for the more purely self-existent divinities. The line of demarcation between the two classes of spirits is by no means a palpable one, and but little of error will be committed in speaking of their religious system as ancestral, mingled with a fear of various imaginary deities, with innumerable superstitions, beliefs in incantations, and processes of divinations.

During our ramble we saw the Kusaian feminine costume of a strip of cloth, five or six feet in length and nine inches broad, woven, like the men's maros, from banana fibres, and wound about the hips. Their hair is long, and their ears are enormously bored, so that whatever natural beauty they may possess, and however the nakedness of the men may be tolerated, the females of this island repel every virtuous mind.

The respect paid the king on this island is excessive. All bow low in his presence and approach him on their hands and knees, even his own son, and none dare raise his voice above an undertone. He is never looked at directly by those at whom he is looking, and all business ceases as he passes.

On a succeeding day several of our number started to visit the Lee or West Harbour, going by the northern shore and returning by a direct line across land, enjoying the tramp along and in the mangrove swamps and over the coral flats, and then homeward through the dripping forests, brilliant with flowers and vocal with the cooing of pigeons. It was at the Lee Harbour that the American whale-ship *Henrietta* was cut off in 1842. This was also, it is said, the consequence of foreign crime in ravishing daughters and wives, and detaining them on board.

This was the last, however, of these deeds of violence on Kusaie. Vessels soon found the natives had "learned better" than to refuse them their females, and they more and more resorted there till the establishment of our mission in October, 1852, when the Rev. Mr. Snow took the post he still maintains. The open unblushing vice of

former days on board vessels has ceased on Kusaie. It need not be more than remarked, in view of the late discussions on this subject, that this open permission of, and even desire for, females on board ships for sin, is still practised in many of the darker ports of Micronesia, and is bringing on other islands the same sad disaster already brought on Kusaie. It is this permission of open vice on ships which, it seems to me, should be distinctly told the public, when still practised.

The population of Kusaie was in 1852 estimated at 1,200 or 1,300. It is now only about 700. The whole population seems saturated with the disease which is the wages of sin, and it is still rapidly on the decrease. The heart-sickening details given by their missionary should be read to excite all in this Christian community to sympathy and action for him and his people.

There is much that may be done by every Christian in praying for mercy on Kusaie. There is much that may be done for Kusaie by each virtuous member of society in this large seaport in resolutely countenancing only virtue. There is much also for public men in Honolulu to do for Kusaie, and all Micronesia, in holding before the seafaring world the fact of the existence, even in our Pacific Ocean, of a higher law on the subject of morality than any dictate of human expediency or pleasure.

(*To be continued.*)

PACIFIC RAILWAY—*and the Claims of Saint John, New Brunswick, to be the Atlantic Terminus. Proposed by T. T. Vernon Smith, C.E.*

(Concluded from page 208.)

Let us for a moment glance at the description of commerce that will pour its wealth into the Lower Provinces when British America becomes the highway of the world, when the traffic of Europe and Asia is concentrated on its Pacific Railway, its inland seas, its mighty rivers, its magnificent canals.

The Pacific Railway is no local or secondary project. America, great as she is, and greater as she will be, is only one of its tributaries. The roving Englishman and the wandering Chinaman, the East Indian merchant returning to the home of his childhood, and the European soldier going to his Oriental duties, the Australian and the Californian, the Birman and the Peruvian, the Mohawk and the Mogul, must all tread its busy avenues, and swell the motley multitude that throng its termini and crowd its carriages. That traffic which yearly sends its fleets from the Spice Islands to Europe; that still supports the caravans of Cairo and Damascus; that loads a weekly steamer on the Black Sea with the shawls of Cashmere, and the cotton, silk, and drugs of

Armenia ; that overflowing trade which congregated in a few years a population of 600,000 souls in the city of Alexandria ; and last, but by no means least, that trade which the wants of three hundred and fifty millions of Chinese, recently thrown open to the world, must require and will have eventually,

These currents of trade, swelled from Australia, South America and California, must all be collected and pay tribute to a Pacific Railway before that line can properly subserve the wants of the world or fulfil the purpose for which it is created. A line from the Atlantic to the Pacific, complete, unbroken, and integral, can and will revolutionize the Eastern world ; and it is due to the subject to linger a few moments on the sources from which the future traffic will be derived, and to which the manufactures of Europe will ultimately tend in return.

The productive industry of Asia generally is of a simple and unique description, and it is worthy of remark how the peculiar idiosyncrasy of the Asiatic mind has impressed itself upon their manufactures. In all the useful arts which depend upon a development of principles and a progressive improvement in their application, the Oriental has long since been utterly distanced by European and American manufacturers, but in those rare productions where extreme patience, laborious and unremitting attention, and manual dexterity, are the main requirements, the Asiatic with instinctive fidelity reproduces the same pattern for ages, and supplies to his European customer the ornate and costly copy of the same article that adorned the monarch of a thousand years' oblivion, or decorated the temple whose last column is crumbling into forgetfulness.

Time with us is too valuable, human hands too few, human hearts too susceptible, to waste the precious energies of life in the adornment of a shawl, or the embroidery of a skull-cap ; but fashion dictates, luxury demands, taste sanctions, and wealth pays for the sacrifice ; and in this store room of the world, human beings are numerous and unemployed, nature is bountiful in her supplies, life is rank, cheap and swarming, hands not minds work, fingers not feelings are employed ; and man, debased, degraded man, steeped in superstition, lost to noble and regenerate feelings, performs the duties, plods through the drudgery of living, unfeelingly, unwittingly, almost unwillingly.

Not the least remarkable of the wonderful changes that have recently taken place in the Asiatic world is the breaking up of the seclusion of centuries in the Celestial Empire, and the wholesale emigration of the Chinese to Australia, California, and the Spanish dependencies in the Gulf of Mexico. This exodus, so strangely unexpected and apparently accidental in its commencement, bids fair to form a new feature in the ethnological history of the present century, and the formation of any more direct route would have in this Coolie emigration, an immediate return, and an immensely prospective revenue.

The Chinese already form a considerable portion of the labour of Cuba ; they contributed largely to build the Panama and Central American Railways, and British screw steamers are now engaged in

the trade to that quarter, doubling Cape Horn with their living cargoes, and coasting round nine-tenths of the South American continent. In ten months of 1855, one hundred and thirty square rigged vessels cleared from Hong Kong with nearly 15,000 passengers. During the same period 11,000 cleared for Cuba from other ports; the stream fed by the teeming millions of the Central Provinces has increased ever since, and though only vague calculations can be made as to the total number, if the present ratio of increase be continued, it is certain that from China alone, a stream equal to the emigration from Great Britain, nearly 1000 per day, will shortly seek a communication to or across this Continent. The frightful mortality on the passage has hitherto checked the number of the self-exiled Celestials, and the removal of that by the construction of the Railway would no doubt double and treble the stream of emigration. Of the total number in 1855 that sailed for Cuba, one in seven, or nearly fifteen per cent. succumbed to the horrors of the middle passage, and died before reaching their destination. As an item of traffic on the Pacific Railway, the present Coolie exodus would load heavily a train a day for five months in the year, at the very season too when freights ordinarily are most in request.

The tea trade of China, extensive and valuable as it now is, would receive an impetus from the Railway, the influence of which would certainly increase the consumption. Western Europe and the Eastern coast of America require annually about 50,000 tons, or nearly two pounds per head of the population. The freight, insurance, and expenses, average from Hong Kong to England nearly five cents per pound, and in this trade alone, which would employ one freight train per day the year round, the saving to the European and American consumers in freight alone, would be over 1,000,000 dollars.

The silks and cotton of China and Hindoostan await only this communication to supply Europe with a description of fabrics different, and it may be better than any at present imported. Up to the middle of the last century the old world was supplied from these countries almost exclusively with the better description of goods, and indications are not wanting that the future consumption of cotton will be drawn mainly from India, from the great plains of the Coromandel coast, and the valleys of the Godavery and the Knistna. The cotton plant is indigenous to India. Professor Schouw of Copenhagen calls it the characteristic plant of Hindoostan, where it forms the sole article of clothing of one hundred and fifty million inhabitants, and is cultivated over the length and breadth of the land to the extent of 400,000 tons per annum. During the last fifteen years the relative consumption of American and Indian cotton in England has been six to one in favour of the former, but fifty millions sterling are being expended on Indian railways, and who shall estimate the corresponding improvement in that country when its vast plains and rich vallies shall be fairly opened, to the agencies of civilization and improvement? As the cheapest route to Europe, the North American Railway and the British provinces generally will share in every advancement in India; will profit

by every outlay there, and will reap golden harvests from a country where they have not sowed.

But there is another element—time—affecting, even more than the cost of freight and the course of trade; and in no description of commerce is this so apparent, or of so much consequence, as in the Eastern trade with Europe. The Aberdeen clippers obtain from £8 to £12 sterling per ton from China on the finer description of teas, in consideration of a few days saving in time, and any route that can reduce the period of transit from China to England from eighty days, the present average clipper time, to fifty, at an expense not exceeding £5 or £6 per ton additional cost, may safely calculate upon 150,000 tons of European exports to the East, and at least the same weight of imports from Western Asia.

When the simple value of these Oriental productions is considered, the element of time is seen at once to be of far more consequence than a few pounds in freight. The silk and silk goods of India and China average from £2,000 to £3,000 sterling per ton in value; the indigo of Hindoostan ranges from £500 to £1,000 per ton, whilst tea, coffee, spices, shell lac, and over 70,000 tons per annum of Eastern exports range from £100 to £300 per ton. The bare interest alone, on a saving of thirty days' time, equals the present freight of £8 to £12 per ton on the silk goods, whilst insurance and risk of damage or delay on such valuable and perishable commodities would insure their carriage by rail wherever the same were practicable.

Independently of the saving in time and cost of transport of these Eastern productions, Great Britain has another and a more important necessity for the construction of this railway than at first sight may appear. One other European power has an Empire in Asia, and a frontage on the Pacific. No other country is advancing so rapidly in all the arts of civilization and improvement, or promises so soon to attain to a commercial importance of the first rank as Russia. Within the last two years she has taken a decided step towards the highest modern civilization, and apart from her military power must soon rank amongst the first class nations of the world. Within that period the tariff on foreign importations has been modified, and the steam communication between Great Britain and her former enemy is now extensive and mutually profitable.

The cultivation of the arts of peace are raising Russia to a moral elevation that the warlike ambition of the late Czar could never have anticipated. Her rivers are now navigated by steam, her industrial resources are being developed to the utmost, internal improvements are projected in all directions, and her ports and harbours have become the centres of a busy and flourishing commerce. Forty steamers are owned by one company on the Black Sea, before the end of this year seventy will be employed on the Sea of Azof, and Russian propellers ply regularly from Odessa to Marsilles, Trieste, Genoa, and even London.

Between China and Russia an overland transit trade has long existed, which has lately assumed an importance that Great Britain

must soon look upon as the omen of a serious rivalry for the carrying trade of the East. It may serve to some extent to remove the prejudices of some who fancy that a railway 3000 miles long, across this continent, can never form part of a freight line between England and China, to learn that the manufactories of Warsaw and of Moscow have latterly driven the woollen cloths of Prussia and Germany out of the Chinese market, where they had previously sold to the extent of 8,000,000 dolls. per annum. These Russian woollens are transported 5,000 miles by land, over the steppes of Siberia to Kiatchka, the frontier market of exchange, situated 1300 miles from Peking. From 1830 to 1840, this transit trade between Russia and China increased 1000 per cent., and so perfect is the communication that the news of the Chinese war, and the details of the late Treaty were well known in St. Petersburg a fortnight before the official despatches were received in London by steamboat, telegraph and rail.

To shorten this overland communication both in time and distance, to improve the watercourses, and take advantage of her noble rivers, Russia at the present time is bending all her energies. Forty-five millions sterling of French capital are being expended in the construction of a railway 2,600 miles long, to which our projected Pacific scheme is a pigmy attempt. Ten millions more have been authorised on other lines to complete the communication to the Black Sea and the Oural-Mountains, and to connect the navigation of the Volga and the Don. Steamers have been placed on Lake Baikal, the Superior of Asiatic Russia, and the navigation of the Amoor, a large river 2000 miles long, on the direct route to the Pacific, and whose tributaries drain Chinese Tartary, is soon to be opened.

All these undertakings tend to oppose our present almost monopoly of the Asiatic trade with Western Europe, and Great Britain must either prepare to lose to a great extent the cream of that commerce, or rival Russia in the extent of her expenditure on a new line of communication, where the speed of the locomotive will be substituted for the clipper ship, and the punctuality of the land route for the precarious uncertainty of the long sea voyage.

Such are some of the advantages and necessities of the Pacific Railway in its commercial importance to Great Britain. It remains to be briefly considered in its political and military character. The British Empire in India gradually aggregating to itself the smaller principalities, has become, either by conquest or treaty, one of the most powerful colonial dependencies that the world has ever witnessed. Recent events have shewn us that whilst India requires management, strong and energetic, and that promptness is one of the most important elements in the solution of the question of supremacy, our present communication is not adequate to the military wants or exigencies of her government. The mails from Bombay, the nearest of the Presidencies to London, average thirty-five days, whilst sailing vessels round the Cape take one hundred and twenty. Even under the most urgent circumstances, steam vessels have seldom made the passage in less than ninety days, and did no other argument exist for the con-

struction of a British railway to the Pacific, the recent painful events in India would supply the deficiency.

On the 9th of April, 1857, the first telegram arrived in London, announcing the murderous resort of the Bengal Sepoys to fire and sword, and measures were immediately taken to reinforce our troops in that quarter. On the 26th of June, telegrams again arrived announcing the revolt at Meerut, and the seizure of Delhi, the government were then perfectly sensible of the position of affairs in India, and the press and the public were unanimous in the demand for instantaneous action, in the despatch of the troops. The choice lay between the Egyptian and the Cape routes, between sailing vessels and steamers, and in looking back upon the course pursued, it is scarcely fair to blame the government by the light of facts gleaned since.

The tremendous risk we were running of losing our Indian Empire altogether, the terrific suffering of our countrymen overpowered by numbers, and the contagious example to other districts still faithful, of a successful rebellion, put all questions of economy or inconvenience on one side; it was a consideration merely of time and quantity. Steamers by hundreds were ready in England, but how on the Red Sea? Australian clippers were performing their journeys in equal time and with more certainty than Australian steamers. The passage of troops through a foreign and distant territory, the possible objections that might delay or stop them *en route*, the unhealthiness of the Red Sea and Desert in July and August, and a thousand other suggestions, all forced themselves upon the attention of the Commissioners, and wrongly perhaps, they decided in that moment of anxiety and suspense in favour of sailing vessels and the Cape route.

Of thirty-one vessels taken up by the 10th of July, nearly all were sailers; and in looking back at their performance, we may take these trips as representing the best that can be done between England and India. The average length of voyage of twenty-two sailing vessels between the 10th of June and the 27th of August, from England to Calcutta, was one hundred and sixteen days, the average of nine steamers subsequently between the 6th of August and 21st of October was eighty-six days, and the average loss of time of 16,000 men, embarked in fifty-five sailing vessels, was thirty-seven days over what might have been done had steamers been available and once taken up. Had a British Pacific Railway at that time been in existence, and a fleet on the Pacific in such condition as it would necessarily be when that communication is open, an army, however extensive, might have been transported across this continent to Calcutta, accumulating at every military post on its route, in at most fifty-five days from England, saving sixty days over the time actually occupied by the greater part of the army despatched to the scene of difficulty.

It is a simple question when the elements are known, to calculate the saving in the transportation of an army occupying fifty-five days in place of one hundred and sixteen. It is an easy matter to estimate the value of the time of 16,000 men, two months longer than necessary

upon their passage, but what human head can sum up the amount of misery endured, the irretrievable mischief done, the desponding hearts broken, the suffering inflicted upon the gentle, the lovely, and the innocent, through the lawless unrestrained passions of 100,000 ruffians preying for two months on the vitals of society, and exulting over their powerless victims with all the refinement of cruelty and the malice of fiendish revenge. That two months of misery endured, that two months of unnecessary wrong and violence inflicted, plead louder than the two or three millions of disbursements that would have been saved, and demands, necessitates, the creation of any route that can check or control for the future a repetition of so terrible a chastening.

The Frazer River gold discoveries have an importance in connexion with the extensive coal deposits of Vancouver Island, too palpably requiring protection to be disregarded by the British government. Situated between California and the Russian forts of the Pacific, New Caledonia requires a strong police to guard against the lawless fillibusters of the one, and a fleet to oppose to the powerful armament of the other in those northern waters. The necessity, therefore, of a strong naval and military establishment at this half-way station between Halifax and India, at once points out the economy of a railway communication which would dispense to a great extent with a standing army in time of peace on the Pacific coast, and facilitate its movements in time of war. Halifax, Saint John, and Quebec, would then effectually guard our new dependency, and England with a chain of fortresses across this continent, would grasp the Indian Empire with a resistless strength that distance would not impair, nor delay be mistaken for want of means or vacillation of purpose.

The military value of the Pacific Railway has, however, one drawback which must be stated. For five months in the year, were it made to-morrow, it would be without an Atlantic terminus that England could use in time of war. The first link is still to construct, and that step belongs to New Brunswick to initiate. Two hundred miles separate the Canadian territory from the military line to Halifax or Saint John, and that two hundred miles is the key to a commerce which Saint John only of all the Atlantic ports seems unwilling to understand or appreciate. Boston, in railways alone, to secure the Saint Lawrence trade, has expended £12,000,000 sterling. New York, in canals and railways, has up to the present time, disbursed £25,000,000, and Philadelphia nearly £8,000,000, all to secure a connection with the Great Lakes, which, after all, may not be the most economical. Portland, a small city, but made great by its enterprise, subscribed in cash, 50 dols. per head of its inhabitants, and extended credits for 100 dols. more, to secure its Montreal railway. A similar subscription on the part of the people of British America, would build the Pacific line from Halifax to Vancouver three times over. Portland has not been irredeemably ruined by the speculation,

the population has been doubled by its liberality. Boston and New York have grown rich by their expenditure, and the phenomenon of a country ruined by its railways is yet to be witnessed.

There are two points in connexion with Saint John, that viewed conjointly, give as the terminus of a railway three thousand miles long, advantages not possessed by any other port on the Atlantic seaboard; these are its facilities for the formation of docks, both wet and dry, and its immense water power. A tide rising twenty-eight feet, and a railway running more than two miles over an alluvial formation, below the level of high tides, and waiting only an inexpensive canal and one pair of lock gates to give eight miles of quay-side frontage, and four hundred acres of wet dock, is a feature not found elsewhere.

The city of Portland, with great liberality and at considerable expense, built two wharves, perhaps forty or fifty feet wide, to serve as landing places from the stem and stern gang-ways of the *Great Eastern*, a mile from the centre of the city, and forming after all, only an uncomfortable and amphibious sort of connection with the monster, if ever she makes her appearance in transatlantic waters. At a less expense than it cost to put her into the water in the first instance, our so called mill pond in the heart of the city might be converted into a graving dock, to repair the lowest plate in her hull or the bottom rivet of her keel; or floating within fifteen feet of the railway track, a whole train might discharge its varied contents over her side in one-tenth of the time that the present arrangements at Portland would possibly admit. When such vessels become more common on the Atlantic, it will be a question of grave importance whether the only open harbour in America that can float her at low water at all seasons, and dock her at high water, will not command the trade, as the most eligible terminus for their voyage.

Saint John has another advantage, shared in only by Quebec as the Atlantic terminus of a railway, and at present wholly unimproved in her immense water power. The application of the paradoxical principle in water and other fluids, whereby the weight on a certain area is made independent of the actual volume of water employed, and dependent only on the height of the head or point of supply, as a motive power for machinery, is as recent as 1846.

In that year the corporation of Newcastle-on-Tyne put down the first hydrostatic crane for unloading vessels, the water being taken from the ordinary street mains. One of the most beautiful applications of this principle is for the purpose of supplying the power round railway stations, for loading and unloading the cars, working the turntables, traversing machines and waggon-lifts, for raising and tipping coal waggons, opening and closing swing-bridges, and a variety of other purposes. At the central station at Newcastle a three-inch service pipe from the street main turns the locomotives, puts the coke in the tender, loads and unloads the merchandize, and after it has done its work, is forced into the tank for the supply of the engines, so that there is literally no cost for the enormous power used round this busy

depôt, excepting £5 per annum paid to the Water Company for the use of the water in its transit this way.

During the late Crimean war ten of these water cranes were erected in the arsenal of Woolwich at a cost of £30,000. The ships that went out first were loaded in the river, and each vessel required three weeks to take in her cargo. The saving effected by their use in time and labour after their completion, in eight weeks repaid the whole cost. In Great Britain alone twelve hundred of these machines are now at work, nearly all of the public docks and most of the government establishments have them in use, and wherever practicable, the railways have universally adopted them for lifting, hauling, hoisting, loading, and discharging vessels, and every purpose for which a strong intermittent power is requisite or available. Distributed under almost every street in Saint John, water, the cheapest, safest, and best motive power yet introduced, at an enormous pressure, but nevertheless noiselessly and unseen, awaits the touch of science and mechanism to be led forth from its underground channel, to pull, or grind, or crush, discharge our vessels, turn our machinery, work the ponderous forge hammer, or do the humble drudgery of our houses.

As a commercial, territorial, and military railway, the Pacific line through British North America is the only possible route and the political necessity of the age, and as its Atlantic terminus this city has advantages, shared in by no other. The construction of the road, heavy and expensive as it is, is by no means without a precedent. Excluding the portion now completed, Vancouver Island may be connected with Halifax and Saint John at an expenditure not exceeding £25,000,000 sterling. Russia, with one line of 2,600 miles, asks for £45,000,000. The Lombardo-Venetian Company will require on their railroad of 1900 miles in length, probably the same amount. Twenty-six miles only of this road cost over two and a quarter millions, and ninety-six consecutive miles averaged over £45,000 sterling per mile.

Spain has 1,500 miles of railway built or building at a cost equal to our utmost requirements; and in England where the system is supposed to be nearly complete, 1000 miles of road are under construction, and the estimated expenditure this year is over £20,000,000. In India four long lines are being prosecuted simultaneously, and on one of them, stretching 1235 miles from Bombay, a single section of thirty miles, requires more labour than the whole of the New Brunswick roads together. There is nothing, therefore, impossible or improbable in the whole being completed in a few years from this present time, when the proud position this city will have attained will constitute it the commercial, if not the political capital of a colonial empire on this continent, the value and importance of which to Great Britain, is impossible sufficiently to appreciate.

VOYAGE OF H.M.S. "CYCLOPS" FROM ENGLAND TO THE CAPE.—
Captain W. J. S. Pullen.

(Continued from page 201.)

From the experiments on Massey's Sounding Machine carried out by Mr. Mayes, and here shown in a tabulated form, I find that as yet it is only an approximate index error that can be arrived at; for, from the ship sheering about so over a very uneven bottom, the depths were constantly changing, and although in many cases the difference was trifling, still it was enough to make the results slightly erroneous. It requires still, calm weather, and the ship to be anchored where the depth would be constant, not changing by the unevenness of the bottom, and I should prefer not less than 100 fathoms.

At anchor off the settlement of the island of Tristan d'Acunha, in 42 fathoms, with steam and 100 fathoms of stream hawser; waterfall, S. 14° W.; eastern extreme of island, S. 54° E.; ship's head, S. W.

In these experiments the deep sea line was used, with the index error lead, weighing altogether 45lbs.

Masseys' Instruments used for Experiments.

No. 1347, of 1500 fathoms: in original form, as from maker.

No. 2290, of 3000 fathoms: cylindrical shield or drop catch removed; replaced by pauls on top of rotator.

No. 2289, of 3000 fathoms: one received from Mr. Massey before sailing with an improved stop.

No. 1318, of 3000 fathoms: a stop lever (Mr. Mayes' alteration), both pauls and drop catch removed.

No.	Time of Letting go.			Time of Reaching Bottom.			Interval.	Nos. of Instruments, and Depths Shown.					True Depth.	Remarks, &c.
	h.	m.	s.	h.	m.	s.		1347.	2289.	2290.	1318.			
1	9	56	50	9	57	13	23	37	39	36·5	37·5	43	Mean time 24·7s. Mean depth 42·5 fs. Mean by No. 1318 36·8 fms. Mean time 39·6s. Mean depth 43·7 fs. Mean by 1318, 40 f. In 8th cast 2290 was jammed by screw. M. t. 69s. M. d. 44f. M. by 1318, 38·2f.	
2	10	6	10	10	6	35	25	38	39	37·5	37	42·5		
3	10	16	30	10	16	51	21	37	39	36·5	35·7	42·5		
4	10	26	0	10	26	24·5	24·5	36·5	37	39	37	42·2		
5	10	44	30	10	45	0	30	36·5	37	38	36·7	42·3		
6	10	53	40	10	54	17	37	37·2	37·5	36·2	37·2	43		
7	11	2	35	11	3	11	36	40	37·5	36·5	39	44		
8	11	12	20	11	13	10	50	41	35	13	43·5	44·5		
9	11	22	15	11	22	49	34	38·7	35·5	38·2	42	44		
10	11	29	30	11	30	11	41	47	37·5	35·5	39	43		
11	11	39	30	11	40	45	75	22·7	35	15	39·2	44		
12	11	49	50	11	50	53	63	35·2	37	39	38·5	44		
13	12	5	50	12	7	10	80	18·7	37	26	34	44·2		
14	12	15	15	12	17	15	120	4·7	53	56	26	44·5		

From the means shown in this table an error is got for No. 1318.

		<i>Error.</i>	<i>Mean of Experiments.</i>
Time of descent of 100 fms.,	58 secs.	13·4 fms.	Nos. 1 to 5.
"	" 90·5	8·5	Nos. 6 to 10.
"	" 157	11·8	Nos. 11, 12.
"	" 181	23	No. 13.
"	" 269	42	No. 14.

The variations in the true depth were in consequence of the ship swinging over an uneven bottom. A mark was placed at about the mean depth, and the variation in its position noted each cast, with the lead just touching.

Three of the machines sent down had undergone some alteration from their original form,—Nos. 2290 and 1318 by Mr. Mayes, and 2289 by Mr. Massey. No. 1318, showing the best result, is the one for which Table III is calculated and applied. All the instruments were attached to one rod with four arms, so that each had a separate connection, but bearing the same relative position to each other. The rod was made on board. A partially detaching weight was used, and so connected to a stop on 1318 (Mr. Mayes' invention) that directly the weight touched the bottom it acted on the stop in such a manner that the rotator became so completely locked that nothing could move it in its passage up through the water; consequently, the indices showed what they had really arrived at on reaching the bottom.

In the first alteration of the machine 2290 by Mr. Mayes there was every reason to suppose that the instrument on coming up, from any shake, altered its index; hence this new plan, and with cause to think that it is the best from the experiments yet had with it.

For an example showing the application of index error we take from the table of deep soundings on the 19th, when No. 1318 was sent down attached to the weight, 2700 fathoms of line, and 2374 by machine on return to surface:—

	<i>h. m. s.</i>
The time of letting go was	4 48 30
„ reaching bottom was	5 48 30
	<hr/>
	1 0 0 = 3600s.

Now $\frac{3600}{57} = 63.16$ s. = 133s. for a mean interval of descent for every 100 fathoms. Referring to Table III, this interval comes between 90·5 and 157s., and the proportional part due for the difference to 133s. gives a correction of 10·46 fathoms for every 100 fathoms, to be applied to what the machine registered. Thus:— $10\cdot46 \times 27\cdot00 = 282\cdot42$ for correction. $\therefore 2374 + 282\cdot42 = 2656\cdot42$ fathoms; very little different from what the line showed, and hardly appreciable in so great a depth.

Early on the morning of the 27th the wind chopped round to S.b.W., and for a few hours blew a fresh breeze, veering gradually till about noon, when it settled at S.S.E., with a smooth sea. The temperature had very much decreased, the thermometer at noon showing $56\cdot5^{\circ}$,

just two degrees lower than the sea. Several albatross and kittawakes hovering round the ship. The barometer pretty steady.

On the morning of the 28th the wind was S.E.b.E. and throughout the day, gradually veering to the northward round by East; when at three the following morning it finally settled at N.E.b.N. Its greatest strength was 7, but only for a short time, subsiding and continuing at 5.

A little after noon of 28th several patches of seaweed were passed, and a long swell up from the westward. After the wind had got well to the northward this swell subsided to a perfect smooth sea of a light green colour, as if in soundings. Several grampus were seen coming up from the westward, hanging a long time on our weather quarter. The first Cape pigeon was seen to-day, and the kittawakes were making themselves quite at home, pitching and remaining a long time on the studding sail boom ends.

As the wind got northerly the temperature began to get up, the thermometer at noon showing 65°. The barometer fallen a very little, but it may be called steady. In the evening several patches of seaweed were seen.

Towards the morning of the 30th, the wind, which had held from a N.N.E. quarter since the 28th, began to get unsteady, and, backing to the westward, finally settled in the afternoon at S.S.W., and from 4 to 5 in strength. The thermometer, too, began falling, ranging between 55° and 61°, until noon of the 1st January, when the wind was again N.W., and a heavy swell coming up from S.W. The range of the barometer between noon of the 29th and noon of the 1st January was 30.40 and 30.22, falling with north and rising with southerly winds.

On the evening of the 31st the foretopsail yard was found so badly sprung—in fact, gone right in the sling—that it would be necessary to shift it. Not having the spare one rigged, it was fished with the studding-sail booms, thus carrying on sail during the night. On the morning of the 1st January, 1858, it was shifted, and in very good time, for towards evening the wind was getting up, and every appearance of a dirty night.

A day or two ago, shortly after leaving Tristan d'Acunha, the foremost paddle-beam was found badly sprung on the starboard side, and with the rolling of the ship lately it had evidently gone further, there now appearing but a little of the wood holding together. It appears to be perished, and the carpenter reports that it is not seaworthy. We can do nothing with it, but trust in that all-wise and merciful Providence which has conducted us thus far in safety. May it please Him to continue His protection and guidance, and, oh, make us worthy of it.

All the 2nd the wind was fresh from W.b.N. and West, bringing up a heavy sea with it; and on the morning of the 3rd it veered as far South as S.W.b.S., when, at noon, it began decreasing gradually and hauling more southerly. On the morning of the 4th there was so

little wind that the fires were lit and we were once more under steam. At noon it was quite calm, with a long heavy swell from S.W. By the noon observations we found the current had set us N. 85° E. twelve miles for the last twenty-four hours, that is from noon of 3rd to 4th.

For the previous twenty four hours, or, I should rather say, since the last observations between 1st and 3rd January, a current had set N. 71° E. twenty-five miles. All this was doubtless caused by strong westerly winds; and they having subsided on the morning of the 4th, and quite calm in the evening, I had a boat lowered down to try current, and found it not more than one-seventh of a mile an hour in a N.W. direction. Later in the evening the wind was light, but backing to the westward.

On the morning of the 5th it was quite calm, and the S.W. swell had gradually gone down, when, in the forenoon the ship was swung for deviation. Afterwards we tried for soundings with 800 fathoms, but got no bottom. A thermometer was sent down at 500 fathoms, giving a temperature of 40° and density of water 1027 at 63·5.

At daylight of the 6th land was seen on the port bow, soon made out to be the Table Mountain. At 7h. 30m. the Cape of Good Hope was passed. Thence steering along the western shores of False Bay, between them and Whittle Rock, between Roman and Noah's Ark Rocks, entered Simon Bay, and took in one of the inshore moorings.

H.M.S. *Castor* and *Sappho* brig were here, but the Commander-in-Chief, the Hon. Sir F. Grey, was away with his flag-ship, the *Boscawen*, visiting the station. Captain Lyster, as senior-officer, gave the necessary directions about our defects, and as there was no dry dock a large baulk of timber was recommended to be bolted on the paddle-beam, a sort of fish, and to project several feet either side of spring.

This and the making good other defects, besides coaling and completing provisions, kept us fully occupied, together with giving the men a run on shore, until the 20th of January; when, before going to sea, steamed round and got the deviation on each point of the compass.

This compared with that we had got at sea on our passage out, exhibited in many instances a great difference. However, I can offer no reason, except that in the observations taken on shore some error may have been made in reading the instrument used, a six-inch theodolite; or not sufficiently quick in taking the observation, for the ship was generally moving quickly past when the signal was made. At all events not so great as to cause such discrepancies in the result.

The entrance into False Bay, through it, and to the anchorage in Simon Bay is so fully remarked upon that I can add nothing more. Moreover, our stay was so short that it did not admit of any extended observations. I therefore only give my ideas on the capabilities of the place, as having every facility of making it both a mercantile and naval port with little outlay.

We passed close round the Cape, up False Bay, between the Whittle

Rocks and main, and into the anchorage between the Roman Rocks and Noah's Ark, taking one of the inner buoys (moorings) close off the dockyard, thus conveniently situated for communicating with it, and getting our defects remedied.

Simon Bay, although confined as an anchorage for many large ships, has, I consider, more facilities for making it a better port than Table Bay; and if the time, labour, and money—nay, half of the latter would be sufficient—were expended on it rather than the other, which the good people of Cape Town are contemplating, and endeavouring to get the home government to assist them in, they would find it better bestowed in the long run. I think the making a breakwater in Table Bay rather fallacious, whereas Simon Bay would, with a little art, make a splendid port, and the work be lasting, with little difficulty in accomplishing it.

It is already considered a safe anchorage throughout the whole year, whereas Table Bay is not, ships preferring the former in winter, from April to September, inclusive. Even in the summer months, from October to April, during those dreaded N.W. gales which send such a heavy sea into Table Bay wrecks have occurred, instancing the case of H.M.S. *Sceptre*, with many large ships, in November.

Quoting from Horsburgh the remarks of Mr. J. Brown, Master of the *Winchester*, on Simon Bay, he says, and which all can but agree with, that although open to the north-easterly and easterly winds, they never blow home, but the S.E. are the winds to be guarded against, and it is from want of room only that a large number of ships cannot find security. Now I mean to say that there is a remedy for this by running a breakwater out, say in a northerly direction, from the eastern point of the bay or outer Fort Point, for a distance of from three to four cables' lengths. The depth is great certainly, after getting a cable and a half off; but, notwithstanding that, I should think it would be less expensive than the basin to be formed by the two breakwaters at Table Bay. The whole length of that work is to be 10,200 feet, whereas, in Simon Bay, at the outside 2,400 feet; moreover, this would insure more space for the shipping and facilitate the building of wharves, docks, &c. In fact, all along the line of coast up to the dockyard, a distance of about seven cables, might be made available for mercantile purposes by taking advantage of what nature provides in the shape of points and straggling rocks, some to be made use of and others blasted and cleared out of the way.

As a naval port its value has already been proved; and although our stay was short, still we had a proof of its superiority over Table Bay even in the south-easters, the only winds here to be feared, for one was making great commotion among the shipping there, driving them from their berths, and communication was stopped both from and to the shore. In Simon Bay, at the same time, and throughout our stay of fourteen days, nothing prevented any boats from passing between ship and shore.

Again quoting Mr. Brown, in his directions for sailing *en route*, he says that the bottom in Simon Bay, although sand, is good holding

ground when anchors are well seated. Ships moor N.W. and S.E. from May to September, heaviest ground tackle to N.W., for, being the winter months, you get the strong gusts from the hills in that quarter. From September to May South and S.E. winds may be expected to predominate,—the best anchor then to S.E.

Water is abundant, and no difficulty in procuring supplies for shipping. In fact, very little is wanting artificially to make what is naturally a very good port one of the very best.

The road between Simon Bay and Cape Town has certainly its disadvantages, but only for a short space in the whole distance of about twenty-two miles, certainly not more than 10,000 feet to be made perfect. Little as I know of engineers' work, I think that this portion can be made equally good with the rest, and at a trifling cost.

I see in the proposition for the works at Table Bay that 1,000 convicts are to be engaged for that specially. A pity the good people of the Cape rejected those sent some time ago. They might have made good use of them, and have had no occasion to request 1,000 now. All endeavour to carry out what I think had better be left alone, as far as Table Bay is concerned, and which I will now have a little talk on, as well as give what little information I have been able to pick up about this breakwater.

From his Excellency Sir George Grey I got a proposed plan and opinions; but the only sailor that I could get an opinion from, and to whom the Governor referred me, was Lieutenant Jamieson, R.N., the Captain of the Port. His ideas are well worthy of consideration and ought certainly to be taken into account, for he must speak from downright experience. In fact, in his duty it must come particularly under his notice, and before proceeding further I will give his very first remark,—“Could such a plan be carried out, it would take a very great weight off my mind when there are many ships in the roadstead during the season of the N.W. gales.”

These N.W. gales bring in a heavy sea and current, which divides about the Salt River, one branch or portion sweeping out to the northward, the other S.W. round Table Bay. It deposits a great deal of silt in the anchorage and of course lessens the depth of water. Of late years a wharf has been run out for a considerable distance North from the custom-house, and this current has so completely scoured the eastern, or rather south-eastern, side of this jetty that piles and rocks which were once covered are now visible, and sand has been deposited on the opposite side.

This must therefore be the eddy that has been alluded to, and these proposed breakwaters are intended not only to prevent this deposit from accumulating but afford protection to the shipping. On looking over the report and plans of work to be carried out, I see that a very large surface is to be enclosed; but the question which I think requires consideration before it is entered into is the expense. I am not sufficiently acquainted with such works, but it seems to me, taking into account the time—ten years,—the probable gales we may have in that time, checking and destroying the work in its progress,—that

both time and expense would fall short of the estimate. Again, and which is the idea of others also, it is to be considered that, supposing the silt does not deposit within the basin, it may probably do so outside, at the entrance, and there form such a shoal or bar as, after a time, to make the anchorage useless. Dredging may clear it, but then comes another item of expense, and who is to pay it?

In the view that I took of the anchorage from the high ground at the back of the Asterdam and Chavonne Batteries (January, 1858), it struck me that there was a very visible decrease in the depth of water in the anchorage since I was last in it, just sixteen years ago, when in command of a merchant ship, but this is only from recollection; and also that wharves must be run out a considerable distance to meet the requirements of merchant vessels discharging and taking in cargo.

And on looking at the plan there is another consideration suggests itself. Suppose a ship running for this harbour in a strong north-wester, the entrance of 1,600 feet would be rather dangerous at such a time; and as, when inside, all berths are probably occupied, the anchoring under the shelter of so low a wall as the breakwater would, I should say, be rather a hazardous experiment.

Again, there is a certain quantity of deposit falls into the bay from the land by the furious south-easters. How is that to be kept out? I do not think the wall proposed would answer. In fact, I think Table Bay is just as well as it is, and all attention turned to Simon Bay; to which now, in these days of engineering and electric telegraphs, all objections are done away.

THE WOLF ROCK LIGHTHOUSE.

Midway between the Lizard Point and the Scilly Islands, at a distance of about two and twenty miles from each, lies a dangerous rock called the Wolf. It is about 58 yards long and 38 yards broad at low water; bold and steep to on all sides. The set of the tides in the locality varies towards every point of the compass in the course of twelve hours; ordinary springs run very rapidly, and during S.W. gales and stormy weather, there are furious eddies, making it very hazardous to approach within a considerable distance of the rock; the rise of tide at such times is also full ten feet above the ordinary springs. The sea roars terrifically, as with the full force of the swell of the Atlantic it precipitates itself against the rock. In calm weather the noise is heard at a great distance.

It will be easily imagined that this rock is very difficult of access, except in very fine weather. It was only after, long, patient, and persevering toil, that the attendant difficulties were surmounted about twenty years ago, and a beacon was completed, having the centre of

its globe 24 feet above the level of the sea at high water. Portions of the wrecks of several vessels jammed into the interstices of the rock were discovered, and told a fearful tale of the loss of life and property on this treacherous rock.

It was found that the beacon was so frequently completely buried in the waves that to make it effective it would be necessary to give it greater elevation. In 1848, the stone beacon was cased outside with thick iron plates, (perforated,) and a new iron mast and globe erected, with the centre ten feet higher than the former one. The total cost incurred in the erection of this beacon, with the last improvements, was £11,298 4s. 1d.

It has long been desired that a lighthouse should be substituted for this beacon, and in the course of last autumn steps were taken by the Trinity Corporation for commencing operations on the Wolf. The premises of Messrs. Bolitho, at Penzance, being found suitable for a building yard, and furnished with all other necessary accommodation, were rented, and shortly afterwards Mr. James Douglas commenced his new undertaking. Owing to a long prevalence of weather unsuitable for working on the rock, the principal operations have hitherto been preparatory; but as summer comes on the work will be prosecuted with that energy and sagacity for which the family, who have for many years been employed in the erection of rock lighthouses, are eminently distinguished.

The diameter of the base will be 40 feet; over nine tenths of this space the rock has to be squared down to 3 ft. 6 in. below the level of the upper point of the rock, and over the remaining tenth of the diameter 1 ft. 6 in. deeper, so that the lower courses will be built five feet into the solid rock, and sixteen feet below the level of high water springs. The first nineteen courses bringing the tower up to 38 feet from the base, will be of solid granite, the diameter of each succeeding course being reduced by 9 inches, that of the tower at the above elevation is reduced to 25 feet at this level, and on the south-east side of the tower will be the entrance door, made of strong metal, and fitting so exactly as to be perfectly impervious to water, and capable of resisting the utmost impetuosity of the waves. The ascent to the door is by thirty-six metal steps, built in with the solid granite. From the level of this entrance door a circular staircase, left out of the centre of the solid, leads to the water-room, the floor of which forms a landing place for stores. The thickness of the walls of the six rooms above the solid decreases gradually from six feet to two feet, the height of each room being ten feet, with each stone floor forming an arch overhead, and nine inches thick—all granite.

In the store-room is a crane for hoisting in the supplies,—this is ingeniously contrived to launch out, when required, and when not in use it is completely housed, leaving the aperture through which it slides impenetrable by water. The parapet will project two feet, forming a gallery 3 ft. 6 in. round the lantern, with a strong metal rail surrounding it.

The lantern will be 19 feet high and 14 feet diameter, resting on a

five feet pedestal, and surmounted by a five feet cowl and four feet gilt vane. The roof and framework of the lantern are of gun-metal. The centre of the lantern is to be 110 feet above high water spring tides. The crest of the waves, however, will frequently go clean over it, as proof of which, the fog bell affixed to the gallery of the Bishop Rock Lighthouse—one hundred feet above the level of high water mark—was broken off by the sea in a heavy gale of wind during the winter of 1860. The part from which it was broken will be amongst the remarkable curiosities at the great Exhibition this year.

Plymouth Paper.

EVENINGS AT HOME AT THE NAUTICAL CLUB:—*The Chairman's Address—a Glance at Maritime Matters—Progress of the National Lifeboat Institution—Altered Condition of Ships of War—Conversion of Wooden Walls to Iron Smokers—the Merrimac, Monitor, and Naugatuck—the Commodore's Lament—Portsmouth Harbour threatened—the Spithead Forts—Projected Iron Ships of the United States.*

The Chairman, in opening the business of the evening, said, of the subjects to which he would allude, there was one that took the lead of all others by reason of its importance to this country as a maritime nation. It had been foreseen of late that the time was not far distant when iron would be substituted for our wooden walls, and the change had in part taken place. But the American civil war had produced an event which would abundantly hasten that change. Our attention has of late been much devoted to the subject of naval gunnery, and there has been a kind of contest between gunnery and iron, whether a ship might be so plated with the latter as to withstand the effect of the former. But in the midst of these experiments a new application of both to naval warfare has been put to the test in the United States, which bids fair to revolutionise the whole system of our naval construction, and our huge wooden castles will become the models of a day that was gone by. They have done their work and have done it well too,—another class of ship is at hand, and England's wooden walls must become walls of iron. A plan of Captain Cowper Coles for constructing invulnerable ships, called Cupola Ships, has been copied in the States, and has been eminently successful. His friend Albert, with the assistance which he would have, would go into that subject for him.

Another subject for their attention was the intended forts for the protection of Spithead, or perhaps Portsmouth, but he believed that it had been shown that they would protect neither the one nor the other, and there was a plan of one of our engineers for running out a pier no less than three miles from Langston Harbour towards Spithead, which had been highly approved of, it was said, by military men,—

but he would leave it for the Club to consider. As far as his opinion went, it was one of the most dangerous proposals he had ever seen. He trusted that such a suicidal measure as that would meet with the fate it deserves,—although it had been listened to in a lecture at one of our institutions by some few, very few he believed, of the members of the two services.

An amendment, continued the Chairman, had been proposed in reference to certain parts of the Mercantile Marine Act,—the rules of the road had been touched, but not with a finishing hand, and other clauses which nearly concerned shipowners seemed to be well looked after by those gentlemen.

Looking abroad, there seemed to be business doing on the African coast, at a fine island called Zanzibar. The Portuguese, as a nation, cut but a poor figure in benefiting the people of the countries of which they were the early discoverers. They were now much as they were found two hundred years ago. Zanzibar, he had seen in their work, the *Nautical*, was considered, metaphorically, the Queen of the East,—it possessed all the advantages of the tropical climes, was far from being a sickly station, and had a position of considerable importance in a political point of view. The French no doubt will develop its resources of all kinds which the Portuguese clearly never would do; and progressing as we were in Australia, North, South, East and West, we should wish them good progress with their new bantling, believing, as he did, that we had one at the Feejee Islands to correspond with theirs in New Caledonia and those poor Loyalty Islands.

Who is it, continued the Chairman, that will take New Guinea in hand,—a splendid country, its coasts provided with magnificent harbours, and well peopled with *Tartars! Nous verrons*. Whoever does it will have enough to do.

Then our friends, the Russians, have an eye in the way of Tartary as it overlooks Japan and the little islands of Tsu-sima, are admirably adapted as outposts, a kind of look out station at the entrance of the sea of Japan, very conveniently situated for them. But the Japanese they know by this time are not a people to be trifled with.

He would now ask the Secretary for the report of the National Lifeboat Institution, and his friends whom he saw around would favour the Club with their opinions on the topics to which he had alluded.

The Secretary then read the following report of the last meeting, at which Thomas Chapman, Esq., F.R.S., presided.

A reward £13 was voted to the crew of the lifeboat of the institution stationed at Palling, Norfolk, for going off in the night and rescuing eight men from the brig *Jane*, of North Shields, which, during a strong gale of wind, had struck off Palling on the 5th ult. The vessel was ultimately brought to a port of safety.

A reward of £11 was also voted to the crew of the Teignmouth lifeboat, belonging to the institution, for putting off in the night and bringing to port the sloop *Elizabeth*, of Teignmouth, and her crew of

three men, which, during a gale of wind and heavy sea, had become disabled on the 5th ult.

A reward of £34 was voted to the crew of the *Caistor* lifeboat, belonging to the institution, for putting off on the night of the 26th ult., during a dreadful gale of wind, and rescuing, at much risk of life, the crew of nine men of the brig *Sisters*, of Whitby, which had sunk on the Barber Sands. The case was reported to have been a very gallant one indeed.

A reward of £14 was also given to the crew of the *Lowestoft* lifeboat, in connection with the society, and £3 15s. to the crew of the harbour steamtug, and the thanks of the institution inscribed on vellum to Captain W. Rivers, the harbour-master, for rescuing four of the crew of the brigantine *Matilda*, of Stockholm, which, during a heavy gale of wind, was wrecked on the Corton Sands, on the night of the 26th ult. When saved the poor foreigners were nearly exhausted, and declared that they could not have lived another half hour.

A reward of £7 was likewise voted to the crew of the *Drogheda* lifeboat of the institution, for going off in stormy weather and saving the crew of four men of the brig *Minerva*, of Workington, which had stranded on Drogheda bar on the 7th ult.

A reward of £17 was also voted to the crew of the society's *Budon Ness* (near Dundee) lifeboat, for going off in the night and saving the crew of six men of the schooner *Elizabeth Hannah*, of Newburgh, which, while entering the Tay, had foundered, during a gale of wind and very heavy seas, on an outlying sand bank, on the 21st ult. Captain Speedy, of the steamer *Hamburg*, received also the thanks of the institution for his valuable services on the occasion.

Rewards amounting to £37 10s. were paid to the crews of the institution's lifeboats stationed at Whitby, Rye, Camber, Yarmouth, *Caistor*, Walmer, Dundalk, Ferryside and Lossiemouth, for either assembling or putting off with the view of rendering assistance to vessels which had signals of distress flying, but which did not afterwards require the services of the boats.

The *Redcar* lifeboat, belonging to this institution, succeeded on the 1st instant in bringing the schooner *Banff*, of Harwich, which was in a disabled state, into a port of safety. This lifeboat is the oldest one in the kingdom, and has been instrumental in saving scores of shipwrecked men.

A reward of £9 was voted to the crew of a *Pakefield* yawl for going off and rescuing, at considerable risk of life, six out of eight of the crew of the brig *Adonis*, of Colchester, which, during a gale of wind, had been wrecked on the Newcome Sands on the 6th ult. The poor men had taken to the rigging, and the captain, while trying to save his wife, was unfortunately washed overboard with her in the course of that fearful night.

A reward of £6 was voted to a boat's crew of six men for going off and saving, at great risk of life, four men from the schooner *Elizabeth*, of Aberdeen, which, in stormy and thick weather, had stranded near Spycmouth, on the Banffshire coast, on the 18th of February.

! Rewards amounting to £26 10s., were likewise granted to the crews of shore-boats for rescuing the crew of three men of the schooner *Diligent*, of Carnarvon, which had sunk off Abersoch, near Pwllheli, on the 23rd of January; twenty-seven men from the ship *Tiger*, of Bath, United States, which was wrecked off Templetown, near Waterford, on the 22nd of January; seven persons from a fishing-boat which had drifted on the rocks near Spiddal, on the coast of Galway, on the 30th of January: four men from a boat which had struck on a reef of rocks near Dunree, on the coast of Donegal, on the 29th of January; thirteen persons from a boat which had capsized off Bellmullett, county Mayo, on the 19th of January; two men from a boat which had sunk during a sudden squall of wind off Scarborough, and three men from the sloop *Ceres*, of Watchet, which had foundered off that place on the 9th of March.

It was reported that the institution was about sending to the International Exhibition a model of its lifeboat and transporting carriage; and various other articles for saving life from shipwreck. A very large wreck chart of the British Isles for the past year would also be exhibited there by the society.

During the past month the institution had sent a new lifeboat and a transporting carriage to Plymouth. The boat was the gift of Miss Burdett Coutts to that port. Another lifeboat had been sent to Dundee, the cost (£300) of which had been collected by Mrs. Hartley, of Bideford. Another lifeboat was ready to be sent to Kingstown, the expense of which had also been collected by Miss S. H. Bertie Cator. The institution decided on forming a lifeboat station at Port Leven, near the Lizard,—Mr. Robartes, M.P., having again generously promised to contribute £150 towards the expenses of the same. It was reported that a friend of the society had sent £200.

The Shipwrecked Fishermen and Mariners' Society had sent to the institution £150, which had been chiefly collected in threepences from its sailor members. G. J. Fenwick, Esq., of Northumberland, had also presented to the institution £250, to enable it to plant an additional lifeboat on the Northumberland coast. Captain Ward, R.N., inspector of lifeboats to the institution, gave a satisfactory account of the twenty-five lifeboats which the society had on the West coast, each of which he had recently inspected. Payments amounting to £760 having been made on various lifeboat establishments, the proceedings terminated.

The above report having been read, Albert rose, as he said, for the purpose of offering a few remarks on the altered condition of naval matters,—our naval defences, indeed, he would call them; for he was sure that the days were gone by when England would lift her arm with any other intent than that of defence or requiring restitution in a virtuous cause.

The remarks of their worthy Chairman were not exaggerated in any degree. The present navy of England might now be said to have gone by, and that power which could soonest replace wood with iron,

especially in the invulnerable form which Captain Coles had introduced would be then mistress of the sea. The state of the case had been so admirably stated in reference to the effect of the great change on our navy, by the Duke of Somerset, in the House of Lords, that coming, as it did from his Grace, with the authority of First Lord of the Admiralty, his plain unvarnished tale should be preserved among their minutes as an important historical episode. It ran as follows:—

The Duke of Somerset said, he must remind their lordships that a few years ago, in the summer of 1859, when he first came into office, the Admiralty was called upon by the public, by that house, and the House of Commons, not to lay aside the building of wooden ships, but to add to the strength of the navy; and when he first came into office he found a programme for the building of a large number of wooden ships, and also of two iron ships. He did not think it right to depart from that programme; and accordingly two iron-cased vessels were proceeded with, one the *Warrior*, and the other the *Black Prince*. But the government resolved before many months to build four of these iron vessels instead of two. It was found inconvenient to have ships with so large a draft of water, and accordingly, whereas the *Warrior* and *Black Prince* were built of 6,000 tons, carrying 26 guns, the *Defence* and *Resistance* were now constructed of 3,700 tons, and carrying 12 guns. A new question was now raised, that these guns were not sufficiently protected, and accordingly a new class of ships was set on foot, which he might call the *Valiant* class. Of these one would be launched in August, and two others not until next year, owing to a failure on the part of the contractor.

With this question of vessels arose another great question of armaments; and after further deliberation three vessels were laid down in the summer of last year, which he might describe as of the *Minotaur* class, of 6,700 tons, carrying 40 guns, all of which were protected, and of 1,300 horse-power. Their lordships would find that they had ten vessels of iron. Four of these were already launched, as he had mentioned, and one more would be afloat in August, and effective this autumn. He, however, did not feel satisfied with the progress which had been made, and accordingly he had directed five wooden frames to be lengthened and fitted with iron plates, thus producing a class of vessel of 4,000 tons, and carrying 32 guns. Three of these would be ready this autumn, and two more early next year.

Then came to be considered the question of the mode of building these vessels, and of fitting them with cupolas, according to the plan recommended by Captain Coles. Hitherto this plan had been considered, but it had never been tested in any way. Accordingly one of these cupolas was subjected to the severest tests; and he might mention that one of the advantages attending the cupolas was that guns could be fired from them much more rapidly than from the deck of the *Excellent*. They fired at the cupola first some eight or ten shots of 40lbs., then some fifteen or twenty of 68lbs., and, finally, some forty shots of 100lbs., but without effecting the slightest injury, except in one instance, where one of the plates was deficient. Then again, it

was found possible to fire two guns in the same cupola, thus doubling the effect of the discharge.

At the time when these experiments were being made no particular alarm was felt, and accordingly he (the Duke of Somerset) had not thought it necessary to apply to the Treasury for an extraordinary grant, but considered the question might well be left to the decision of parliament. But he had now ordered the construction of a vessel wholly of iron, to be fitted with cupolas on Captain Coles's plan. This ship was to be 250 feet long, its tonnage was to be above 2,000 tons, and it was to draw only 20 feet of water. That would be a very powerful and effective vessel. But it might possibly be said, why not try the effect of a cupola on a wooden ship? Well, that had been thought of, but it occurred to him that if he had tried the experiment on an old ship, and a failure had taken place, it would have cast discredit on the whole system. At the same time, it was his belief that perfect success would attend the cutting down of wooden ships for the purpose of covering them with iron plates and fitting them with iron cupolas. But in order to make sure, he had thought it best to order an iron ship to be constructed on this principle. It was a ship carrying guns in a cupola, and was perfectly capable of going round the world.

Thus six different classes of vessels had been constructed; but still he had not felt satisfied. The iron plating on these vessels was not yet strong enough; and, in the present state of discovery, the iron plates did not contribute to the strength of the ship. But this evil he had no doubt would be remedied. The noble earl asked him what the Admiralty were going to do with their wooden ships. That was not an easy question to answer; but at present they were converting, in the way he had described, five frames of line-of-battle ships, three of which, as he had already said, would be ready in August, seven frames of frigates, and eight of large corvettes. His opinion was that it would be possible to cut down twenty line-of-battle ships, and adapt them in the way described, and, consequently, if the world wished for iron ships, this country was in a position to compete with any other power.

He then came to the question of the late conflict which had taken place in the American waters, and he would endeavour to distinguish between what they had learnt by it and what not. He thought it was already the undivided opinion of all experienced men that when iron ships met with wooden ships, the latter could not live. But there was this wide difference. They all knew before that iron ships would be necessary for purposes of coast defence. But if America and other foreign powers followed the example, and had iron ships also, this country must be prepared to have iron ships in all parts of the world. They must now send iron vessels to any portion of the globe where iron vessels were likely to be needed.

He then came to the financial question, and he did not think that the consequences were likely to prove so expensive as had been supposed by some persons. But another result of the late action was this. It had led some persons to suppose that iron ships were absolutely

invulnerable. He (the Duke of Somerset) confessed it had led him to a very different conclusion, and he though the invulnerability of iron vessels was a matter of very great doubt. Much had been said about the powers of the *Merrimac* in running down the Federal frigate; but it must be remembered that the frigate was at anchor, and the *Merrimac* was a mass of some 3,000 tons, though not moving at a very rapid rate. He believed her utmost speed was some five or six knots an hour. He believed that one of our own iron frigates attacking a wooden vessel under such circumstances might have effected a similar result. So that he did not think the result conclusive; at any rate, it would not be so easy for the *Merrimac* to run down a steamer in motion, which would escape her much as a hare would run before a greyhound. It yet remained to be learnt how far the *Merrimac* was injured by the encounter. He believed it was quite true that the *Merrimac* was defended with railway iron bars, but they had been previously rounded.

The *Monitor*, on the other hand, was a vessel of very curious form, one which Mr. Ericsson, in a letter which had at least been attributed to him, had declared to be quite new. That letter purported to convey an admonition to the Admiralty, and he (the Duke of Somerset), on the part of the Admiralty, felt much obliged for the admonition; and if Mr. Ericsson would only continue his experiments, he would save the department a great deal of trouble at Shoeburyness. But the *Monitor*, in fact, was something between a raft and a diving bell. Her deck was only two feet above the water, when the water was smooth, and there was no protection on her deck whatever. The crew and officers consequently lived under water, and their only means of ventilation was by a pipe which ran up through the deck; so that living on board such a vessel could not be very pleasant. Their cupola, moreover, was built with inch iron over inch iron; ours were made of four solid inches of iron, which was a great deal stronger. That experiment of the superior strength of solid iron had been tried repeatedly, and upon that subject there was no doubt. Thus far their vessel was defective. The *Monitor*, moreover, was not fitted to go from port to port. He perceived from a letter in a Montreal paper, it had been stated that the *Monitor* had been all but lost on the voyage; that she would have sunk had it not been for the assistance of a steamer; that her crew were nearly stifled by smoke, clouds of vapour from the furnaces, and foul air, and that with 400 men on board, life was very much like what it must have been in the black hole at Calcutta. It was stated that during the action such was the want of ventilation in the ship, that the eyes and noses of the seamen shed blood; whilst the concussion in the cupolas was so great as to disable many of the artillerymen. This evil of concussion in the cupola, he might observe, had been remedied in the case of our own vessels now in construction,

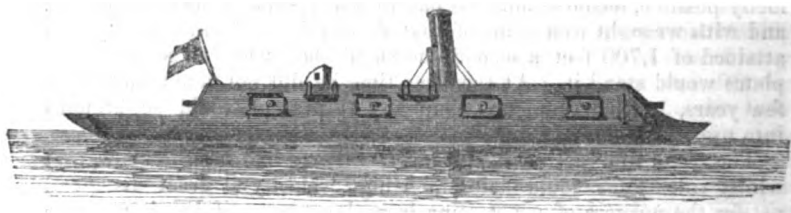
Then, again, much was said of the American 11-inch and 9-inch Dahlgren guns; but the question was, what velocity did they produce? One of their largest guns attained a velocity only of 900 feet in a

second ; whilst a 68-pounder of ours attained a speed of 1,500 feet in a second. That was also a rifled gun ; but what was more remarkable was, that rifled guns would not do. It was at first supposed that nothing was like rifled guns ; but in order to attain the highest velocity possible, recourse must be had to heavy, smooth-bored iron guns ; and with wrought iron guns of that description, when a velocity was attained of 1,700 feet a second, he should be curious to see how iron plates would stand it. At the same time he did not doubt that, in a few years, much larger guns than any at present would be brought into use.

The result of experiments, however, hitherto had been to show, that whilst rifled guns could maintain a high velocity at great distances, yet for the purpose of penetrating iron plates near at hand, recourse must be had to wrought-iron smooth-bored guns. Following the other observations of the noble earl, he (the Duke of Somerset) thought that not merely two, but three classes of ships would be required in the navy. First, it would be necessary to have some speedy vessels to accompany our merchant shipping if they needed defence—the Cunard and other liners now simply relying on their own speed to escape an enemy ; secondly, there must be another class of ships to cruise at sea ; and, thirdly, there must be a class of iron vessels to defend our coasts and harbours. But he thought it would be most unwise to proceed more rapidly in the matter than they were now doing. Some wooden ships would still be of use for the purpose of serving as despatch vessels, and for the transport of troops ; but as to the building of ships generally of wood, he thought they might hold their hands. No new wooden line-of-battle ships had been commenced ; and those which had been laid down were readily convertible into iron-plated ships.

As to the question whether ships built upon Captain Coles's plan were capable of being an entire substitute for forts, his opinion was that an iron vessel if disabled in action, would be very glad to get under the guns of a fort ; and it must be remembered that there was no limit to the size of guns which could be placed in a fort, while after all there was a limit to those which could be worked from an iron ship. They of the Admiralty no doubt were apt to think that vessels alone could do the work, and would like to take all the money and use it for the purposes of defence in their own way ; but he thought the question must be gravely considered, and it would be most unwise to jump hastily to a conclusion. Another circumstance connected with the recent conflict was that the guns of the *Merrimac* could not be vertically trained, they could not be deflected beyond a certain point, reminding one of the incident in the memoirs of Lord Dundonald, where he captured a Spanish barque by getting in under her guns and boarding her, whilst she could only fire over his head. If it were possible to forget the frightful loss of life which occurred in these conflicts, and the misery and suffering that were spread over the American nation by the raging of this most unhappy war—these conflicts, viewed solely as matters of scientific experiment, were of the highest interest.

The foregoing lucid statement was received with marked attention by the Club, and considered as most satisfactory. The Secretary here added that he had taken pains to obtain some representation of the two American vessels alluded to, the *Merrimac* and *Monitor*, which



The Merrimac.



The Monitor.

he proposed to add to the foregoing, and he believed that in reference to the originality of the latter the Americans themselves considered it was due to Captain Coles. They say that—

The idea of the new shield ship proposed by Captain Coles is evidently borrowed from Ericsson, unless it can be proved that Ericsson has appropriated the invention from Coles, for both are manifestly the same. And they think that—the evidence as to originality to be strong on the side of Ericsson, as the American gunboat is already built, and has fought a battle, whereas the British craft is not yet in existence, but only proposed.

But Captain Coles's letters, printed in the *Times*, shows that his cupola was proposed as long ago as 1855.

Another iron vessel, a steam gunboat, of the Americans being now employed, a description of her might be acceptable to the Club. This was the *Nangatuck*.

She is an iron screw steamer, constructed in the usual way, all being secured with beams and angle bars of the best material. The lines of the hull are not unusually sharp, as is the case with the famed Stevens battery, but present very much the appearance of one of our old-fashioned Sound propellers. She is not, as is generally supposed, intended to be a model of the Stevens battery, but it is merely designed

to illustrate some of the novel ideas connected with that monster engine of war—namely, the ability to sink and raise a vessel with great rapidity; to steer and manage her by means of two propellers placed at each side of the rudder, and taking up the recoil of the gun by means of india rubber. Experiments already made have proved the successful attainment of these points to her constructors, but yet remain unsatisfactory on the mind of the public.

The hull of the vessel is constructed of iron, 101 feet in length, 20 feet beam, and seven feet depth of hold. She draws five and a half feet light, and nine feet when submerged, and her speed, it is calculated, will be eleven miles per hour when light, and five and a half when submerged.

The principal features for her protection from shot and shell are, first, the setting of the vessel two feet lower in the water when going into action, by means of water-tight compartments, two feet deep, between the main deck and outer covering, so arranged as to be rapidly filled or emptied by powerful steam pumps. This does away with the necessity of carrying the weight of two feet of iron armour; while it substitutes to the greatest possible extent, the best known armour—water; for experience has taught that when a ball strikes water it takes an upward direction, and will, therefore, prove perfectly harmless; and, in this instance, should a ball pass through the deck, it must pass through the bulwarks, unscen and unheard by those between decks. This peculiar arrangement will also give greater speed to the vessel while cruising, chasing, or retreating, inasmuch as it will be able to throw overboard the weight of the two feet of water between decks, and for the same reason to pass over bars and into harbours which she could not otherwise reach. Second, the use of an iron-clad bow, curved inwards, and plated with two layers of half-inch plates, strongly riveted and bolted, presents the appearance of a ram, which, no doubt, could be effectively used for running down wooden vessels. The curving of the bow is so admirably arranged that only by the merest chance would a ball strike any spot at right angles, and so must glance off; and when submerged, she presents but a small surface upon which the enemy can bring their cannon to bear. Her sides above water-line are made of white cedar, fully one foot thick, which is so soft in its nature as to allow a ball to pass through without splintering.

The machinery, which is situated abaft midships, consists of two horizontal high-pressure engines, 14-inch cylinder, and 24-inch stroke, working independent of each other, and driving the two propellers at either side of the rudder; an ordinary locomotive boiler, two double oscillating donkey engines, driving two of Andrews' pumps, capable of throwing out 900 gallons of water per minute. The ability of this vessel to round rapidly on her own centre, without making headway, by means of the two screws, instead of the ordinary means employed in making the circuit of a vessel, gives her remarkable and important facilities for manœuvring in action. In connection with her speed, it will enable her to overhaul one after another of the enemy; run close

alongside; present herself for action in the most effective position; bring her big gun to bear in any direction; turn in narrow channels, and, if necessary, retreat in any direction with facility. The two screws form two distinct means of propulsion—that of driving the vessel and enabling her to be steered in case of accident to the rudder, which is double the ordinary security against the breaking of machinery in action or otherwise.

The armament consists of one 100-pound rifled gun and two of James's 12-pound howitzers. The heavy gun is mounted amidships, pointed towards the bow, and is loaded from below by depressing the muzzle downwards, which is effected by means of pulleys ingeniously constructed for that purpose. This gun is loaded by means of a moveable charger, which can be raised or lowered at pleasure. The ramming is accomplished by a sort of piston-rod, elevated on a line with the muzzle of the gun, which is also worked by pulleys, thus affording the celerity of loading and firing every half minute. This gun rests on a shot-proof iron carriage, of which the recoil (only six inches) is taken up by the employment of large india-rubber springs.

The hull is divided into four water-tight compartments, and on descending the gangway of either of these compartments, you find yourself upon the second deck, in a small iron box, yet having ample accommodation for the purposes for which they have been assigned. The cook's galley is situated at the bow; next come the sailors' apartments, then the magazine and rendezvous for action; and next to this the engine-room, which is abaft midship. The officers' quarters are on deck, comfortable looking, but rather limited. When in action but one person is necessarily exposed.

All this iron and steam and heavy guns, exclaimed the Commodore, are revolutionizing the whole system of our navy. Our towering castles of wood are mere monuments of a past age, doomed to be annihilated, cut down to make cupola ships—our once boasted wooden walls can no longer show themselves at sea. "Hearts of oak are our ships, jolly tars are our men," must become "Hearts of iron are our ships, clad in armour are our men," and we shall be hammering away at each other like *Merrimacs* and *Monitors* with no effect; in fact, there will be no end of drawn battles—the pride of the sea, the ship in all her majesty of swelling canvas that as Byron said used to

"Walk the waters like a thing of life,"

will become a kind of nondescript—a mass of iron just above the surface of the water, with a pump here and there, an air-pipe, and a smoke-stack.

Aye—added Albert, the poet sang of old, and so it still is,—

"Tempora mutantur et nos mutamur ab illis."

And my worthy salt friend have we not as much iron as any power in the world, good coal to work it, and good stout arms to fight in armour if we must do so.

Yes, we must go with the stream of time, returned the Commodore,

but it goes against my heart point blank to see that we are persevering with those forts that are to be clad in armour too, and stuck up at Spithead as defences. We have passed through times when we have been at war with the whole world, and never troubled our heads about an enemy coming to us ; the difficulty was for our ships to get at him, but now we are not to consider ourselves safe unless we have these fixed forts, which Captain Coles has shewn one of his ships may run past with impunity and do what she pleases. Indeed, sir, although I never have yet believed that this country has passed the meridian of her greatness, I shall begin to entertain serious doubts whether she has not done so, and taken the first step in her decadence with the construction of these forts, to testify to the world, her consciousness of her own failing strength.

There was much dissent from this last sentiment evident in the Club, as Albert rose and prefaced his remarks by the observation that their excellent friend, the Commodore, who was a good authority in most cases, had a right perhaps to look at these modern innovations of scientific improvements as an old seaman who could ill brook the idea of his favorite craft being all laid aside ; those in which he had sustained the honor of his country against any odds. Still there was the fact before them. We knew all about it theoretically, and that it must come on us ; and the Americans sooner than we expected, had given us the benefit of their practical experiment of it. Ericsson's *Monitor* was a very good lesson, and he will find that it has not been thrown away. He might add—

“Fas est ab hoste doceri”

but he did not apply that to the Americans, and he hoped that he might never see the day that it might be.

Referring to these proposed forts, the chairman said he would then put it the Club, which was of more importance to this country, iron ships or the iron forts. The unanimous opinion was that England had always been more dependent on her ships than on her forts. Without snips she could not maintain her position as the great maritime power she had been, and without iron ships now was not even safe, as her shores were in many places open to invasion, that forts were to her secondary to ships, and, therefore, that iron ships were far more important to her than iron forts.

Their worthy chairman, continued Albert, had alluded to a design proposed by a civil engineer to carry out a pier from Langstone harbour entrance for three miles towards the Spit buoy. Proposed, he said—

Yes, proposed, observed the Commodore, one which he hoped like the forts never to see.

But which (continued Albert) had formed the subject of a lecture to a few professional listeners in one of our numerous London institutions. Now he quite agreed with their worthy chairman, that it was fraught with mischief to Portsmouth, the harbour of their very

principal arsenal. It had been held as a great principle in reference to the preservation of Portsmouth by a very high authority, no less than the late hydrographer to the Admiralty, that every drop of water that flowed into Portsmouth harbour was of importance, and he quite agreed with him, because it tended to keep down the bar. But what would be the effect of this pier from Langstone, literally he might say to throw the last hour or two of the flood towards the Solent; to raise, in fact, a barrier to the progress of the tidal stream into the harbour during the last hour or two of every flood. The effect of that loss would soon show itself in a lower level at high water mark, in addition to the silt it would eventually throw into the channel between it and the Spit Sand and on the bar. If we were bent on commencing the destruction of that harbour, no surer course could be adopted. Even on this principle alone he considered that placing a huge fort on the Spit Sand would in itself prove to be an increasing obstacle to the flow of the tide, and would assist nature in carrying on her destructive process of filling up deep water channels—that levelling system, if it might be so termed, which in these places was by no means desirable. He deprecated, therefore, everything that contributed to that end, and hoped that neither piers nor forts would sully the surface of the fair waters in the approach to Portsmouth harbour.

The Commodore quite agreed with Albert in these remarks, and was glad to hear him express himself so decidedly. We should be placing landmarks, he said, for channels and blocking ourselves in by thus attempting to block our enemies out. We should have a reserve of iron ships and men, ships that might go and meet the foe as they were wont to do in former days. The whole scheme was an engineering affair, but dealing with salt water, was really a case for ships and seamen and not one for them. The panic of invasion too had been set at rest by these iron ships. As the transporting vessels would necessarily be of wood, they would be sunk by the iron cupola ships ranging alongside of each of them as they approached.

The subjects of our discussion this evening, observed the Chairman, have partaken rather of the character of the defences of our coast, and so forth; but the sudden change which has recently overtaken us in the means of attack and defence is of sufficient importance to justify our attention to that subject. The *Monitor* had been held out to us as a warning, and the importance which appears to be attributed to such defences by the Americans may be seen by the account of their iron clad navy that had appeared from their own journals in the columns of our *Daily News*. The *Monitor* was not lost upon us, and he thought that this account was worth preserving for reference, as it not only gave us a clear view of what they were doing, but the great importance which they attributed to such vessels as moveable defences in reference to those that were fixed. They say

However much or little the encounter of the *Merrimac* and *Monitor* teaches, in America as well as in England it has stirred both the public and the government to action as no mere reasoning ever could. It may now be convenient to gather up and review our information

respecting the recent action of the United States government in reference to iron clad ships.

It has been said that the *Monitor* was the work of a private citizen, and that it was forced upon the government against its ideas and wishes. In truth, however, as long ago as the special session in July last, the Secretary of the Navy called the attention of Congress to the subject of iron clad vessels, and an appropriation of 1,500,000 dollars was made for the purpose of having one or more constructed. On the 6th of August an advertisement was published calling for plans. By the 16th of September the board of three naval officers appointed to examine and consider the plans, presented their report, and recommended Captain Ericsson's plan among others for adoption. The contract for the *Monitor* was signed on the 4th of October, between the Secretary of the Navy and the builders. It provided for the completion of the vessel by the 4th of January, *i.e.*, one hundred days, and for payment by the department in the usual way; and further, that if the vessel sustained a satisfactory test, she was to be accepted, and thereupon the last 25 per cent. of the contract price was to be paid. The *Monitor* was one of the three iron clad vessels which were undertaken about the same time, a fact which was stated in the messages of Secretary Welles to the Congress last autumn. That document was published in England, but the attention of the English press was mainly directed to certain portions of it better calculated to sustain a factitious excitement, and this part was generally overlooked. From the following passage in the report of the Board of Naval Officers, of which Commodore J. Smith was chairman, it will be seen that the expectations of the builders of the *Monitor* were not romantic. They said of Captain Ericsson's design:—

This plan of a floating battery is novel, but seems to be based upon a calculation which will render the battery shot and shell proof. We are somewhat apprehensive that her properties for sea are not such as a sea-going vessel should possess. But she may be moved from one place to another on the coast in smooth water. We recommend that an experiment be made with one battery of this description on the terms proposed, with a guarantee and forfeiture in case of failure in any of the properties and points of the vessel as proposed.

Price 275,000 dollars; length of vessel, 172 feet; breadth of beam, 41 feet; depth of hold, 11½ feet; time, 100 days; draught of water, 10 feet; displacement, 1,255 tons; speed per hour, 9 statute miles.

Various delays occurred in the construction of the vessel, which was not completed by the contract term; she was launched on the 30th instead of on the 4th of January. The congratulations of the navy department in answer to a telegraphic despatch announcing the event, concluded with a request to "hurry her for sea, as the *Merri-mac* is nearly ready at Norfolk, and we wish to send her there."

Of the iron clad vessels nearly ready for service, the next in importance is Stevens's floating battery, which has been described in detail. This vessel, it is alleged, will make 19 knots an hour, and throw a greater weight of metal than any thing afloat. It will, however, take two or three months to finish her.

The *Galena*, an iron-clad vessel, built at Mystic, in Connecticut, and now being finished at Greenpoint, New York, will be ready for sea in a fortnight. She appears, however, to be too lightly constructed. The *New York Times* calls her "a plated egg-shell." Another "dark" vessel, which, being at present without a name, is referred to as "the formidable vessel now building at the Philadelphia Navy-yard," may probably be classed, without injustice, with the *Galena*.

The *Naugatuck*, a small but strong gunboat, is a present to the government by Mr. Stevens, and a miniature of his large floating battery. Her speed is ten knots an hour. She can carry coal for twelve days, and her armament is a single 100-pounder Parrott gun. Like the *Monitor*, she can be sunk at will nearly to the top of her deck,—thus presenting only a narrow stripe to the enemy's shots. It is supposed, that from the small surface she exposes, she could easily steal up to a hostile vessel in a dark night and deliver her missile with effect.

The *Adirondack*, a wooden frigate, is being plated with iron.

The foregoing vessels represent the iron clad navy of the United States at the date of the action at the mouth of the James River. It remains to speak of the subsequent action of Congress.

The bill introduced by Senator Hale, who is chairman of the Senate's Committee on Naval Affairs, is designed to lay the foundation of the new navy of the United States. It appropriates thirteen million dollars for the building of iron clad gunboats, three quarters of a million for the completion of Stevens's battery, half a million to the Washington Navy-yard, for new buildings and machinery for rolling and forging iron armour-plates for the ships, and one million for the construction of a mail-clad steam battering ram. The project of the last named engine appears to have strongly fascinated the Northern mind. Its construction is, moreover, recommended on the most practical grounds, as the South has two shot-proof batteries nearly ready at Mobile, and two others on the lower Mississippi, against which the Federal squadron in the Gulf would be as powerless as was that at Hampton Roads before it was reinforced by the *Monitor*.

The ram, according to the proposition before the Senate, is to be "of not less than 5,000 or 6,000 tons burthen, and of great swiftness and strength." The *New York* papers observe, truly enough, that "if constructed in accordance with these conditions, the ram will undoubtedly be an engine of warfare against which no iron-plated vessel, battery, or ram in the world, either built, or being built, can cope." But after Congress has done its best, it will depend on the skill of the naval engineers of the United States to combine in one vessel

qualities which governments have hitherto sought in vain in iron clad ships. In the United States, as in England, there are people whose imagination is so overpowered, and who are so possessed with the notion that "something must be done," that no projects are too wild for them to entertain. There are also other people whose professed business is simply to "study public opinion," and who fool the former class to the top of their bent. As a specimen of what these latter can do, we give an extract from the *New York Herald*:—

It is a grand point to have the start in these engines of destruction, and America will have gained that point over every power of Europe. In the event of a war between two maritime powers, that nation which has the most and best iron-clad vessels first at sea will be able to maintain the superiority to the end; for not only can she destroy or capture all the mere wooden war vessels of her enemy, but prevent the construction of iron-clad craft by entering her ports and burning her navy yards, with the ships on the stocks. No coast fortifications now built can keep such vessels out of an enemy's harbours. They can be easily demolished or rendered untenable, and seaboard cities will be at the mercy of iron-clad frigates. How do the powers of Europe and the United States relatively stand in regard to such vessels? The following table will show what has been done and is now in progress in Europe:—

England is building	15
France	14
Spain	5
Austria	2
	36

Of the English, according to the recent statement of Lord C. Paget, six are to be of the same model as the *Monitor*, having a turret and two guns. The *Warrior* and *Black Prince*, already completed, are each upwards of 5,000 tons burduns. In addition to her other guns the *Warrior* carries one which throws a projectile of 450lbs. weight. This vessel is shown by her trial trip to Lisbon, in smooth water, to be in some respects a failure. The iron-clad ram, the *Defence*, appears to be more seaworthy, but a clumsy structure, though it is stated she made eleven knots an hour. Her burthen is 3,660 tons.

The French iron-plated frigate *Gloire* is the first ever built, and a few others have been finished by order of Napoleon which are regarded as improvements on her. But what is done in this respect is kept as secret as possible, while the Emperor gets all the information he can of English experiments and of our own—as, for example, through his minister, M. Mercier, in relation to the Stevens' battery.

The United States have the following already built, contracted for, or proposed:—

The <i>Monitor</i>	1
The <i>Galena</i> , built at Mystic	1
The powerful vessel at Philadelphia	1
The <i>Adirondack</i>	1
The Stevens' battery	1
The <i>Nangatuck</i> , built by Stevens	1
Iron-clad gunboats ordered by Congress	20
Iron-clad frigates recommended by Senate Naval Committee	20
The iron ram recommended by Senate Naval Committee	1
Gunboats ordered by Massachusetts	2
	49

New York State will probably add one or two more, thus making a naval force of fifty iron-clad gunboats, greatly exceeding the combined iron-plated vessels of all Europe, and able to whip the navies of the world.

The *New York Times*, which thinks the permanent interests of the nation should not be forgotten in the midst of all this excitement, with more moderation than its contemporary, points out that it is better to look at actual wants than to indulge in dreams:—

If we once had provision made for our present safety and for the destruction of the rebel iron-plated floating batteries—which we should consider done were the ram, a brace of *Monitors*, and the three iron-clad gunboats now in process of construction completed—we could almost wish that we should pause awhile before going any further, at least that we should await the results of the experiments that will be made with these before spending many more millions. It is our national temperament to “put things through,” and rush to an extreme, and there is just a danger that the mania for iron-clad vessels may cost us dearly. Having provided for our immediate necessities, let us bear in mind that we have large and prospective needs as well as present demands; and that it is the plain dictate of prudence to avail ourselves of all the experiments, on both sides of the Atlantic, that tend to throw light on these novel and still obscure, though overwhelmingly important questions. One thing is certain, we are bound to have an iron-clad navy that will defy those of the most powerful European nations. Already, at one leap, we have taught the world more than all it before knew respecting this new warlike enginery. The country is opulent with creative genius and engineering skill. This genius and skill will now largely take the direction of iron-clad vessels. Let us, therefore, not sink money in building structures which the rapid strides in the science may soon render obsolete.

Nautical Notices.

CHINA TO SYDNEY.

Hongkong, February, 1862.

Sir,—Being a constant subscriber and reader of your magazine for the last seven years, I have the pleasure and gratification to state that, guided by your work, I made a fine voyage from Fou Chou to Sydney. I left Fou Chou on the 24th September; and went North of Formosa to 30° N. and 150° E. From there I turned South, crossed the line in 162° E., passed without trouble East of the Solomon Group and West of Caledonia, and arrived at Sydney on the 21st November, fifty-eight days out.

Being a stranger in these seas, I went entirely by your magazine, although it was against the advice of many English shipmasters. I had Lieutenant Maury's charts and directions on board, and had made several splendid voyages by them; but in this part of the Pacific Maury was short of observations, and his charts are of very little use.

While at Sydney there arrived an English barque 127 days, and another 107 days from Fou Chou; and a Dutch barque which left fourteen days before me had not arrived on the 16th December. These vessels all went through the China Sea, and I should have done the same had I not been in possession of your magazine for 1859, and read those pages (250-5) by Captain Hunter. It is but justice to say that I consider this magazine the most useful and valuable book a captain can have.

Leaving the East coast of China from the end of October to the end of January, bound for Sydney, I would advise a ship to go North of Formosa, if enabled to do so, without loss of time; otherwise, go between the Pescadores and Formosa, and outside of the Bashees, and stand down South or S.E. as high as the N.E. Trade or Monsoon will admit without pinching, keeping topmast studding sails set, and try to reach the line in 140° to 145° E. From there steer along the line and pass between New Ireland and Bougainville; or steer along the North coast of New Guinea, between that island and New Britain, along to the S.E. When in about 10° S. and 157° E., steer South or S.E., and pass either between Caledonia and Fairway Reef or altogether West of these shoals, West of Caledonia, and so down to the N.E. coast of Australia, where you will find the northerly wind prevail.

I give the preference to the New Guinea route because I do not believe that the West monsoon blows so far to the East as Captain Hunter says and as your drawing represents. It may blow to 160° E. as an exception, but not like a monsoon. I spoke to a captain at Sydney who had cruized there for three years, but never found a West wind worth mentioning. This voyage up I was boarded by the officer of a whaler, who said that in their three years' cruise, they had never experienced a West wind. From 10° S. to the line, be-

tween 160° and 165° E., I had nothing but calms and light northerly winds. I did not notice even a sign of westerly wind; but I strongly believe that at New Guinea a constant West wind is blowing from November to February, and am confident that I could make the aforesaid passage to Sydney in thirty-five to forty-five days, especially when under the line in January.

This route is 600 miles shorter than going out to 30° N. and 155° E., and about 2,300 miles shorter than through the China Sea and South of Australia. I think it would be a benefit to captains to point out this route in your magazine, especially to those who strive to make quick passages and are not acquainted with these seas.

In going to Sydney this voyage I passed West of Caledonia, and found the Tamar Shoal (marked, position doubtful) to be in $21^{\circ} 23'$ S. and $161^{\circ} 47'$ E., differing only two miles in longitude from the position laid down. It is about 300 feet square, and about two feet under water. I passed it only half a ship's length off. It is very dangerous, as it lies directly in the track of vessels to and from Sydney.

Coming up this voyage I passed one mile East of the seven islands group of the Caroline Islands. Found their latitude correct, but twelve miles further West, agreeing with Lieutenant Maury's *Directions* (1855), page 807. The south-easternmost is in $5^{\circ} 45'$ N., $157^{\circ} 34'$ E.

The following day (21st January), at 6h. 30m. a.m., I discovered a very extensive shoal connected with Bourdelaise Island. The position of this island agrees with what I made it. It is very dangerous when coming up from the S.E. The fifty feet high island cannot be seen from the S.E. point of the reef. I am, &c.,

P. A. PALACK,

Master of the Hamburg barque Esmeralda.

To the Editor of the Nautical Magazine.

RAPER'S NAVIGATION.—We perceive that this excellent work has just appeared in its seventh edition. In a former volume we have entered extensively into the various details of this work, which has become a favourite one afloat. In the last edition we find the principal feature of improvement to be in the tables of positions, from the resources of the Hydrographical Office of the Admiralty.

RATING CHRONOMETERS BY LUNARS.—We would direct the special attention of our readers to the important paper by Captain Toynbee in our present number on rating chronometers by lunars, a subject to which attention has not yet been given as it should be. Captain Toynbee has clearly shown that chronometers and lunars *together* make the longitude obtained by them at sea a matter of certainty. But implicit confidence in chronometers loses many ships yearly. As in the case of one wrecked on Robben Island, at the Cape, this year, by which many of the passengers and crew were lost. This ship's chronometers placed her fifty miles from the land. It is time that these matters were attended to.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

JUNE, 1862.

ZANZIBAR,—*The Queen of Eastern Africa.*

[The little island of Zanzibar, alluded to in the following paper, originally from the *Revue Colonial et Maritime*, it is said makes up for its insignificant dimensions by its important position in a political point of view. In one of our former volumes it is termed "the Queen of Eastern Africa," and the account therein given of it by the late Admiral W. F. W. Owen, who visited it in 1820, will form an appropriate introduction to the narrative which follows.]

Zanzibar.—The name of this Queen of Eastern Africa is sometimes written Zanzebar, and with the Arabs the one is as common as the other.

Its extent in latitude from Ras Ngoowy, in $5^{\circ} 42' 8''$ S., to Ras Kizimkas, in $6^{\circ} 27' 7''$ S., is about fifteen leagues; and its greatest breadth, from Ras Shangany, on which the town is built, to Ras Chuaka, on the eastern coast, is about six leagues: but its general breadth is from three to four leagues.

This island is the metropolis of the Inaum of Muscat's possessions on the East coast of Africa. It is said to contain a population of upwards of 200,000 souls (Captain Moresby, of the *Menai*, who was there in 1821-22, calculates the population at 300,000, and it has been assumed at half a million) including slaves and free, the bulk of the population being slaves.

The inhabitants are composed of three classes, all professed Ma-

hometans: 1st, Arabs; 2nd, Sowily; 3rd, Negro slaves from all parts of the coast.

As it was formerly the settlement of the Sowily on this coast, so their language, called the African, is that generally spoken on this island, in common with all the places from Patta southward to Ibo; and the inhabitants of that coast are mostly the proprietors of the soil, which is cultivated by Negro slaves, who in a generation or two consider themselves Sowily also.

The Arabs are of two classes: the military, who compose the garrison, rarely exceeding 200 in number, and the merchants; among both of these many Sowily are also to be found. Besides the garrison, the Imaum has generally a disposable force, greater or smaller according to his exigencies. But his military officers are mostly Arabs, and as family ties impose a claim for mutual friendship and support to very remote degrees of consanguinity, so can he seldom use his power against other Arabs who claim to be independent of him, because his own force is composed probably of many relatives of those he would employ them against. Thus it is that with a force sufficient to overwhelm anything that can be opposed to him on that side of Africa, he has for many years been unable to subjugate Mombas, governed also by Wahaby Arabs from the neighbourhood of Ras ul Kheisma, nominally a part of his dominions, and who have family connections throughout his Arabian territory.

The town of Zanzibar, called, I believe, Shangany or Changany, is situated on a low point of sand so named. It has a square wooden fort and a few miserable cannon of small calibre; and the town is very irregularly built, but the avenues or streets are much more open and airy than in Arab towns generally. It may contain 3,000 or 4,000 inhabitants, and is almost isolated by the shallow port; and as much of the port dries at low water, the situation is unhealthy for Europeans; but the land within the town, being more elevated, is said to be very sane, as well as very fertile in all tropical productions.

The general aspect of the island is very agreeable and inviting, and is nowhere very high, but has everywhere a moderate elevation of from 30 to 100 feet. There are some hills at the South end of the island which may be 300 or 400 feet high.

There is a very considerable commerce at Zanzibar with all the ports and places from Chuluwan, near Sofala, to Mecca, in the Red Sea, and with the coast of Arabia, thence to Muscat, and even with Persia, within its gulf, and with every port of Madagascar and the Comoro Isles, and particularly with Bombay and Surat. Until lately it was a mart for slaves, of which full 20,000 passed through it annually for various parts of the globe, and perhaps one-fifth of that number do still pass through the hands of its merchants annually.

From the western shores of Zanzibar the coast of the main land is distant from five to eight leagues; but a part of this space is occupied by shoals, which so long as unexplored are very dangerous, so that the channel is seldom used, except by such vessels as desire to anchor at a place within it.

Captain Boteler, who accompanied Admiral Owen on his expedition, speaks thus of it:—

In no place were we furnished with refreshments so cheap and of such excellent quality as at Zanzibar. Our decks every morning while at anchor off the town exhibited the appearance of a market, where, for a dollar, upwards of two dozen fowls could be procured, sugar of excellent quality at twopence per pound, rice of a superior sort at a penny, and a great variety of fruit in proportion. Bullocks were obtained at from five to eight dollars a head; they were of middling size and of the humped breed. The sheep, of the Angola kind, were likewise very cheap.

The narrative to which we have alluded runs thus:—

We left Reunion on the 30th November, 1860. I had with me two priests of the diocese of St. Denis, in Africa, MM. the Abbès Eymard and Schimpif, a Surgeon of the French Navy, six attendants of the sect founded in the colony (called *les filles de Maria*), various workmen—blacksmith's, carpenters, and some sick-room attendants.

The Society for the Propagation of the Faith had allotted 20,000 francs to the mission of Zanzibar for 1860, and the Consul-General of Reunion, recognizing the utility of this mission to a neighbouring coast, had assigned 15,000 francs for it in his budget of 1861. Some special gifts were added to this, so that we were enabled to purchase in France or in Reunion what was required for the following:—1. The ornamenting of a grand chapel. 2. An hospital for European sailors. 3. A receiving-house for the poor of Zanzibar. 4. An establishment for dressing wounds. 5. A surgery. 6. A blacksmith's shop. 7. A carpenter's shop. 8. A small agricultural collection. 9. A house in frame.

His Excellency the Colonial Minister of Marine had recommended the mission to M. le Baron Darricau, Governor of Reunion, as well as to M. le Baron Fleuriot de Langle, Naval Commander-in-Chief on the East coast of Africa; and thanks to this benevolent introduction, these officers were enabled to follow the bent of their generous feelings. Among the favours that were granted to us I may mention the free passage given to the whole mission, and their baggage, on board of the government vessels.

It was in the *Somme*, a French steamer, that we embarked, under the command of M. Ansart, Lieutenant de Vaisseau, to which ship M. Fleuriot de Langle had transferred his flag. These officers, as well as those of the *Somme*, treated us with a care and attention that I have pleasure in reporting here. The course of the *Somme* led us first to visit the isles of Mayotte, Anjouan, Mohelo, and the great Comoro island. On the 21st of December we saw the island of Zanzibar, and on the following morning were in the roads off the town, which is also called Zanzibar, after the island.

This island, situated six leagues from the African continent, in lat. 6° S. and long. 36° E., lies parallel to the coast for about twenty

leagues. Its mean breadth is five to six leagues, and area stated to be 64,000 acres.

Seen from a distance the island resembles an extensive basket of verdure springing out of the water, for it is very low and planted throughout like an orchard. The mango, orange, citron, and spice, along with the coccanut, here display their rich fruit amidst a graceful foliage. The ground consists of deposit from the sea on beds of coral, tolerably thick and of remarkable fertility. From its very nature it is well adapted for the culture of the sugar-cane, and the few hills met with, the abundance of vegetation which covers the island, and its vicinity to the African coast, secures the island a sufficient supply of water. The climate is far from deserving the bad character it has, for it is quite healthy; and, although it is under the equator, it enjoys a much more temperate climate than might be expected from its position. The sea breeze, in fact, and especially that which comes from the S.W. for six months of the year, renders the climate tolerable, and sometimes pleasant, even for Europeans.

The town of Zanzibar stands on the west part of the island, on a spacious sandy point which projects into the roadstead, and its high white houses bordering the strand present an imposing appearance; but it is only necessary to land to find out how badly it is built. The streets are very narrow and sandy, and the eye, fatigued with the strong light of the torrid zone, finds there no verdure on which it can repose for relief.

It was in the evening of the 22nd December that we finally left the *Somme*. The day had been occupied in landing our baggage and transferring it to the establishment of the mission, to which we gave the name of la Providence. Night had already commenced when we entered the boats that were to land us, and in doing so it seemed as if we were again leaving our country, for Reunion and the *Somme* had brought it so vividly to mind.

The people of Zanzibar, who had watched us as we landed and took our road to la Providence, kept back with respect. M. Derche, French Consul at Zanzibar, had sent us some soldiers as guides, who led the way. Following them were the workmen of the mission, then the six *religieuses* (sisters) covered with long veils; M. M. Ey-mard, Schimpiff, Semanne, and myself completed the little cortege. The moon shone favourably on these our first steps of possession. We glided like shadows along the narrow streets of the town, silently asking the blessing of the Almighty on our progress.

On reaching la Providence we could not forbear exclaiming "it is a monastery!" In fact, this house, built of stone, is a large parallelogram, two of its sides being about thirty-seven yards long and eight wide. They are connected at the two extremities and in the middle by three wings of five yards wide and twelve long. There is the ground floor, a stage, and then the covering of the building. Outside the building and the two courts which it forms there is a third court, closed by another building. A garden surrounds the

whole, which is enclosed by walls six yards high. The sisters are lodged in a house in the vicinity that admirably answers to their occupations. The English Consul residing at Zanzibar considered that our building would contain 3,000 French people, were it required. I note this estimate to give an idea of la Providence.

It might surprise any one that we are not living in straw huts. Others have commenced their labours on African soil by sheltering themselves thus under a covering of leaves, and living like black people. Thus they get fever, and fail in the object of their mission. Here, as well as elsewhere, the first thing is to live! Now, to continue well and to be able to commence work in earnest, good quarters are necessary in a house where the air is healthy, that one may live like Europeans, and not expose oneself either to sun or rain. This is the plan we have adopted, and, Providence permitting, we have preserved our health since our arrival. Besides which, we want a very large house for the various works which we shall have in hand.

On the second day we were presented to Seid Medjid, Sultan of Zanzibar and its dependencies, by M. Derche (French Consul) and M. de Langle, the Commandant of the station. He received us in a neighbouring building by the sea side, called the Grand Barza (Bazaar?). He came, with all his attendants, for the occasion, stood at the foot of his stairs, and shook hands most graciously with us as we arrived. In the room where we were entertained we occupied one side and the Sultan and his officers the other; all of us being seated on chairs as in India. The usual questions passed between us about health, the voyage, France, and the Emperor. I had already seen the Sultan on two voyages to Zanzibar, and was not unknown to him. The reception was most cordial. He was told that we had come to cure the sick, to relieve the poor, to instruct children, and to establish trade. Seid Medjid replied that he was happy to see us in his country, and hoped that we should one day be useful both to him and his people.

This young Sultan is an Arab about twenty-five years old; his figure is well formed, and he is a handsome specimen of the Arab. His look is full of intelligence, with a pleasing expression of countenance. His manner is graceful, and although of scarcely ordinary height, Seid Medjid is something dignified in person. One may see in him that distinguished manner which is found among the higher class of Arabs. It is to be regretted that this young Sultan, who excites the sympathy of all that see him, has passed his youth under circumstances so little calculated to develop his natural talents.

When our visit had extended to about twenty minutes a female slave entered the room and presented each of us with a small cup of delicious mocha, then a glass of water *a l'essence de rose*, then cakes, after the Arab fashion. The conversation continuing, Seid Medjid made us offers of service—the winding up of these ceremonies. He told us, according to oriental fashion, that his house was ours,—his country was ours,—and that we might make use of it with him as with a brother. In our turn we replied that we were at his service—

our house, our workshops, everything we had. M. Lcmanne tendered him the resources of his art and the virtues of pharmacy. Then, according to custom, we asked the Sultan's permission to retire, touched hands with him, as well as his officers, and he reconducted us to the foot of his stairs. Thus, at the first contact with these Orientals, we have taken, without knowing it, a high position.

On returning to la Providence we were met by two difficulties. First, the discovery of the state of our things. Nothing was to be seen on every hand but boxes, utensils of all sorts, planks, straw, all our collection thrown pell mell. Those among us who had not hitherto learned the use of a chisel, or knew anything about carpentering and sweeping, had a good lesson now, and it was not long before we were perfect in the art of planing.

The second difficulty was to find breakfast for all our party, the kitchen on board being no longer available. The collation of which we had partaken with Seid Medjid, although royal, would not support us long in the work of arrangement. The skies, which bring our daily bread, aided us. Two breakfasts came to us at once: one from the French consulate,—the other sent by an Arab princess, Bibi Kole, the Sultan's sister (bibi in the language of the country signifies madam, or mademoiselle). The dishes which they sent us reminded us of the days of the patriarchs, or, if you please, those of Homeric repasts.

It would be like forgetting the natural colour of the people here not to remember what served us for knives and forks, as well as seats, on this occasion. Our fingers were the substitutes for these instruments of civilized lands. Yet it would be difficult to find a banquet more seasoned with gaiety. Every one pulled with his hands and teeth as he laughed at the sport. The saffron in all the dishes and all the sauces coloured us with a golden tint, which added no little to the fun, and our merry meal ended, we resumed our work.

[It appears by the letter before us that the work at la Providence progressed so well that on the 25th of December the services of the Roman Catholic church were performed, at which the principal European persons attended. Various details are given as to arrangements concerning these matters, but we return to the narrative with the following.]

At Zanzibar all self-denial to do good or to assist the poor is unknown. Everything which bears the stamp of poverty is as the dirt under foot. There is not in the whole island or its dependencies a single asylum for the distressed. The poor that are sick are literally abandoned in the streets. Aged people may be seen dying under the very walls. The crowd passes by, glances unconcerned at these objects, as unfeeling as beasts of the field at the sight of either suffering or death. In secluded parts will be found youths, children, and women with eyes and limbs eaten into with hideous sores. Swarms of flies settle on these poor creatures and torment them all day. But nothing disturbs them, and they often die where they are in all their neglected misery. On such occasions, from thence the body is taken

and thrown into the sea; and after an interval of time the sea casts the skeleton remains whitened on the beach! If, however, it is considered that a corpse should be buried,—at a short distance from the town a hole is made in the sand, in which it is deposited. The night following troops of jackals hunt about the place. If the grave were protected by a wall or some fence the body would be safe from them; but it is not so. Our feelings are naturally shocked by so much heedlessness, both for the living and the dead, and we mention it to the people of the place. They do not even comprehend us!

When they see us helping any of these poor wretches, or giving them food and lodging, and clothing them, they wonder at us, and often say—"Who pays you for treating the Masquini in this way?" We tell them that Iga commands Christians to love the poor and unfortunate, and to give them every assistance; that when we meet a poor person we do not care whether he is a Christian, Mahometan, Banyan, or African,—our duty is to care for him; that Iga had set the first example, and all Christians should follow it, especially the priests. It is to obey him that we come to Zanzibar, and that we desired to penetrate into the great land, Africa. Such a reply is strange to them, for they can only look to one object in any kind of work—that is, for recompense, and that recompense is money.

Here is another instance by which you may judge of the moral condition of society at Zanzibar.

Every morning at half past seven the bell of la Providence announces to the sick of the place that they may come and have advice and the treatment dispensed by our establishment. Then may be seen the maimed, the sufferers from bad eyes, those afflicted with sore legs and other infirmities, to the number of forty or fifty—sometimes as many as eighty, wending their way every morning to our establishment. Occasionally their sores are so severe as to leave a part of the leg-bone exposed, emitting an odour which is enough to turn the strongest of stomachs. These unhappy wretches it is the lot of M. Lemanne, Surgeon of the mission, to attend; and he does so every day with a feeling of charity which I cannot too highly extol. There are no others emulous of rendering assistance in these cases but the *religieuses* of the establishment. Imagine the surprise, the astonishment, of the Arabs, especially the rich class, at seeing those weak females washing and dressing these horrible wounds; without minding them, they continue for hours their trying occupations, while their visitors stand looking on, following them with their eyes in mute silence. These same men even, who carry a sword in hand, daggers in their belts, and whom you would suppose by their military bearing were terrible fellows, are sometimes obliged to turn aside their gaze from the shocking sights they behold.

When they have recovered themselves they will return to the sisters, who continue performing their work, and by voice and gesture express their astonishment at what they see. Doubtless you would suppose that they comprehend the motive of these charitable acts; not so,—they comprehend nothing. Listen to their questions:—"Who

pays you for such work as this? You ought to be well paid for being condemned to doing it." (I declare that I only translate here their own remarks, often repeated.) In reply to these questions the sisters show them the crucifix on their breasts, and tell them—"Do you see this image? it is the image of Iga, our Master, our God; it is to follow his example and prove our love for him that we have left our homes, our country, and all that is dear to us. No one on earth pays us. Are we asked how we are clothed and fed? In Heaven we shall receive the reward of our labours, and that in the presence of God." One day a couple went away saying, "Their religion carries something to the heart that we do not understand."

Besides the hospital for the poor of Zanzibar and the dispensary abovementioned there was another service to be rendered to the place. The island is frequently visited by European vessels, as well as American, from India and the African coast; and sometimes they have on board sailors whose health requires the rest and advantages of the shore. As yet there has been no such establishment for them; but we have opened one to which these sick persons have come as many as seven and eight at a time. And when a ship is cast away on the coast we receive the crew, especially the seamen, who are always the worst off; and we are glad to offer them mental consolation along with supplies of food and shelter.

We have established a blacksmith's and a carpenter's shop, with the view of making artizans of the youth of Zanzibar. But this is only an outline of our doings; and, notwithstanding the forge of the mission is the most extensive establishment of its kind in Zanzibar, we have been able to render service to several ships, both mercantile and those of the state; also to strangers, and especially to the Sultan, who is indebted to the operatives of the mission for the progress of his sugar manufactory.

Besides these services of indoor work others out of doors are also rendered. M. Lemanne visits the sick at their houses. He is at present the only medical man in the country. The natives who engage in war have recourse to means sometimes cruel and perhaps ridiculous. For instance, here is one among the latter:—They will draw some fanciful figure on a plate in any colour; the plate is then given to the sick person, who licks the outline thus sketched, swallowing what he takes into his mouth; after which he is considered as cured, unless sometimes an evil genius comes and neutralizes the virtue of the remedy. A medical Frenchman is thus likely to render eminent service at Zanzibar, and M. Lemanne ever since his arrival has been gaining in estimation.

As the Arab female is not allowed to have a doctor for any malady whatever, she often has recourse to the sisters of our establishment for advice, and she is always received with attention and even pleasure. By the questions put to them and the answers which they give these visits lead to a veritable sermon. Their dress, their cross, their beads, their mode of life, all form subjects of conversation. An abridgement of the catechism is explained by them, and does not fail

to produce effect. Among these unhappy females, condemned by Mahometan custom to become victims of imprisonment and to be shut up from being seen, sometimes are found Christians carried off from their relations or sold by them, and yet they have retained their faith, however they may have been deprived of instruction from their infancy. A few words and signs is sufficient to recover in these poor creatures the feelings of religion, and to enlighten them on the dignity of woman among Christians. Certainly it is too true that wherever the cross has not been planted, there woman lives and dies dishonoured. In such a country woman has neither the rights of mother nor wife, not even those of companionship—she has none whatever. She is bought and sold, and age always throws her into oblivion and contempt, and full often into misery. Perhaps she has given birth to a child who becomes of importance, perhaps a rich and handsome prince; and while her child aspires to the throne, she who is his mother is condemned to the life of a slave, unknown and neglected. To an Arab his father is all in all, his mother nobody. With such a custom it is not difficult to understand society, but to appreciate the effect of it it is necessary to reside among these people.

I have said nothing yet about schools. We have concluded that before opening them we should make ourselves known and accepted by the population; and with that object we have commenced our proceedings with works of charity. It is by this medium that we address ourselves to the town, the whole island, and even to strangers. Our hospital, our dispensary, the relief which we distribute, are the several means by which we appeal to public feeling, and it seems that an impression is already made on the Arabs, for they have come and asked us to instruct their children. The Abbé Schimpiff is charged with beginning the school and in a short space of time eleven pupils have come to us. As soon as the strength of the mission admits of it, we shall receive a party of young Banians, about ninety in number, who have begged every day to be allowed to come to our school.

We have redeemed slaves and have regained abandoned children, with whom we shall commence our school of apprentices to the different trades. If our resources admit it will be easy to enlarge upon these. The slave market is often replenished with a crowd of children and young men, whom one can obtain for next to nothing. For sixty francs, and often less, one has the satisfaction of giving liberty to fine young men of twenty years of age; those who are younger, and especially those of delicate health are obtained for half that sum. Those whom we have redeemed from slavery have remained with us. When we tell them they are free and may go where they please, they answer us in their own language, "Here we have plenty to eat,—we stop here,—we quite content to work with you,—you our father, mother, brother, sister, all."

In this island of Zanzibar there are nearly two thousand of these persons from Africa, the most of whom are slaves. Their masters know not what to do with them and tell them to go and get their bread where they can, and they come to us for work to get it. When

I have been in want of workmen I have only had to say a word to our porter in the evening, and at six the next morning I have had fifty young men full of life and spirits. I could have a thousand if I wished for them. At the end of a day's work I give them twenty-five centimes each, and they take them with thanks, considering me generous. They generally earn fifteen centimes, and those who employ them do not give them their meals. Ah, well, all these workmen, and all in the island are slaves who may be liberated, instructed, and taught to be Christians.

I shall conclude this account, reserving to myself to give you further details hereafter. Will you remember Zanzibar and your children. Tell the diocese of St. Denis, if you please, and all the world, that this vast African coast is one of the richest and yet the most abandoned of the whole universe; that Zanzibar especially, a rich healthy island and the centre of commerce of the whole coast,—Zanzibar only waits for Reunion to send her some workmen to commence the manufacture of sugar, oil, and cocoa, and to employ them in bringing out the immense resources which the country possesses.

The best way of aiding the mission is to form at Zanzibar a body of Christians, dressing them like Europeans and Creoles, to set the example of good manners. I know very well that there are tares mixed with good grain, but that is the common lot of human nature. History tells us that the regeneration of people is due to religion, preached, it is true, by missionaries, but assisted also by a Christian population. It is by contact with them that Indians and barbarians are civilized. For our part we avow that we can work, but the good we can do is very much restricted if not assisted by the Christian element.

At Reunion there is a young intelligent population demanding work from the stranger. The youth forming it perceive that the ground on which they were born is occupied, and they turn their attention to another. They see that some wise and influential men undertake the expense of their passage,—men who thus prove themselves the true friends of those who encumber the schools of Reunion. In acting thus they avert all embarrassment for the future, and effectually hold the means of regenerating the eastern coast of Africa by placing it in communication with the people of a civilized country. When one comes to understand the circumstances of Reunion, and that there are but a few hundred leagues to Zanzibar, where the ground is naturally so fertile and so cheap,—where workmen may be had for fifteen centimes per day,—where they may be had by hundreds of thousands,—where the means of living are so cheap that twelve to fifteen fowls may be purchased for five francs,—where, in fact, the Creator has profusely lavished his choicest gifts,—really, with such advantages, it is difficult to comprehend how such a country, but eight days' sail from Reunion, should be entirely unknown there.

The insalubrity of the climate is one objection to it; another, no guarantee for the safety of property; another, the ill will of the people towards strangers! All this has yet to be verified. Here, as else-

where, sickness comes in its time. But the island of Zanzibar is healthy, and the country fever is easily avoided: in its very nature it is mild. As to the safety of property, that is guaranteed by treaty between the Sultan and France, and by the presence of the French Consul. Besides, at Zanzibar everyone buys and sells; all the people may hold property and plenty of them do so. As for the good will of the inhabitants towards strangers, I declare that I have been charged by Seid Soliman, the Governor of Zanzibar, to send letters written by his own hand to the Governor of Reunion, in which the Sultan begs of him to induce his people to come and build factories at Zanzibar, assuring him that they are wished for in the country, and that the sugarcane may be planted everywhere. The planters promise to transport them to the factory, provided they have half the produce.

May the day soon come when all these questions are understood at Reunion and in Europe. Then will this extensive African coast, with its vast interior, awake from its sleep of lethargy. It is not by being jealous and disputing about political influence that Europe will civilize this unhappy country. It is not by spreading terror on her coasts and stealing in her forests those numerous herds of her people that come from her interior that her benefit will be promoted; but by going to them with good will, by setting to work practically, and teaching them the two great secrets which make the man and the Christian, labour and religion. Let it not be said that these people live careless and happy. Yes, the African is happy if the happiness of man consists in having always a full stomach and sleeping day and night! but that is what the whole brute creation does.

Those then who talk of humanity, of philanthropy and regard for the Negro, should not content themselves with talking about his being bought and sold; let them rather help to raise him from his low condition. Yes, there is danger in their coming to us as slaves; but it is well that we should go to them, that we should facilitate their having establishments with the means of civilizing themselves to the end that on some future day they may come to us as free men: it is right that our two countries should be on good terms, but on the ground of justice. Seeing our superiority to them and the marvellous result of our industry, they will seek to know the land from whence we came: they will go there themselves, and will bring back into their own country ideas which are there unknown. I know that it is the duty of the missionary to devote himself gratuitously to his calling during his whole life, and that such a sacrifice can only be imposed on him who has adopted that career,—therefore I say to him and every one that the African coast is one of the most extensive and richest of the whole world. And I add, moreover, that the island of Zanzibar, the centre and capital of these immense coasts, is a magnificent country, containing all the elements which constitute riches.

The foregoing relates to Zanzibar: the following appears to be a

view of the system of our own missionaries from the pen of a French officer, whose remarks we find in the same journal.

The Protestant missionaries (in the Pacific) adopt a system which appears to them sufficient to secure their power where they are established. They select from among the natives the most intelligent and ambitious, instruct them most carefully, and nominate them catechists on giving them the authority to preach, and then send them out in all directions with the assurance of protection. These catechists, spread about everywhere, contend with the chiefs, infringing on their authority, and rendered bold by their forwardness, ambition, and the certainty of being supported, obtain a power which is rapidly undermining that of the chiefs themselves. The missionaries are thus concentrating all authority in their own hands. It is these catechists who on all occasions do all they can against the catholic religion, and the chiefs dare not enter into any contest with them to maintain an equal protection to the two religions as provided by the treaties. Several of them have lately declared that it has been at the instigation of the Wesleyans that they have persecuted the Catholics. In the Feejee Archipelago they do the same thing, and as the Feejeeans are not so intelligent as the Tonga Islanders they obtain a great number of them to their faith and send them to all the different islands of the archipelago. The King of Bau, who has been staying with our party for nine days, was surrounded by no one else but the Tongians, and followed their counsel.

The reverend catholic fathers live as strangers to politics. They know little of the intrigues by which they are surrounded, and their disinterested manners form a lively contrast with the exactions of the Wesleyans, who obtain from the Protestant natives contributions of natural produce, particularly cocoanut oil; the value of which exactions, according to M. R. P. Chevron, is 100,000 francs per year in the island of Tonga Taboo alone. The Protestant missionaries besides exercise influence in controlling the market, thus finding another source of profit. The catholic missionaries, on the contrary, demand nothing of the natives, and contribute with their religious services all kinds of supplies,—their modesty and charity thus obtains them the affectionate esteem of all the chiefs, Catholic or Protestant: they, however, do not contend with the Wesleyans and their catechists for the affections of the natives.

At Samoa and Feejee the foreign consuls have endeavoured to induce the chiefs to offer the cession of their islands to England, which country does not seem to care for the protectorate. The chiefs of Samoa and Tonga have a great idea of nationality, which makes them deaf to these attempts. At Feejee they are less careful about it, but they have there to deal with a population by no means so intelligent.

In all the Pacific islands the principal article of commerce is cocoanut oil, which is shipped everywhere by schooners and other small craft and conveyed to Sydney. The trepang fishery might be carried on

with advantage at Feejee and New Caledonia; but in this part very little is done. Sandal wood is nearly exhausted at the Feejees; some little trade in tortoise-shell is carried on from thence, but their principal export is also cocoanut oil, which is worth from 30 to 35 francs the ton at Sydney. They import cotton articles of dress and cloth, which is sold at so much per fathom.

There is no military or naval force in the islands. The natives owe their protection to the difficulty of access to their country. They are, in fact, so embedded in woods that they can find ambush anywhere.

The French commerce is little or nothing, and very few of our people reside on these islands; they are looked on with regard by the natives. At Tonga and the other archipelagoes, the native population is sensibly decreasing, but the missionaries pretend that it remains stationary,

[This appears to be but a partial and one sided view of the subject, and we have no doubt is so as far as religious matters are concerned.]

The perils of our missionaries among the Pacific islands from the elements as well as the prejudices of the natives, is well exemplified in the following:—

The *Patriot* records the expulsion of the Christian missionaries from Tanna, the largest island in the southern portion of the New Hebrides group in Western Polynesia. Two missionaries were located there in 1842, but after a brief stay they were obliged to leave. The barbarous and superstitious natives, who had been unaffected by their teaching, became inflamed with fear and hate. The epidemics which raged amongst them were ascribed to the missionaries, and they barely escaped with their lives. Native teachers from the neighbouring islands afterwards returned to the place, and endeavoured to introduce Christianity amongst these cannibals. One of them was murdered, but the attempt was not given up, and some little progress was made during the succeeding ten years.

At length, in 1858, three European missionaries again took up their abode here, of whom two, the Rev. J. G. Paton and the Rev. Mr. Mathieson, continued to labour on amidst considerable difficulties, but not without considerable success also, until the close of last year. The heathen people of Erromanga crossed over to Tanna, and instigated the idolatrous portion of the population to kill the missionaries. The conspiracy became known to the Christian natives, who immediately prepared to go to war, but were prevented by the missionaries, who, though they knew their lives were in danger, yet persuaded them to lay aside their clubs and spears for awhile. A hurricane which visited the island, doing great damage in some districts, but spared the mission property, wrought up the heathen party to irrestrainable rage, and the conflict could no longer be avoided. The missionaries at first barricaded their house, and their friends defended it for some time; but they were at last obliged to abandon it and fly to the bush, where they

remained for several days, and were only saved from the dread alternative of death by starvation or death by the cruel hands of the blood-thirsty savages, by the opportune arrival of a trading vessel, which took them off the island by force, and conveyed Mr. Paton and Mr. and Mrs. Mathieson to Aneiteum. The mission property, worth at least £1,000, has been entirely destroyed; the church, indeed, seems to have been burnt some time before the final catastrophe. Mr. Paton is now in Sydney, and proposes to procure a small vessel by means of which to carry on the work of evangelization in the islands near Tanna, for there is not the least intention of abandoning the mission.

ON SUMNER'S METHOD.—*By James Gordon, A.M., Nautical Author and Teacher.*

(Concluded from p. 186.)

Take the same example as formerly, viz., Exercise No. 2 of Norie's *Epitome*, 17th edition, 1860, and supposing that the Greenwich mean time found by means of a chronometer is, for the first altitude, Feb. 25d. 1h. 37m. 22s., and the equation of time 13m. 18s. *additive* to apparent and *subtractive* from mean time. Hence the apparent time at Greenwich is, Feb. 25d. 1h. 24m. 4s. Then call $\Delta_1, \Delta_2, \Delta_3, \Delta_4, \Delta_5$, the points for which we formerly calculated the apparent time at the ship corresponding to the first altitude, and we shall have:—

	Δ_1	Δ_2	Δ_3	Δ_4	Δ_5
	h. m. s.	h. m. s.	h. m. s.	h. m. s.	h. m. s.
App. time at ship	1 24 4	1 8 35	0 47 15	0 40 31	0 30 55
Do. at Greenw.	1 24 4	1 24 4	1 24 4	1 24 4	1 24 4
	0 0 0	0 15 29	0 36 49	0 43 33	0 53 9
Long. W.....	$\overset{\circ}{0} \overset{\prime}{0}$	$\overset{\circ}{3} \overset{\prime}{52}\frac{1}{2}$	$\overset{\circ}{9} \overset{\prime}{12}\frac{1}{2}$	$\overset{\circ}{10} \overset{\prime}{53}\frac{1}{2}$	$\overset{\circ}{13} \overset{\prime}{17}\frac{1}{2}$
Lat. N.....	49 0	50 0	51 0	51 15	51 30

The first line of *equal altitudes* joins Δ_1 and Δ_2 , call it, therefore (Δ_1, Δ_2) and similarly of the others; we shall then obtain by Mercator's sailing the following courses:

$$(\Delta_1, \Delta_2) = \text{N. } 68^\circ 23' \text{ W.} - (\Delta_2, \Delta_3) = \text{N. } 73^\circ 28' \text{ W.} - (\Delta_3, \Delta_4) = \text{N. } 76^\circ 38' \text{ W.} - (\Delta_4, \Delta_5) = \text{N. } 80^\circ 32' \text{ W.}$$

The prevalent idea is that although the latitude by account may be very erroneous, yet any *line of equal altitude* found from a single altitude by Sumner's method will give the course which the ship must steer to make the coast at the point where said line intersects the coast, as the ship is assumed to be somewhere in that line.

But by the above calculation it evidently appears that the course

varies according to the assumed latitudes: the extreme difference being in this case $12^{\circ} 9'$, or upwards of one point.

Besides the course being uncertain, the points in which the *lines of equal altitudes* intersect the coast are considerably different from each other. To illustrate this I shall assume that the coast is a straight line bearing N.W., and passes through a point in lat. 49° N. and long. 14° W. By projection, the latitudes and longitudes of the points can be easily ascertained; but I shall give those of the extremes by calculation.

Take (A_1, A_2).

(A_1, A_2) will intersect the coast, forming a triangle of which the base is on the parallel of lat. 49° N., and its length is between A_1 in long. $0^{\circ} 0'$, and the point of the coast (which we shall call c) in long. $14^{\circ} 0'$, and therefore $= 14^{\circ} = 840'$. The angle of the base at A_1 is the complement of the bearing $68^{\circ} 23'$ between A_1 and $A_2 = 21^{\circ} 37'$; and the exterior angle at the other extremity of the base being the complement of the direction of the coast $= 45^{\circ}$, therefore the angle at the vertex is $45^{\circ} - 21^{\circ} 37' = 23^{\circ} 23'$: the vertex being the point of intersection of (A_1, A_2) with the coast, which we shall call v . Then vc being calculated, it will be the hypotenuse of a right angled triangle, of which the acute angles are each 45° , the base is the diff. long., and the perpendicular the Mer. diff. lat. between v and c . Hence:—

Sine $21^{\circ} 37'$	Log. 9.566314		Mer diff. lat. of v and $c = 542$
840	Log. 2.924279		M.P. for c in lat. $49^{\circ} = 3382$
	12.490593		Lat. of $v = 54^{\circ} 34'$ M.P. = 3924
Sine $23^{\circ} 23'$	Log. 9.598660		
	2.801933		Diff. long. v and $c = 541.6 = 9^{\circ} 1\frac{1}{2}'$ W.
Sine 45°	Log. 9.841771		Long. of $c = 14^{\circ} 0'$ W.
	R $\times 541.6$ Log. 12.788704		Long. of $v = 23^{\circ} 1\frac{1}{2}'$ W.

= Diff. long. and mer. diff. lat.

Take (A_1, A_2).

Here A_1 being in lat. $51^{\circ} 15'$ N., we must find the point in which the line of the coast intersects this parallel of lat.: call this point c' .

Lat. of $c = 49^{\circ} 0'$	M.P. 3382
Lat. of $c' = 51^{\circ} 15'$	M.P. 3693

Mer. diff. lat. = 211

= Diff. long. = $3^{\circ} 31'$ W. as angle from c to $c' = 45^{\circ}$
 Long. of $c = 14^{\circ} 0'$ W.

Long. of $c' = 17^{\circ} 31'$ W.

Calling v' the point in which (A_1, A_2) intersects the coast, the triangle

of which the angular points are A_4, v_1 , and C_1 , is solved in a similar way to the former calculation. The angle at $A_4 = 90^\circ$ - bearing of $(A_4, A_3) = 90^\circ - 80^\circ 32' = 9^\circ 28'$. $v_1 = 45^\circ - 9^\circ 28' = 35^\circ 32'$. And the base $A_4 C_1 = \text{long. } C_1 - \text{long. } A_4 = 17^\circ 31' - 10^\circ 53\frac{1}{2}' = 6^\circ 37\frac{1}{2}' = 397\frac{1}{2}'$. Hence:—

Sine $9^\circ 28'$	Log. 9.216097		Mer. diff. lat. of v^1 and $C^1 = 78$	
	397 $\frac{1}{2}$ Log. 2.599610		M.P. for lat. of $C^1 = 51^\circ 15' = 3593$	
		11.815707		
Sine $35^\circ 32'$	Log. 9.764308		Lat. of $v^1 = 52^\circ 4' \text{ M.P.} = 3671$	
		2.051399		
Sine 45°	Log. 9.841771		Diff. long. v^1 and $C^1 = 78.2 = 1^\circ 18\frac{1}{2}' \text{ W.}$	
			Long. of $C^1 = 17^\circ 31' \text{ W.}$	
R $\times 78.2$	Log. 1.893170		Long. of $v^1 = 18^\circ 49\frac{1}{2}' \text{ W.}$	

= Diff. long. and mer. diff. lat.

Distance between v and v¹.

The course between v and v^1 being 45° , and diff. lat. = $2^\circ 30' = 150'$, we have $\log. 150 + \log. \sec. 45^\circ$ (rejecting radius) = $\log. \text{distance} = 212'$. Consequently the point of the coast which the ship would make is uncertain by 212 miles.

Double Altitudes.

For the time of the 2nd altitude we must add 2h. 10m. (the elapsed time) to the time of the 1st altitude, Feb. 25d. 1h. 24m. 4s., which gives Feb. 25d. 3h. 34m. 4s. as the apparent time at Greenwich.

Hence, if I call the points for this altitude B_1, B_2 , &c., I shall obtain in the same way as for the 1st altitude:—

	B_1	B^2	B_3	B_4	B_5
Long. W.	$8^\circ 40'$	$10^\circ 6\frac{1}{2}'$	$11^\circ 39\frac{1}{2}'$	$12^\circ 1\frac{1}{2}'$	$12^\circ 29'$
Lat. N.	$49^\circ 0'$	$50^\circ 0'$	$51^\circ 0'$	$51^\circ 15'$	$51^\circ 30'$

I formerly calculated four double altitudes, from the latitudes and apparent times; by making a similar calculation with the latitudes and longitudes, I shall obtain the following positions:—

	1st.	2nd.	3rd.	4th.
Lat. N.	$52^\circ 34'$	$51^\circ 39'$	$51^\circ 23'$	$51^\circ 24'$
Long. W.	$13^\circ 47\frac{1}{2}'$	$12^\circ 40\frac{1}{2}'$	$12^\circ 17\frac{1}{2}'$	$12^\circ 17\frac{1}{2}'$

To verify a Double Altitude.

I formerly suggested to use the latitude $51^\circ 24' \text{ N.}$ as found by Ivory's method, and calculate the elapsed time: this gives

For 1st alt.	0 34 50
For 2nd alt.	2 44 48
Elapsed time..	<u>2 9 58</u>

Difference only 2s. from the given elapsed time.

Again,—

	<i>h. m. s.</i>		<i>h. m. s.</i>
1st alt. gives app. time.	0 34 50	2nd alt. gives app. time.	2 44 48
App. time at Greenwich.	1 24 4	App. time at Greenwich.	3 34 4
Long.	0 49 14	Long.	0 49 16
	= 12° 18½' W.		= 12° 19' W.

Another mistake of Sumner.

As Sumner assumes a parallel of equal altitude to be a straight line on Mercator's chart, he ought, in a double altitude, to use the mer. diff. lat. between the lats. instead of the diff. lat. Thus, referring to my former paper, I stated 9m. 44s. : 1° :: 24m. 56s. : 2° 34' diff. lat. Whereas it should be, assuming Sumner to be correct,

<i>m. s.</i>	:	92	::	<i>m. s.</i>	:	24 56	:	236
9 44		Lat. 50°		M.P.		3474		
		Lat. 52° 27'		M.P.		3710		

which differs 7' from the lat. formerly found.

Concluding Remarks.

1st. I made a supposititious example by assuming the times by chronometer, and also that the coast was in certain position. I may retain the same latitudes and change the longitudes equally by any quantity, and could thus illustrate the same example on a chart of the East coast of America.

2nd. If the ship had been making for England, the course found by Sumner would have caused her to cross the Atlantic instead of reaching her destination.

3rd. The double altitudes vary so much by Sumner that the results are not practically useful.

4th. If the chronometer is wrong, it is true that the *parallels of equal altitudes* will be removed due East or West by the quantity of said error; but the uncertainty will be double the error. For example, if the chronometer may be presumed to be 1m. in error, the position of the parallel will be uncertain to thirty miles.

5th. In conclusion I may remark generally that the verification of the double altitude can only be usefully made by the method I have suggested. If the latitude is uncertain to any considerable amount, a single altitude will not give a course to be depended on; and the point of land to which such course would lead the vessel would be quite uncertain from two causes, viz., the uncertainty both of the latitude and of the chronometer. If it is affirmed that if the latitude is not very erroneous the method may be used with sufficient accuracy for practice, I even deny this, because only one particular course is found, which may be a very unsuitable one, if it happens to be nearly parallel to the coast.

On the whole I conclude that Sumner's method is useless either for a single or double altitude. The only reason I can conceive for its extensive popularity is owing to its having been generally believed that a course would be accurately ascertained however great the error might be in the latitude by account, which I have shown to be false.

J. GORDON.

MICRONESIA—of the Pacific Ocean.

(Continued from page 245.)

The Marshall Islands.—This archipelago has, for the last thirty years, been the least known and the most dreaded of the Micronesian Islands. It lies in the angle between the Caroline Islands to the West and the Gilbert Islands to the South. Its various groups range from lat. 4° to 12° N. and from long. 165° to 172° E.

Two lines or chains of islands, lying nearly parallel to each other, and running N.W. and S.E., are included under the name Marshall Islands. The more eastern is the Ratak, and the western is the Ralik. Each chain numbers fifteen low coralline islands. Several of these islands are very small, without lagoons; but the greater number are fully formed atolls, and some of them are of immense size.

It seems to me next to certain that Alvaro de Saavedra, in 1529, visited islands in both the Ralik and Ratak chains, when on his attempted return to New Spain from the East Indies via Papua. When steering E.N.E. from Papua, or, as the Spaniards called it, the Island of Gold, they came to a group of small islands in 7° N. They were inhabited by natives of a dark colour, who wore beards, and whose bodies were marked as if with an iron. In consequence of this marking, which was undoubtedly tattooing, and of which this is the earliest notice I have seen, the islands were called Los Pintados, or islands of the Painted People.

The reception of the Spaniards at this island was too hostile for comfort, and they passed on to the N.E. eighty leagues, when another group of low islands were seen, the inhabitants of which received them so kindly that the voyagers named their discovery the Good Gardens. The inhabitants of this group were light coloured like those of the first, and like them were painted or marked. The women, it is said, appeared beautiful; they had long black hair and wore coverings of very fine matting—a description that answers well to the females of the present day on the Marshall Islands, and to no others of the Micronesian Islands. It is further recorded that their canoes were made of fine wood, which is at certain seasons drifted there, a fact which is still to be observed on the Marshall Islands, though the principal wood used in building proas is the breadfruit. The natives supplied their visitors with two thousand cocoanuts, which, next to the pandanus, is the staple of all the low islands.

This Saavedra was he who first suggested the idea of a canal across the isthmus of Darien, and who, had he lived, seriously intended attempting its execution. His grand, but perhaps impracticable purpose, was, however, frustrated by his death, only a few days after leaving the Good Gardens.

More than two centuries passed before these islands were, so far as we know, again visited. In 1767, Captain Wallis, of the English navy, discovered two groups in the northern extreme of the Ralik chain, which he supposed to be the Pescadores found on the charts by Anson, who passed near this region in 1742 on his way to Tinian of the Ladrone Islands. These groups are undoubtedly the Ailingenae and Rongrik of the natives, and the Rimaki-Korsakoff Islands of Kotzebue.

In 1788, the ships *Scarborough* and *Charlotte*, under the command of Captains Marshall and Gilbert of the English navy, returned to China from Port Jackson, where they had been to commence the first colony in Australia, and on their route they struck first on the northern portion of what has since, by Krusenstern, been called the Gilbert Islands, and then upon the eastern chain of what, by the same authority, has been called the Marshall Islands. The report of these discoveries were given by Governor Phillips, who accompanied the expedition; but it is said by Findlay to have been a "loose account," and did not aid materially to a knowledge of the inhabitants.

In 1792, Captain Bond discovered two of the Ralik Islands, and in 1797, Captain Dermott still another. Captain Bishop, of the *Nautilus*, in 1799, passed several of the Ratak Islands seen by the last voyagers, and discovered one or two not before reported. In 1804, the English ship *Ocean*, and again in 1809, the brig *Elizabeth*, saw several of the middle Ratak Islands. But of all others, the most important name connected with the Marshall Islands is that of Kotzebue, of the Russian navy.

In May, 1816, Kotzebue first saw the closely connected groups of Taka and Utirik, while on his way to the North. In January succeeding, after recruiting at the Sandwich Islands, he again visited this region, and discovered and thoroughly explored the greater number of the Ratak Islands. In October of the same year he again returned directly from the North to these islands, and added still another group to his discoveries, so leaving only the three southern atolls of the range unexplored. In October, 1825, on his second voyage, he again visited these islands, and added to his former explorations the four most northern groups of the Ratak Islands, the most eastern and western of which may be called discoveries, though he made most singular and confusing mistakes in giving native names, mistakes never before noticed, and which long perplexed the writer of the present papers, who feels that he is able for the first time to present a tolerably correct chart of the Ralik Islands. The data upon which this chart is based are collected in another paper, and will in due time be published.

Kotzebue's merits in connection with the Marshall Islands are very

considerable. He first gave an account of the inhabitants in a graphic narrative that correctly depicts the islands and the external life of the inhabitants, so far as he had time for observing it. His reports of their habits of thought and feeling, were, as a matter of course, far too highly coloured and very defective. The efforts made by himself and the celebrated naturalist, Chamisso, who accompanied him, to introduce new plants, and so add to the limited resources of the people, were certainly very commendable, but nothing ever came of them, from the innumerable rats, and the ignorance of the people, and, above all, from the utter incompatibility of the soil with foreign vegetables.

But a few months since, I saw a native of the Ratak chain who told me of the visit paid their islands long ago by a ship whose commander was named Tobu—undoubtedly Kotzebue—and he correctly named to me the islands visited by him. The same name also occurs in some of the songs of even the Ralik Islanders.

It seems unnecessary for the sake of enhancing Kotzebue's merits, to claim for him the discovery of the greater number of the Ratak Islands, as was done by Krusenstern, and to suggest that Captains Marshall and Gilbert discovered the Ralik range. Though there are many discrepancies hard to reconcile, it is but just to recognize the prior claims of the English navigators, and to acknowledge that Kotzebue first definitely located them on our charts.

The next source of information regarding the Marshall Islands was in 1824, when a part of the crew of the American whale-ship *Globe* mutinied and landed on Mili, or the Mulgrave group, which is the most southern of the Ratak Islands. A few of the crew regained the vessel and navigated her to the Sandwich Islands. In December, 1825, the U.S. schooner *Dolphin*, having been sent for that purpose, arrived off the island and took Lay and Hussey, who were all that remained of the mutineering company. These were mere youths and had taken no part in the mutiny. They subsequently published a narrative of their residence on Mili. The mutineers were killed by the natives in revenge for their brutal treatment of the females they took for wives. In 1858 the Rev. Mr. Doane visited this group, and the spot where the *Globe* was anchored, together with the islet where the mutineers lived, were shown him.

In 1824, Captain George Ray discovered Ebon, or Boston Island, the most southern of the Ralik Islands. It was in 1824 that Captain Duperrey passed Mili, and also touched at Jaluit of the Ralik Islands. Again in the years 1829, 1831, 1832, and 1835, Captains Chramtschongo, Hagemeister, and Shans, of the Russian navy, passed several of the central Ralik Islands. But notwithstanding these many visitations, the Ralik Islands are yet most incorrectly represented on all our charts,—which comes principally from the reports not having been implicitly followed by the compilers of our charts.

Events of violence commenced in the Marshall Islands in 1834, when Captain Dowsett visited the so-called Pescadore. Here his boat's crew was cut off while he himself had gone inland, holding friendly intercourse, as it would seem, with the natives of the village.

Those left in command of the vessel became alarmed on seeing the skirmish on the beach, of which the captain was probably ignorant, and, immediately putting to sea, returned to the Sandwich Islands. The same year the *Waverly* was fitted out from Honolulu to search for Captain Dowsett. On arriving at the island, the name of Dowsett was found cut on trees, and garments of his were found. The natives seemed to wish to say that Captain Dowsett had gone to sea. But the captain of the *Waverly* very rashly, and we must say cruelly, fired upon them, killing many and otherwise injuring them. From there the *Waverly* went to Ponapi, and thence to Kusaie, where she was cut off. Captain Dowsett's fate has never been ascertained. It has been reported that he was alive on the Ralik Islands as late as 1843. But it seems to myself most probable that he reached Raven Island in his boat and was there killed, according to a report published in the *Friend* of January, 1853.

In 1845, Captain Cheyne, of the trading schooner *Naiad*, passed Ebon or Boston Island. He detected the natives stealing, and used what was probably undue violence, when they became exasperated and showed fight. A severe tussle ensued, in which one person was killed on the spot, and another, a nephew of the highest of the Ralik chiefs, was so severely wounded that he died soon after reaching the shore. It seems probable that the natives cherished revenge for this during many years. A whale-ship was nearly taken off Namarik (Baring Island) about this time; and two whaleboats' crews, who had lost their vessel, came on shore at Ebon, and were all killed.

Towards 1850, one or two whaling captains endeavoured to establish a cocoanut oil trade with the Ralik islanders, but never came completely in their power. In October, 1852, the schooner *Glencoe*, of San Francisco, came from Ponapi to Ebon, and most imprudently anchored just under its lee. The vessel was cut off, and every soul killed.

In December of the same year, Captain M'Kenzie, of the trading schooner *Sea Nymph*, also of San Francisco, but last from Ponapi, anchored in the lagoon of Jaluit or Bonham Island. He one day incensed a chief by rough, abusive conduct, who avenged himself by stimulating his relatives and attendants to kill the captain the next time he landed, and to murder all but one of the crew.

The Rev. Dr. Pierson, of the Micronesian mission, touched at several of the Ralik Islands in 1855, while cruising with Captain Handy, of the barque *Belle*. The subsequent year a party of Ralik islanders drifted 350 miles westward to Kusaie, and there became further acquainted with Dr. Pierson, and desired that he would go and settle among them on the Ralik Islands; to which they in a few months returned in proas of their own construction. In 1857, the Rev. Messrs. Pierson and Doane removed to Ebon, and there the latter of these missionaries still lives, successfully reducing the language to writing, and preaching the gospel to those whose hands have so recently been imbrued in the white man's blood.

This people, the history of whose contact with the civilized world

has been thus briefly given, do not, probably, number over about 10,000; 6,000 perhaps in the Ratak chain, and probably 4,000 in the Ralik Islands. And yet almost every one of their thirty atolls is inhabited; from which it may be gathered that the islands are but sparsely populated. Yet intercourse with a very considerable portion of the inhabitants is secured by taking a permanent station, for they roam in their proas from island to island of their respective ranges. There is comparatively little intercourse between the two principal chains, but a very considerable portion of their time is spent by the inhabitants either in voyaging or preparing to voyage within their own ranges. Since the time of Kotzebue, almost the whole of the contact with the so-called civilized world has been enjoyed by the Ralik islanders, who now pride themselves upon being the mediums of communication with foreigners, and upon being best posted regarding the great outer world. Yet I recently saw a man from the more northern Ralik Islands who had never seen a white man before us on Ebon.

Nominally each range is subject to a high chief, or more properly to a chiefish family. But several of the southern Ralik Islands are now independent of their feudal head, who lives on Aurb. So also in the Ralik chain, the four northern islands are held by a very slight cord of dependance. And even where the authority is most potent, it is not of a very palpable character to one looking for the kingly tyranny on many Pacific islands. There is oppression, and outrage, and cruelty, but it is rather the petty usurpation of individuals and families than the systematic grinding of a despotism.

It is interesting to find the same system of clans here that is found in all the Caroline Islands of which we have any definite knowledge. Many of the clans are different, but several are the same as those found westward, though with different names. There is the same law, which counts descent by the mother rather than the father. As in most of the Caroline Islands, one clan furnishes the chiefs of real blood, and another embraces the sons of these true chiefs. This comes from a true chief not being allowed to marry into his own clan, but into that to which his children ought to belong. Different clans have the supremacy in the different ranges, and it is possible for different islands of the same range to acknowledge different clans as paramount; from which it may be seen how difficult it is to properly apprehend, and how much more difficult to accurately state, the political affairs of this people.

The language of the two ranges is substantially the same, though there are dialectic differences. And though the vocabulary of this language differs from any spoken in the Caroline Archipelago, its grammatical construction bears the most striking similarity to those westward, as has been shown by the Rev. Mr. Doane, in a valuable paper on this subject in the *Friend*, of February, 1860.

In physical appearance the people are not unlike the Caroline islanders, as described on Ponapi and Kusaie, save perhaps that they are a little coarser and more vigorous in their manners, and perhaps

also a little darker complexioned. Their male dress, of a skirt of hibiscus bark, and the beautifully ornamented mats worn by the females about their hips, render them very decent in their externals. They seem more excitable and mercurial than any of the Caroline islanders we have met; but this comes in part from their slight contact as yet with foreign vice and disease.

It is sad to be obliged to report that disease is now being rapidly introduced among the Ralick islanders by whale-ships passing the islands, and who now venture to permit natives, with females, on board their vessels. The strength of the race will ere long be sapped. How sad that the safe residence of missionaries among them should be the cause of attracting physical and moral death to their shores! How difficult to sustain hope in one's heart when planning for the elevation of a people, whose contact with the representatives of civilization serves, with but few exceptions, to render their diseases more deadly and their vices more vicious!

Like all the Micronesians, these people are worshipers of their own constructed deities and also respecters of the spirits of their ancestors. They have the reputation among the islands to the West, where they are frequently drifted, of being exceedingly skilled in every kind of incantation and necromancy. They are, if possible, the most superstitious of Micronesians. Their mythological tales are exceedingly numerous, and of interest in showing the range of ideas possessed by a people inhabiting so unfavourable a locality. And it must be confessed they betray no intellectual poverty as compared with their brethren in any part of the Pacific. The missionary finds no less mind and material to work upon than among the inhabitants of higher islands, Mr. J. D. Dana's supposition to the contrary.

Great taste is shown in the embroidery of their beautiful mats. Their houses are scarce anything more than roofs supported on posts, with a floor on a level with the eaves, forming a loft where treasures are kept, and where men and chiefish women may sleep. But in the construction of their proas their greatest talent displays itself. Many of these are of great size, capable of carrying 50 to 100 men in the open sea. One side is flat or perpendicular, while the other is convex. The outrigger is attached to the convex side of the canoe. The canoe or proa is thus very sharp, not only at the two ends, but along its whole keel. It settles deeply into the ocean, and by carrying its outrigger to windward, its flat side is to leeward, thus enabling it to hold its own as scarcely any civilized vessel can. It, therefore, sails very close to the wind, and with its tri-cornered, or mutton-leg sail, it beats rapidly to windward.

They provision these proas with cocoa-nuts and preserved bread-fruit and pandanus, and taro and water, and can, when occasion requires, by their skill in fishing and catching water, sustain a voyage of several months. This explains the almost fabulous accounts of their drifting three, four and five months without seeing land; and goes far in explaining the mode in which those and other Pacific islands were first populated. The Marshall islanders are probably the

greatest voyagers now remaining in the Pacific Ocean. A party of them this year beat back to their homes from Wellington Island, which is nearly 600 miles to the west, and that without any of the appliances the educated navigator would consider indispensable. Their passion for voyaging will yet facilitate the spread of the Gospel among them. They have a very accurate knowledge of the islands of their own seas, and a wonderful tact in navigating. They even construct rude maps by which they retain and impart knowledge regarding the direction and relative distances of the various groups. These maps consist of small sticks tied together in straight or curved lines, intended to represent the currents or waves to be met, while the islands are to be found at certain points where these lines meet. The construction of these maps is a secret which the chiefs would retain for themselves; and the individual who first divulged the art to us, though the husband of a chief, was threatened with death.

Most appropriately do these people plant paddles about the graves of their more illustrious dead. Nothing on these islands is more interesting than a visit to the desolate cemeteries, under the towering cocoa-nut trees, where paddles in various stages of decay lift their blades among the coarse vines and scattered shrubs, while scores upon scores of fearless rats perform their gambols before your eyes, or squat like squirrels as they watch your movements. Very many of the dead are not buried, but are sent to sea with various religious rites.

It was in December, 1859, that I first landed on Ebon, and there I spent seven of the pleasantest months of my life.

To one whose experiences had been on the high basaltic islands of Micronesia, there was something romantic in a residence on this gem of a coral island, under the groves of towering cocoa-nuts, pandanus and bread-fruit. For, strange as it may seem, they not only all grow more stately here than on the more highly favoured islands, but the cocoa-nut and pandanus are far more productive.

The pandanus in particular assumes a character on a coral island that would hardly be expected from anything seen of it in other situations. It is an interesting fact that has escaped the transient investigator, that the fruit of the pandanus is of vastly more importance to the inhabitants of such islands than the celebrated cocoa-nut. Even on the comparatively unproductive Kingsmill (or more properly) Gilbert Islands, they can use up the greater part of their cocoa-nuts in the manufacture of oil and still subsist luxuriantly on the drupes of the pandanus. On the Marshall Islands, where the bread-fruit and jack-fruit (or numic bread-fruit) grow so luxuriantly, this is still more emphatically true. And Mr. Dana of the U. S. Exploring Expedition, is greatly mistaken when he speaks of this fruit as "a sweetish, husky article of food, which, though little better than prepared corn stalks, admits of being stored away for use when other things fail." The drupes of several varieties of the pandanus are really luscious, and are probably much more nutritious than sugar cane. There are several months of each year when it is in season that natives eat little else, besides preparing large quantities of it for future

use. This article as prepared on the Marshall Islands is an admirable one, very palatable, and one which a foreigner readily becomes fond of. It is put up in large rolls and wrapped up in the leaves of the tree, then bound very tightly and nicely with cord, and may be kept thus many years. It is not injured by exposure to the weather, or even by long submersion in the ocean. It is, therefore, an admirable preparation for taking to sea. The tree itself often grows as high as the cocoa-nut. Its straight, tough trunk is used on the Gilbert Islands in preference to every other kind of wood in building their largest and finest council houses. How opposite are these facts to the assertion in the *Penny Cyclopædia*, that the pandanus is useful to man in no way but by furnishing material for thatching!

The mission premises occupy the N.W. point of the principal islet of the Ebon cluster, curving round the southern end of the lagoon. The lagoon itself is not far from circular; only about six miles across. It is one of the prettiest and cosiest in all Micronesia. Nothing is more picturesque of its kind than a view from the lagoon shore of the mission station, not a dozen rods from the houses. The white sand-beach curves beautifully to the south and east and then to the north. The reef continues completely round on the north, and supports several islets along its course that in the distance are black with the heavy growths of cocoa-nut and pandanus. The lagoon thus enclosed is perchance enlivened by the sails of many fishing canoes, while, here and there along the beach, lie the larger proas waiting the day when they shall be launched for voyaging in the outer ocean. This inner beach is the highway and the common, where old and young pass back and forth, and gambol as merrily, or mayhap, as savagely, as the crabs that burrow in its sands.

A poor squall-beset mariner, obliged (as was a recent captain of the *Morning Star*) to lay off and on, shut out from this coral sanctuary, this magic bethel built among the waves with almost invisible hands to the praise of our wonder-working Maker, may be excused for comparing it to "a dismal cellar—even the rats not wanting." But to one privileged to daily exchange the pleasant "*I iokwe iuk, I love you,*" with the friendly natives, to eat of their deliciously prepared bread and jack-fruit, to chew their juicy pandanus drupes, to sip the sweet sap of their cocoa-nut trees, or drink the cool water of the nut—to one who has wandered through the groves, who has lived beneath them and been nightly hushed to sleep by the murmurings of breezes high in the leafy world above—to one who has laid his hand on ocean's main as it rolled up to the outer beach bringing its rich varieties of marine life, or who has by twilight paced the inner beach as star after star came twinkling from the upper deep in admiration over Micronesia's scattered gems, so happily reflecting their upper glories—to such an one, Ebon is an oasis of delight on the watery waste, a liberal and delightful "home on the rolling deep."

When Dana says "The coral island in its best condition is but a miserable residence for man," he transcends the experience of one who has lived on Ebon.

During all the winter there were but about 500 people on the island and no high chiefs, nearly 800 having left in September, 1857, for the northern islands of the range in a fleet of forty proas. They did not return till the 11th of March, 1860.

The missionary is the sole representative of civilization on the Marshall Islands, and is yet the eighth wonder to the inhabitants. His house is the great centre of attraction; it is the lodge, the lecture-room, the lyceum, the store, the market-house, the exchange, and even the hall of whatever legislation there is. The reinforcement of 500 who just arrived in the northern fleet poured in upon us, crowding our houses, stunning our ears, peering into our rooms, offering all kinds of island trade, and giving us ample opportunity for doing good actively and passively.

A couple of days later a great dance came off in honour of, and with the hope of benefiting the health of two sick chiefs. A concourse of perhaps 600 assembled under the magnificent bread-fruit grove just outside of the cocon-nuts that line the whole lagoon shore of the island. Some sat, some stood, while others availed themselves of whatever stumps or canoes afforded a slight elevation.

A band of thirty women, sitting in a row, commenced by a fierce rub-a-dub on shark-skin headed drums in the shape of rough hour glasses.

Soon Kaibuki, the so-called king, darts from among the crowd into the open space before the drummers. He wears the Marshall Islands fringed skirt which is made to bulge out by a pile of pandanus leaf hoops surrounding the body just below the waist, after a fashion, so far as I am informed, not yet devised by the opposite sex in civilized lands, but which we must not despair of seeing adopted even in *Hawaii nei*—after it shall have been decreed from Paris! His head and the enormously distended lobes of his ears, are decked with flowers, and bunches of feathers are fastened to his arms and hands. He immediately throws himself into most astounding postures; he has commenced repeating a song, and the effort is to do it in the most unnatural and horrible way possible. He shouts, screams, screeches, hisses out his whispered words, rolls his eyes, dances, prances, hops, jumps, and most horribly contorts his face, while every muscle in his body quivers first with forced and finally with natural excitement. The delighted audience follows every motion and thrills under the dreadful bedlam of the principal actor and of the multitudinous drummers, as those of other lands do under the enchanting powers of a Rachel or a Piccolomini.

A few minutes, however, exhaust him, and he retreats backward off the arena. Another takes his place, after whom other performers come on by twos and threes, from the toothless man of gray hairs to the little urchin yet unaccustomed to dress of any kind, but who is today covered with the skirt of hibiscus bark, and ornamented with lilies and chicken feathers. The space is at last entirely vacated. All the performers, numbering about fifty, now collect in a solid phalanx, and come forward together, Kaibuki at their head. A slow treading,

accompanied by wild singing, advances them to the centre. Here they form in line and surpass themselves in all the horrors of simultaneous screaming, gesticulating and contorting of faces. Our heads ache and our nerves grow tremulous under the aggravating discord of human voices and dolorous drummers. But they have reached the end of their drama. One by one they stagger from the line, till Kaibuki alone remains standing, who suddenly makes his salaam to us and asks "E moneki?—Is it good?" to which we respond by a non committal Ebonite English "good morning," and as polite a bow as our rusty manners allow.

A few minutes later and the crowd has hold of long ropes attached to a huge proa which they are about to haul up on to the sandy beach. Many apply their backs directly to the canoe on either side at both ends of it, and a score or more of naked boys are at the outrigger. All is ready. Kaibuki commences an inspiring song and dance appropriate to the grand occasion. He acts like a madman frightened at the hideous monster towering above him. While he whispers and hisses his words through a frightful mouth and capers about, throwing a part of his shirt over his head and rolling his eyes all but inside out, the excited company are uttering rhythmic groans as a part of them away on their ropes, and others slightly raise her by pressing with their backs. The proa slowly advances up the slope. But Kaibuki's voice fails him, and another takes his place, and then another, and finally Nemairh, the king's niece, and the most influential woman in the Ralik Islands, advances, and if possible out-does the rest, ending with slapping a handful of sand into her own streaming face and eyes, and then capering about even more outrageously than before. The proa is fairly beached, and we return to our homes, more deeply impressed than I can readily tell with the deep shades of darkness about the Marshall Islanders' minds.

In March Mr. Doane's infant son died. While he yet lived the King's only living brother came with evident good-hearted joy, holding a piece of pandanus leaf, which by the projection of an end after being deftly folded indicated the child would not die, and felt hurt that his prognostications were disbelieved. The evening after its death, Kaibuki, the hard-hearted savage, came with his four wives and his attendants, and wished to see the corpse. He had given the child a native name, and shown it many attentions, as the first white child born not only on Ebon but in all the Marshall Islands. There it lay, more placid than for many an hour before. The chief, who had often torn his subjects apart limb by limb, entered the room in a most subdued manner, and sitting down by the corpse which the parents' love almost dreaded to expose to stranger eyes, unfolded two most elaborately embroidered mats. With the gentlest murmurings of affection he spread them over the loved one, then covering his eyes, burst into tears. This touched the parental heart; the tear founts unexpectedly filled—the father was unmanned.

An older brother of Kaibuki not arriving as was expected, a fleet of fifteen proas, loaded with provisions, started on the 25th of April for

the North. July 2nd, after an absence of only about five weeks, they returned, some of the fleet having been as far north as Wattho, or Schanz Island, a distance of four hundred miles. Immediately on the arrival of this fleet there was a rush of petty trading in mats, pearl hooks, shells, corals, sponges, bananas, breadfruit, jackfruit, fowls and cordage. It was hard to say no, and harder to say yes. The last remnants of old iron, rusty pieces of wire and old hoop, stray fish hooks, files, old gouges and chisels, remnants of cloth, old bottles and vials, &c., &c., were thankfully received, unless there existed a suspicion that better bargains might be made, in which case there was as sharp haggling as by any Yankee peddler, often mingled with genuine Irish blarney. Indeed, had not the "*Morning Star*" our missionary packet, arrived the second day after, we should have been unable to sustain the siege, for our ammunition ran short.

Mr. Doane each Sabbath preaches at the mission station to an attentive congregation, averaging about a hundred, and also about seven miles distant to a congregation of perhaps fifty. A primer of over sixty pages has been printed with our own hands, and a number are gradually learning the high art of reading. There are none in whom we rejoice as converted, though there is one concerning whom we hope. The good work progresses on the Marshall Islands, but an inconceivable amount of labour lays before the missionary.

VOYAGE OF H.M.S. "CYCLOPS" FROM THE CAPE TO ADEN.—
Captain W. J. S. Pullen.

(Continued from page 260.)

At five o'clock on the morning of the 20th January we slipped from the moorings and steamed out of the bay; but before proceeding to sea the ship was steered round between western shore and Roman Rocks, to get the deviation of compass. The shore observations were made by the theodolite,—the angles from a compass bearing of a distant object previously taken by the standard. At 7h. 30m. the observations were completed, and we proceeded to sea, passing between the Roman Rocks and Noah's Ark, westward of the Whittle Rocks, thence so to pass about two miles South of Cape Hanglip.

The ship was very deep in the water, from the circumstance of having completed provisions for four months, and, besides filling up the coal boxes, had 200 bags on deck. In order to lighten this load, knowing how much it was against her speed, particularly under sail alone, I kept under full steam. At about 11h. 15m., Cape Hanglip was rounded with a strong breeze from westward, the barometer falling too, and other circumstances, such as appearance of sky, indicating an approaching gale.

At midnight the wind was N.W., eight in strength, with the sea

getting up and ship labouring much. This we may conclude to be the commencement of the gale.

Early on the morning of the 21st the wind was up to nine in force, when, towards nine o'clock, it had backed to the westward, finally settling to S.W., blowing in heavy squalls, with a force of ten strength. At eight o'clock had reduced the steam to the fourth grade of expansion; but, finding that the ship could not keep ahead of the fast following sea with that power, besides the double-reefed topsails and foresail (the spars would not stand more), full power was had recourse to again. Shortly after, the foretopsail was close reefed and main topsail furled.

In the afternoon a barque was passed lying to, with head to the northward. At the same time one of the timber-heads was discovered split, and as it was close to one of the boat's davits, she was of necessity got in. The ship was labouring very heavily and shipping a great deal of sea—quite afloat between decks fore and aft. The stern ports not of the slightest use in keeping out sea, and the broadside scuttles not much better; in fact, the fittings, in these particulars, seem to be totally defective.

The barometer first began to fall on the night of the 19th—from 30·100 to 30·098; then gradually to 29·700 at four o'clock on the morning of the 21st, when it commenced rising slowly, until it again stood at 30·100 on the morning of the 22nd, and the gale showed symptoms of breaking, allowing us to make sail gradually. Barometer still rising.

On the 22nd, wind still holding S.W.; but between four and five in the morning the gale began to break, but a very heavy sea running still. Our damages were found to be some of the port paddle-wheel berthing, starboard quarter-deck hammock netting, besides one of the timber-heads split. Water-ways and decks were leaky. In fact, the old craft has had rather a heavy straining, and we may yet find more defects.

By our reckoning I do not find that the strong wind has overcome the Lagulhas Current, although it has greatly reduced it.

On the morning of the 23rd the weather had so moderated that the fires were drawn, wheels disconnected, and all sail made, the wind still continuing from S.W. quarter, but gradually getting high, and later in the day veering to West, from South to North, and a heavy sea. As the wind lessened, the sea went down; but it was not until the morning of the 24th that the gale had completely ceased: at noon it was quite calm. Advantage was therefore taken of the still weather, and current tried by boat, giving a different result from that by reckoning, and very much less. The boat made it N.E.b.E., true, with a drain of about one-tenth of a mile an hour.

In the evening of the 25th the wind came up light from N.b.E. and N.E.

Throughout the 26th the wind was moderate from N.E. and we passed several patches of discoloured water, having the appearance

of shoals; which at a distance might easily have been taken for sand spits, but for the undulating motion caused by the swell.

Many of these patches spread over a considerable space, and lay across the direction of wind in long narrow strips, with the dark water between showing like deep channels. The sandy like look proceeds from the brown colour of the floating substance; quantities of which were taken up by bucket, and showing a species of small animalculæ or gregarious molsuen. They were perfectly visible to the eye, except the small brown substance, within a gelatinous substance, which, under the microscope, showed a small lobster-like insect, or gelatinous polypi of the *Pubularia* order.

These patches were first seen yesterday morning, and being now close up to the position of the doubtful Brunswick Shoal, between the parallels of 35° and 40° S., prepared for a deep sea cast. Steam was accordingly got in two boilers, and the following results, as shown in table.

Fathoms.	Times.		Intervals	Diff.	Remarks.
	h.	m.	s.	s.	
0	10	33	25		
100	10	34	51		
200	10	36	58		
300	10	38	32		
400	10	40	39		
500	10	43	1		
600	10	45	36		
700	10	48	15		
800	10	50	45		
900	10	53	30		
1000	10	56	18		
1100	10	59	7		
1200	11	1	52		
1280	11	4	10		

This cast, I think, is satisfactory that no shoal such as this Brunswick patch, with eighty-five fathoms marked on it, can exist near this depth of water; but as Horsburgh, in speaking of it, says they, the reporters, thought they got soundings, and gives it as occupying considerable space more than our chart shows, I decided on getting another cast. Therefore, after running about twenty-two miles on a S. 57° E., true, course, the lead was dropped again, 1,000 fathoms of line veered out, and the same success as before—viz., no bottom.

These casts, I consider, are sufficient to show that this Brunswick vigia may be wiped out of our charts; and we may also form a pretty good idea on the probability of the non-existence of those further southward between the same parallels. They are rather too far out of our course, more particularly as a portion of the steam-pipe is found to be so damaged that it will cause the disuse of one boiler at least,

and perhaps the whole, until it can be temporarily repaired. To effect these repairs it will be necessary, as far as we can yet see, to remove the pipes.

In the evening the wind was moderate from N.E. still, and as soon as the soundings were complete the fires were drawn and sail made.

Until nine on the morning of the 27th the wind was still from an easterly quarter, but apparently veering to N.W., with a cloudy sky and rain; when, a little after ten, in a heavy shower, the wind chopped to S.W., and finally fell quite calm.

On examining into the defective state of the steam-pipe it was found that a portion of that part connecting the after port boiler with the main steam-pipe was badly fractured in the elbow, a little before a flange, and so bulged that the metal was split nearly all round,—the crack open one-sixteenth of an inch at the least. This could not be temporarily repaired, for the coal bunkers were so close that it was impossible to work. Moreover, the space in any part here between the pipe and bunkers, even where no flange projected, was too small to admit of anything being done in its present position. The working of the bunkers was so great, with the motion of the ship, that it was a matter of great surprise that this injury had not been effected before.

To remedy this defect it was necessary to remove the elbow altogether and place a blank flange on the other portion of pipe, thereby losing the entire use of one boiler. And finding from examination that the steam-pipe on the opposite side was likely to be found in a similar state of damage, it was subjected to a rigid examination; and as, by an imperfect view, fracture from the same cause was commencing, it had also to be removed. To prevent a recurrence of this damage, the readiest way was to cut away a portion of the coal boxes where they came so close to this part of the steam-pipe, which Mr. Crighton, the Chief Engineer, had recommended as the only thing to be done. It was accordingly taken in hand, and fully occupied all the force of engineers until the evening of the 1st February.

Early on the morning of the 28th a light air came up from N.E., veered round by North till it again settled at S.W.; and for the next three or four days we got variable winds, veering between North and S.W., never exceeding four in strength and sometimes calm, until the morning of the 1st, when a breeze sprung up from South, veering round by East until it had apparently settled at N.E., five in strength, preceded by squalls of short duration. The long S.W. sea had greatly subsided, leaving it comparatively smooth. The appearance of the weather, too, showed a change in sky, now gloomy and overcast, while before generally clear.

Constantly passing through large patches of polypi; which at a distance had often the appearance of shoals, but is in reality the food of the whale. One was passed close to on the night of the 27th. On the morning of the 28th a solitary penguin was seen close on the ship's starboard quarter. It followed us for two or three hours,

diving occasionally and always coming up a little ahead of where it disappeared. It seemed anxiously to eye the ship.

On the evening of the 28th I had hauled a little northward to get a sounding within a reasonable distance of the shoal called Slot Von Cappelle, marked as doubtful; but finding at noon that our observations showed a southerly set, and we were driving East of it, I gave it up. But on a trial by boat I found the current North, by compass, at least quarter of a mile per hour. Yet our reckoning generally has shown us a southerly current with easting in it.

On further examining into our defects of steam-pipes and the working of the coal bunkers, it was observed that the main steam-pipe would probably also get damaged in the same way, for the iron stanchions supporting the deck had so much drift that it was plainly seen how much they came in contact in the rolling of the ship, which on the 29th was rather heavy, giving a good opportunity both of seeing it and showing how necessary it would be to check it; and the only way was by shifting the upper fastenings, and that could only be temporary. In fact, it is very plain that we want more power to remedy the defects than we have on board. On the evening of the 1st February the wind veered slightly to the northward, with an overcast sky, threatening rain.

On the morning of the 2nd the wind was rather on the increase, up to six in strength, with rain, which continued without intermission, and sometimes very heavy, till noon, with heavy looking weather. The barometer kept very steady. The steam-pipes were completed, as far as our means would allow, and steam was therefore got to test the work, which was found good. With respect to the stanchions against steam-pipe,—they had been set a little clear with the help of chocks between the boilers.

In the evening the wind, which had been pretty steady throughout the day, began to veer to westward, until it finally settled at S.W., fresh at first, with heavy rain and lightning from the westward. It did not last long, but there was a very evident change in the temperature, the thermometer in the space of four hours falling from 69° to 62°. Barometer rising.

On Wednesday, the 3rd, the wind was moderate from S.S.W., veering until noon, when it fell light and came steady from South. The weather throughout the day fine, and temperature from 64° to 60°. Barometer still rising; its maximum 30.45.

However, as we were drawing close up to one of the doubtful shoals on the chart, reported twice,—once by American brig *Atalanta*, and again by the Dutch ship *Samarang*, the latter stating, too, that it was a very extensive reef under water, with some pointed rocks above the surface on its western side, I felt very desirous of getting up to it before dark. I got steam in all boilers and connected. At half past six in the evening we were within eight miles of it, and coming on dark. I decided on getting a cast at once with the whale line used for temperature, considering that if we could not get bottom

with 1,200 fathoms it could be hardly possible that rocks could be in existence within that distance.

Fathoms.	Times.	Intervals.	Diff.	Remarks.
0	h. m. s.	m. s.	°	
	3 32 0	Let go.		Whale line used with the partially detaching weight of 50 lbs.
100	3 33 13	1 13		Wind light from S.S.W., long swell from S.W.
200	3 34 47	1 34	21	Massey's sounding machine attached, No. 1318.
300	3 36 36	1 49	15	
400	3 38 36	2 0	11	
500	3 40 46	2 10	10	
600	3 43 6	2 20	10	
700	3 45 31	2 25	5	
800	3 48 2	2 31	6	
900	3 50 32	2 30	1	
1000	3 53 7	2 35	5	
1100	3 55 55	2 48	13	Down, call it 1000 fathoms.
1200	3 58 40	2 45	3	Massey's machine shows 890 fms.

The line came in very well until the very last moment, appearing as if the weight was all right, returning as the partially detaching weights are intended to do. But suddenly the line appeared to be relieved of any strain, and only a portion of the valve came in. How to account for this circumstance I do not know, unless the weight had by striking at the bottom broken off the valve; but certainly from appearance and feel as it came up, it seemed as if the weight was still on all right. Certainly, by the intervals, the bottom was reached, and at about 1,000 fathoms. However, as this trial was only on the western edge of this shoal, and not liking to leave it without a real proof of the weight having been down, I resolved at once on getting another cast, although it was quite dark, which would not only prove the last, but show whether we could not carry on this work at night.

Fathoms.	Times.	Intervals.	Diff.	Remarks.
0	h. m. s.	m. s.	°	
	5 23 24	Let go.		The temperature whale line with a detaching weight of 80 lbs.
100	5 24 28	0 54		Massey's machine attached, No. 1318.
200	5 25 57	1 29	35	
300	5 27 35	1 38	9	
400	5 29 25	1 50	12	
500	5 31 26	2 1	11	
600	5 33 32	2 6	5	
700	5 35 42	2 10	4	
800	5 37 57	2 15	5	
900	5 40 18	2 21	6	Down between these soundings, call it 1020.
1000	5 42 45	2 27	6	Massey showed 1084.
1100	5 45 47	3 2	35	

A small specimen of the bottom was brought up in the valve, appearing to the eye like very fine sand of a dirty white colour, but evidently from a hard bottom.

One of the regular detaching weights was used, and the specimen brought up was convincing proof of its having been down, and also that the previous cast was correct. Now, getting such comparatively shoal water at such a distance from any land—800 and 600 miles,—it might possibly be that this shoal yet exists, but hardly any part above water, as the Dutchman reported. At all events, I decided on keeping close to the spot, and getting another cast at daylight.

The corrections here applied were not obtained until the following day,—that is, those for the line.

The first correction, or rather the point of depth fixed on, was as follows. The first great increase of intervals is between the 1,000 and 1,100 fathoms; therefore, the depth is somewhere between those two marks. To fix on the point I have taken the preceding difference of intervals from the difference column, which is 6 seconds, and which is rather more than the sixth part of the 35, the greatest difference between the 1,000 and 1,100. A sixth of the 100 fathoms added to the 1,000 makes it 1,017 when it ought to be at bottom, and an additional 3 makes it 1,020, an equal number, and fairly down; not far off the mark, I dare say,—at any rate close enough at so great a depth.

This is about the best sounding we have got, so far as the intervals go, although it was done in the dark, at least the marks only seen by candle light. The most difficult part of the operation was keeping the ship over the weight with the imperfect light; still it shows that it can be done. The weather was certainly favourable.

During the night a cast was occasionally got with the common deep sea lead and line, but with only fifty fathoms of line out.

At five on the morning of the 4th steamed on a N.E. course, by compass, for about five miles; when, not getting bottom with 800 fathoms, resumed the course E.b.S. The current was also tried by boat, and found to be W.b.N. quarter of a knot the hour. At nine dropped the common deep sea lead, but no bottom with ninety fathoms. At eleven stopped again for a deep sea cast.

Being in doubt of the weight having reached bottom at the first great change of interval, more line was paid out; which, on finally coming in, was found to have so fouled the weight and water bottle that the temperature was entirely lost, the thermometer having capsized. The line had greatly stretched too, throwing the original marks out of their places. It was measured on coming in; from which we get a correction to be added to every hundred fathoms of the depth shown by the line. This gave 904 fathoms as the true length of line; Massey, corrected, gave 923 fathoms.

Both in this and the previous sounding Massey's machine showed the greatest depth, and the only way in which I can account for the discrepancy is that we have not yet got the true correction.

Fathoms.	Times.	Intervals.	Diff.	Remarks.
	h. m. s.	m. s.	s.	
0	8 11 16	Let go.		Whale line. Partially detaching weight of 70 lb.
100	8 12 23	1 7		
200	8 13 57	1 34	27	
300	8 15 47	1 50	16	Therm. A 10 attached, showing surf. temp. of 71°
400	8 17 49	2 2	12	Massey, No. 1318, also attached.
500	8 20 5	2 16	14	
600	8 22 27	2 22	6	
700	8 24 49	2 22	0	
800	8 27 14	2 25	3	
900	8 29 54	2 40	15	} Down; call it 850 fathoms.
1000	8 32 47	2 53	13	
1100	8 35 54	3 7	10	Massey registered 833 fathoms.

In the afternoon, about three o'clock, I saw, at some distance off, an appearance of broken water; but, concluding it to be the effect of mirage, did not pay much attention to it. Shortly after, the officer of the watch reported passing broken water, and in an opposite direction, describing it as broken water rushing over uneven ground—a mill stream. On looking for myself, I certainly considered that I saw breakers, and like what I had previously seen, for there was nothing else to cause it, the sea perfectly calm, with hardly a breath of wind stirring. To be satisfied on the point I bore away in the direction, S.S.W., about two miles off, and steamed for it.

On closing, it lost the appearance of breakers, but there were large patches of a certain white substance, called by some spawn, undulating with the motion given by the long S.W. swell. The lead was kept going, and when close up a boat was sent to examine it, sounding in the very densest patch without getting bottom with 145 fathoms of line. What to call the substance I do not know, even after subjecting it to the power of the microscope, for the particles were really so small that I could make out nothing more than that it appeared like a white flossy substance, or like a piece of very fine cotton ravelled completely out into the thinnest of fibre. Infusoria was mixed up with it, and one of the small crustacæ. Some was kept in a bottle, but it appeared greatly to decrease, apparently as if dissolving itself into the other substance around it—the water.

I can easily imagine the taking of these patches for shoal water and breakers when discovered as we first saw them. Some of the men, who had not seen them at first, and did not know of our steering off the course to examine them, directly they got sight of them ahead, exclaimed loudly—"Broken water ahead." Such may have given rise to the Atalanta Rock, for it is very few merchant skippers in those days that would have gone out of their way to ascertain what it was. Even in these later times what instances have we of such utter indifference to anything but what will bring in the £ s. d., when we recollect the *Renovation* and the ships seen on the ice.

However, I think we may fairly expunge this shoal from our charts; but that there is shoaler water about here than usual we have proved,—if we may so call any under a thousand fathoms at such a distance from any land, our second cast being 904 fathoms.

(To be continued.)

REWARDS FOR SAVING LIFE AT SEA.

Board of Trade, March 25th, 1862.

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

To Captain L. T. Wilhelmie, of the Dutch barque *Johanna Maria*, a gold watch for his humanity to the crew of the *Hero*, of Liverpool, abandoned at sea, 21st of August last.

To the master and crew of the smack *General Havelock*, of Hull, £10, for their services in rescuing the crew of the schooner *William*, of Shields, wrecked 19th of November last.

To John Loads, Reuben Boyse, Henry Dew, William Loads, John Otway, Butcher Starling, Charles Harvey, Frederick Warnes, William Hook, and Richard Holiday, fishermen, of Blakeney, £2 each, for their services in putting off in a boat and rescuing seven of the crew of the brig *Viscountess Canning*, of Guernsey, wrecked on Blakeney Bar, 2nd of November last.

To Patrick Cox, Joseph Sinclair, John Bradley, and Nicholas Beshaw, of Harrington, 5s. each, for their services in saving the life of a boy belonging to the sloop *Perseverance*, of Douglas, which foundered on the 24th of November last, and to Mr. Thomas Nicholson, who lodged the boy for a day and night, the sum of 10s.

To Captain Constant Revel, of the French brig *Père de Famille*, a telescope, in testimony of his humanity to the crew and passengers of the steamer *Canadian*, of Montreal, whom he picked up at sea 4th of June last, their vessel having foundered.

To the master and crew of the smack *Joseph*, of Colchester, £12, for their services in rescuing the crew of the *Harmony*, of Sunderland, wrecked on the 2nd of November last.

To Captain S. De Boer, of the Dutch ship *Antonia Geertruida*, a telescope, in testimony of his kindness and humanity to the crew of the *Herculean*, of Liverpool, wrecked 29th of November last.

To Captain Isaac Jennings, of the American ship *William Chamberlain*, a sextant, for his humanity to the crew of the *Garland*, of Prince Edward Island, abandoned at sea 5th of November last, and landing them at New York.

To Captain Hans R. Siberaoth, of the brig *Peter Wilhelm*, of Denmark, a telescope, and to the six men forming the crew, £2 each, for

their services in rescuing the crew of the *Gem*, of Lynn, wrecked 25th of November last, and landing them at Hartlepool.

To Thomas Marley, master of the schooner *Friendship*, of Watchet, a telescope, in testimony of his humanity and kindness to the crew of the steamer *Waterwitch*, of Belfast, whom he rescued from their water-logged vessel 6th of November last.

To Captain Rossi, of the Chilian barque *Ester*, a telescope, in acknowledgement of his services in rescuing the crew of the *Autumnus*, of Liverpool, destroyed by fire 5th of October last.

To K. Duit, R. La Maire, P. Muye, W. Zeeman, C. Zeeman, J. Kuiper, B. Duis, and A. Been, 25s. each, for their services in rescuing the crew of the smack *Providence*, of Yarmouth, wrecked off Huisduinen, near Helder, on the 12th of November last.

To William Arthur Stopford de Vere Beauclerc, Esq., a silver medal, in testimony of the gallantry of his father, Lord Charles Beauclerc, who lost his life on the 2nd of November last, in attempting to rescue the crew of the Scarborough lifeboat; also to Mr. James Tindall, a silver medal, whose father, William Tindall, Esq., lost his life on the same occasion; and to Mrs. Burton, widow of John Burton, killed, £16; to Mrs. Hiles, widow of John Hiles, killed, £19; and to Mr. Brewster, father of Thomas Brewster, one of the boat's crew, also killed, £5; and to the following for their services on this occasion, a silver medal each:—Mr. Reginald Saxony, Mr. Joseph Rutter, Mr. Francis Chieva, and Mr. Richard Hick; to J. Rawling, a bronze medal and £4; C. Lacy, a bronze medal and £2; to William Skipsey, G. Livingston, William Bland, M. Bayfield, and Thomas Gofton, the sum of £1 each.

To Marcel Labousse and Victor Toussaint, inhabitants of Molene, £2 5s. each, for their services in rescuing the crew of the *Phantom*, of Guernsey, wrecked 28th of November last.

To Captain L. C. Blair, of the American ship *Brazil*, of Richmond, a sextant, for his humanity in rescuing the crew of the schooner *Mary Ann Gann*, of Faversham, abandoned 17th of October last, and landing them at New York 10th of November.

To Mrs. Gerrard, widow of John Gerrard, who lost his life on the 22nd of November last, while endeavouring to save the lives of a boat's crew at Burton Bradstock, £10, and £3 to each of her two children, aged ten and twelve years respectively.

To Captain Thomas L. Libby, of the American brig, *Young Republic*, a telescope, in testimony of his humanity and kindness to the crew of the *Nourmahal*, of Digby, Nova Scotia, which foundered at sea November 17th last, and landing them at Portland, N.S., 26th of the same month.

To Captain Hans Neilsen, of the Danish brig *Charlotte Hage*, a telescope, and to the crew of said brig (seven in number), £10, for their services in rescuing the crew of the barque *Ocean*, of South Shields, abandoned at sea November 21st last, and landing them at Madeira 25th of the same month.

To Captain T. Hincke, of the Bremen ship *Magdalena*, a telescope, in testimony of his humanity in rescuing the crew of the barque *Eliza*, of Liverpool, abandoned at sea November 27th last, and landing them at Bremerhaven.

To William Withers, Joseph Withers, Henry Withers, William Dix, John Dix, Robert Dix, John Earl, Samuel Warners, James Mack, John Wagg, Joseph Reynolds, William Clark, Joseph Loads, John Rudsham, and William Juniper, Mundersley fishermen, £1 each, for services to the crew of the *Armais*, of Sunderland, wrecked December 7th last, by manning their yawl and bringing said crew from the light-vessel at North end of Hasbro' Sand, and landing them at Yarmouth 8th of the same month.

To Captain Peneau, of the French schooner *Jeune Hortense*, a telescope, in acknowledgment of his humanity and kindness to the crew of the brig *Volant*, of Sunderland, wrecked December 3rd last.

To James Wallace, farmer, Ballywalter, 30s., and to Nathaniel Hingston, boatman, coastguard, 10s., for their services in rescuing the crew of the schooner *Louisa Melisa*, of Belfast, wrecked off Ballywalter December 15th last.

To Captain Oscar R. Perry, of the American barkentine *Ephraim Williams*, of New York, a sextant, in testimony of his humanity to the crew of the barque *Alice*, of Hull, wrecked off Leon Island on the coast of Patagonia, on the 4th of October last, and conveying them to Monte Video.

To a Moor £5, in addition to £2 given him by the British consul, for his services in rescuing a seaman belonging to the *Josephine*, of Cardiff, on the 9th of December last, who was capsized in a boat at Dar-el-Baida, at which time the master and a seaman were drowned.

To the crew of the yawl *Musquito*, of Scratby (seventeen in number), £4 5s., for services rendered in landing the crew of the brig *Scotia*, of Sunderland, wrecked on the 4th of January last, on the Barber Sand, off Scratby, Norfolk.

To Isaac Goldsack, coastguard station, Mullion, a bronze medal and £2; to John Williams, John Jenkins, Edmund Woolcock, and Philip Rove, £2 each; to Henry George, John Dale, labourers, and William George, fisherman, £1 each; for their services in rescuing four of the crew of the Austrian barque *Padre*, wrecked near Mullion January 22nd last.

To William Cooper, James Cooper, Jonathan Cooper, Joseph Bird, fishermen, and Henry Bird, a boy, forming the crew of the fishing smack *Sturgeon*, of Hoylake, £5, to be divided amongst them for their services in picking up the crew of the *Salacia*, of Waterford, abandoned about twelve miles S.W. of Great Ormes Head on the 25th of January last, and landing them at Hoylake.

To Captain Nowell, of the American ship *Tropic*, a telescope, in testimony of his humanity in rescuing the crew of the *Village Belle*, of Yarmouth, Nova Scotia, abandoned at sea January 6th last, and landing them at Havre.

To Captain Petel, of the French brig *Espiegle*, of St. Servan, a sextant, in testimony of his kindness and humanity to the crew of the *Susan*, of Jersey, abandoned at sea on the 17th of December last, and landing them at St. Pierre, Martinique, on the 30th of the same month.

To Captain Magnus Mall, master of the brig *Ernest*, of Sunderland, a telescope, in acknowledgment of his services in rescuing the crew of the *British Flag*, of Liverpool, abandoned at sea on the 13th of November last, and landing them at Queenstown on the 21st of the same month.

To Captain Hugh Wylie, of the *St. Lawrence*, of Glasgow, a telescope, in testimony of his kindness to the shipwrecked crew of the *Harriet*, of St. John, Newfoundland, on the 8th of December last, and £2 to each of the five men who manned the boat which conveyed the crew of the sinking vessel to the *St. Lawrence*.

To the crew of the smack *Ruby*, of Yarmouth (seven in all), £7, to be divided between them, for their services in rescuing the crew of the Dutch fishing vessel *Annetta*, on the 15th of November last.

To Captain Dudley Young, of the American barque *Diligence*, of Portland, a telescope, in testimony of his humanity and kindness to the crew and pilot of the schooner *Neptune*, of St. John, N.B., whom he rescued from their waterlogged vessel in January last.

To John Palmer, William Arband, and Francis Holmes, fishermen, £1 each, and to Richard Steel and William Gales 10s. each, for their services in rescuing the crew of the fishing coble *Francis Shephard*, of Whitby, upset on the 6th of February last in crossing the bar of the harbour.

To Hadj Boosheib, a Moorish labourer, £5, for his services in saving the crew of the brig *Sappho*, of Shields, wrecked off Saffi on the 27th of November last.

To Patrick Brown, labourer, £1, and to Thomas Doyle, Richard Doyle, James Furlong, Peter Cogley, James Doyle, and Patrick Cousins, labourers, 10s. each, for their services in rescuing eight of the crew of the American barque *General Stricker*, of Baltimore, United States, wrecked at Tacumshin, Wexford, 10th of December last.

To Captain Heyenga, of the Hanoverian schooner *Catherine*, a telescope, and to the four seamen forming the crew, £2 each, for their humanity in rescuing a portion of the crew of the *Salem*, of Belfast, discovered waterlogged and disabled 12th of January last.

To Captain Charles A. Homans, of the American brig *Nereus*, a telescope, to the two mates £2 10s. each, and to the five seamen £2 each, for their services in rescuing the master and six of the crew of the schooner *Paradise*, of Halifax, N.S., on the 5th of January last.

To Captain Y. Geffrey, of the French barque *Francine*, of Paimpol, a telescope, in testimony of his humanity in rescuing thirty-six passengers and crew of the Canadian (s. s.), of Montreal, on the 4th June last, which foundered after striking on a piece of ice off the coast of Newfoundland.

To Captain Thomas Gardner, of the American schooner *Bella Peck*,

of New London, a telescope, in testimony of his kindness to the master and crew of the schooner *Gipsy*, of St. Andrew's, N.B., whom he rescued from their waterlogged vessel on the 24th September last.

To Count Piola, commander of the Italian steam sloop *Malfatano*, a sword of honour, as a mark of gratitude for his services to the British steam-ship *Cairo*, when she ran aground near Ancona, on the 31st January last.

To Captain T. Thurlow, of the American barque *Lucy Ring*, a gold watch and chain, for his humanity to the crew of the barque *Kenmare*, of Picton, N.S., abandoned at sea 26th December last.

To Captain J. B. Morrison, of the American ship *Universe*, of New York, a gold watch, for his humanity to the crew of the barque *Englishman*, of Shields, abandoned at sea 26th December last.

To Captain Antonio Ponto de Campos, master of the Portuguese ship *Garibaldi*, of Oporto, a telescope, in testimony of his services to the crew of the schooner *Forester*, of Milford, abandoned at sea 4th January last.

To Captain Daniel D. Truman, of the American ship *Calhoun*, a telescope, in testimony of his humanity and kindness to the master and crew of the brig *Oxford*, of Liverpool, N.S., whom he rescued from their waterlogged ship on the 21st January last.

To the crews of two French fishing smacks, £12, for their services in rescuing the crew of the steamer *Lord Byron*, of London, wrecked on the Chaussée of Saints on the 26th February last.

To Bertel Larsen, Niels Petersen, Peter Jorgensen, Lars W. Jorgensen, Niels H. Hansen, Peter J. Nielsen, Peter Petersen, Magnus Bech, Ole Sorensen, Ole Christian Bertelsen, Ferdinand Bertelsen, and Hans Petersen, Fishermen and Pilots of Hertsholm, £2 each, for their services in rescuing the crew of the brig *John*, of Goole, on the 16th November last.

To Captain Adie, of the American barque *La Ciquene*, a sextant, for his humanity and kindness to the crew of the *Thomas Anne Cole*, of Melbourne, abandoned at sea on the 1st January last; and to M. L. Mc'Carthy, M. Morton, J. Hoben, J. Benson, and Charles Barney, seamen of the said American ship, who manned the boat which effected the rescue of the crew, £2 each.

To Captain Christopher Crowell, of the American ship *Highland Light*, a telescope, in testimony of his services in rescuing the crew of the *Queen of Sheba*, of Shields, abandoned at sea December 16th last, and landing them at Antwerp on January 18th last, £24, being £6 to the patron, £2 to each of the seamen, and £8 to the owner of the Belgian fishing boat *Garibaldi*, for services rendered to the crew of the smack *Success* of Barking, wrecked November 14th last, and landing them at Ostend on the 16th of the same month.

To Captain Soren Torjensen, of the Norwegian barque *Vesta*, a telescope, in acknowledgment of his humanity and kindness to the crew of the schooner *Currasow*, of Windsor, N.S., whom he rescued from their waterlogged vessel on November 28th last.

To Captain Charles Clark, of the American barque *Heiress*, a

telescope, in testimony of his humanity and kindness to the master and crew of the *Sarepta*, of Newcastle, whom he rescued from their waterlogged vessel on January 26th last.

To four men and two boys, forming the crew of a fishing coble, of Banff, £5, being £1 for each man and ten shillings for each boy, for their services in rescuing the crew of the schooner *Elizabeth*, of Aberdeen, on the 3rd instant.

THE SLAVE TRADE TREATY.

The following is a copy of the treaty between the United States of America and Her Majesty the Queen of the United Kingdom of Great Britain and Ireland, for the suppression of the African Slave Trade, concluded at Washington, April 7th, 1862 :—

The United States of America and Her Majesty the Queen of the United Kingdom of Great Britain and Ireland, being desirous to render more effectual the means hitherto adopted for the suppression of the Slave Trade carried on upon the coast of Africa, have deemed it expedient to conclude a treaty for that purpose, and have named as their Plenipotentiaries, that is to say :—The President of the United States of America, William H. Seward, Secretary of State; and her Majesty the Queen of the United Kingdom of Great Britain and Ireland, the Right Honourable Richard Bickerton Pemell, Lord Lyons, a Peer of her United Kingdom, a Knight Grand Cross of her most honourable Order of the Bath, and her Envoy Extraordinary and Minister Plenipotentiary of the United States of America, who, after having communicated to each other their respective full powers, found in good and due form, have agreed upon and concluded the following articles :—

I. The two high contracting parties mutually consent that those ships of their respective navies which shall be provided with special instructions for that purpose, as hereinafter mentioned, may visit such merchant vessels of the two nations as may, upon reasonable grounds, be suspected of being engaged in the African slave trade, or of having been fitted out for that purpose, or of having, during the voyage on which they are met by the said cruisers, been engaged in the African slave trade, contrary to the provisions of this treaty; and that such cruisers may detain and send, or carry away such vessel, in order that they may be brought to trial in the manner hereinafter agreed upon.

In order to fix the reciprocal right of search in such a manner as shall be adapted to the attainment of the object of this treaty, and at the same time avoid doubts, disputes, and complaints, the said Right of Search shall be understood in the manner and according to the rules following :—

First.—It shall never be exercised except by vessels-of-war, authorised expressly for that object, according to the stipulations of this treaty.

Second.—The right of search shall in no case be exercised with respect to a vessel of the navy of either of the two powers, but shall be exercised only as regards merchant vessels; and it shall not be exercised by a vessel-of-war of either contracting party within the limits of a settlement or port, nor within the territorial waters of the other party.

Third.—Whenever a merchant vessel is searched by a ship-of-war, the commander of the said ship shall, in the act of so doing, exhibit to the commander of a merchant vessel the special instructions by which he is duly authorised to search, and shall deliver to such commander a certificate, signed by himself, stating his rank in the naval service of his country, and the name of the vessel he commands, and also declaring that the only object of the search is to ascertain whether the vessel is employed in the African slave trade, or is fitted up for the said trade. When the search is made by an officer of the cruiser who is not the commander, such officer shall exhibit to the captain of the merchant vessel a copy of the before-mentioned special instructions signed by the commander of the cruiser; and he shall in like manner deliver a certificate signed by himself, stating his rank in the navy, the name of the commander by whose orders he proceeds to make the search, that of the cruiser in which he sails, and the object of the search, as above described. If it appears from the search that the papers of the vessel are in regular order, and that it is employed on lawful objects, the officer shall enter in the log-book of the vessel that the search has been made in pursuance of the aforesaid special instructions; and the vessel shall be left at liberty to pursue its voyage. The rank of the officer who makes the search must not be less than that of lieutenant in the navy, unless the command, either by reason of death or other cause, is at the time held by an officer of inferior rank.

Fourthly.—The reciprocal right of search and detention shall be exercised only within the distance of 200 miles from the coast of Africa, and to the southward of the thirty-second parallel of north latitude, and within thirty leagues from the coast of the island of Cuba.

II.—In order to regulate the mode of carrying the provisions of the preceding article into execution, it is agreed :—

First—That all the ships of the navies of the two nations which shall be hereafter employed to prevent the African slave trade shall be furnished by their respective governments with a copy of the present treaty, of the instructions for cruisers annexed thereto (marked A), and of the regulations for the mixed courts of justice annexed thereto (marked B), which annexes respectively shall be considered as integral parts of the present treaty.

Secondly.—That each of the high contracting parties shall from time to time communicate to the other the names of the several ships

furnished with such instructions, the force of each, and the names of their several commanders. The said commanders shall hold the rank of captain in the navy, or at least that of lieutenant; it being nevertheless understood that the instructions originally issued to an officer holding the rank of lieutenant of the navy, or other superior rank shall, in case of his death or temporary absence, be sufficient to authorise the officer on whom the command of the vessel has devolved to make the search, although such officer may not hold the aforesaid rank in the service.

Thirdly.—That if at any time the commander of a cruiser of either of the two nations shall suspect that any merchant vessel under the escort or convoy of any ship or ships of war of the other nation carries negroes on board, or has been engaged in the African slave trade, or is fitted out for the purpose thereof, the commander of the cruiser shall communicate his suspicions to the commander of the convoy, who, accompanied by the commander of the cruiser, shall proceed to the search of the suspected vessel; and in case the suspicions appear well founded, according to the tenour of this treaty, then the said vessel shall be conducted or sent to one of the places where the mixed courts of justice are stationed, in order that it may there be adjudicated upon.

Fourth.—It is further mutually agreed that the commanders of the ships of the two navies, respectively, who shall be employed on this service, shall adhere strictly to the exact tenour of the aforesaid instructions.

III. As the two preceding articles are entirely reciprocal, the two high contracting parties engage mutually to make good any losses which their respective subjects or citizens may incur by an arbitrary and illegal detention of their vessels; it being understood that this indemnity shall be borne by the government whose cruiser shall have been guilty of such arbitrary and illegal detention; and that the search and detention of vessels specified in the first article of this treaty shall be effected only by ships which may form part of the two navies respectively, and by such of those ships only as are provided with the special instructions annexed to the present treaty, in pursuance of the provisions thereof. The indemnification for the damages of which this article treats shall be paid within the term of one year, reckoning from the day in which the mixed court of justice pronounces its sentence.

IV. In order to bring to adjudication, with as little delay and inconvenience as possible, the vessels which may be detained according to the tenour of the first article of this treaty, there shall be established, as soon as may be practicable, three mixed courts of justice, formed by an equal number of individuals of the two nations, named for this purpose by their respective governments. These courts shall reside— one at Sierra Leone, one at the Cape of Good Hope, and one at New York.

But each of the two high contracting parties reserves to itself the

right of changing, at its pleasure, the place of residence of the court or courts held within its own territories.

These courts shall judge the causes submitted to them according to the provisions of the present treaty, and according to the regulations and instructions which are annexed to the present treaty, and which are considered an integral part thereof, and there shall be no appeal from their decision.

V. In case the commanding officer of any of the ships of the navies of either country, duly commissioned according to the provisions of the first article of this treaty, shall deviate in any respect from the stipulations of the said treaty, or from the instructions annexed to it, the government which shall conceive itself to be wronged thereby shall be entitled to reparation, and in such case the government to which such commanding officer may belong binds itself to cause inquiry to be made into the subject of the complaint, and to inflict upon the said officer a punishment proportioned to any wilful transgression which he may be proved to have committed.

VI. It is hereby further mutually agreed that every American or British merchant vessel which shall be searched by virtue of the present treaty, may lawfully be detained and sent or brought before the mixed courts of justice established in pursuance of the provisions thereof, if in her equipment there shall be found any of the things hereinafter mentioned, namely :—

First.—Hatches, with open gratings, instead of the close hatches which are usual in merchant vessels.

Second.—Divisions or bulkheads in the hold or on deck in greater number than are necessary for vessels engaged in lawful trade.

Third.—Spare plank fitted for laying down a second or slave deck.

Fourth.—Shackles, bolts, or handcuffs.

Fifth.—A larger quantity of water in casks or in tanks than is requisite for the consumption of the crew of the vessel as a merchant vessel.

Sixth.—An extraordinary number of water casks or of other vessels for holding liquid, unless the master shall produce a certificate from the custom-house at the place from which he cleared outward, stating that a sufficient security had been given by the owners of such vessels that such extra quantity of casks or other vessels should be used only to hold palm oil, or for other purposes of lawful commerce.

Seventh.—A greater number of mess-tubs or kids than requisite for the use of the crew of the vessel as a merchant vessel.

Eighth.—A boiler or other cooking apparatus of an unusual size, and larger, or capable of being made larger, than requisite for the use of the crew of the vessel as a merchant vessel, or more than one boiler or other cooking apparatus of the ordinary size.

Ninth.—An extraordinary quantity of rice, of the flour of Brazil, of manioc or cassada, commonly called farina, of maize, or of Indian corn, or of any other article of food whatever, beyond the probable wants of the crew; unless such rice, farina, flour, maize, Indian corn,

or other article of food, be entered on the manifest as part of the cargo for trade.

Tenth.—A quantity of mats or matting greater than is necessary for the use of the crew of the vessel as a merchant vessel; unless such mats or matting be entered on the manifest as part of the cargo for trade.

If it be proved that any one or more of the articles above specified is or are on board, or have been on board during the voyage in which the vessel was captured, that fact shall be considered as *prima facie* evidence that the vessel was employed in the African slave trade, and she shall in consequence be condemned and declared lawful prize, unless the master or owners shall furnish clear and incontrovertible evidence, proving to the satisfaction of the mixed court of justice that at the time of her detention or capture the vessel was employed in a lawful undertaking, and that such of the different articles above specified as were found on board at the time of detention, or as may have been embarked during the voyage on which she was engaged when captured, were indispensable for the lawful object of her voyage:

VII. If any one of the articles specified in the preceding article as grounds for condemnation should be found on board a merchant vessel, or should be proved to have been on board of her during the voyage on which she was captured, no compensation for losses, damages, or expenses consequent upon the detention of such vessel, shall in any case be granted either to the master, the owner, or any other person interested in the equipment or in the lading, even though she should not be condemned by the mixed court of justice.

VIII. It is agreed between the two high contracting parties that in all cases in which a vessel shall be detained under this treaty by their respective cruisers as having been engaged in the African slave trade, or as having been fitted out for the purposes thereof and shall consequently be adjudged and condemned by one of the mixed courts of justice to be established as aforesaid, the said vessel shall, immediately after its condemnation, be broken up entirely, and shall be sold in separate parts, after having been so broken up, unless either of the two governments should wish to purchase her for the use of its navy, at a price to be fixed by a competent person chosen for that purpose by the mixed court of justice, in which case the government whose cruiser shall have detained the condemned vessel shall have the first option of purchase.

IX. The captain, master, pilot, and crew of any vessel condemned by the mixed courts of justice shall be punished according to the laws of the country to which such vessel belongs, as shall also the owner or owners and the persons interested in her equipment or cargo, unless they prove that they had no participation in the enterprise.

For this purpose, the two high contracting parties agree that, in so far as it may not be attended with grievous expense and inconvenience, the master and crew of any vessel which may be condemned by a sentence of one of the mixed courts of justice, as well as any other persons found on board the vessel, shall be sent and delivered up to

the jurisdiction of the nation under whose flag the condemned vessel was sailing at the time of capture; and that the witnesses and proofs necessary to establish the guilt of the master, crew, or other persons, shall also be sent with them.

The same course shall be pursued with regard to subjects or citizens of either contracting party who may be found by a cruiser of the other on board a vessel of any third power, or on board a vessel sailing without flag or papers, which may be condemned by any competent court for having engaged in the African slave trade.

X. The negroes who are found on board of a vessel condemned by the mixed courts of justice, in conformity with the stipulations of this treaty, shall be placed at the disposal of the government whose cruiser has made the capture; they shall be immediately set at liberty, and shall remain free, the government to whom they have been delivered guaranteeing their liberty.

XI. The acts or instruments annexed to this treaty, and which it is mutually agreed shall form an integral part thereof, are as follows:—

(A.) Instructions for the ships of the navies of both nations, destined to prevent the African slave trade.

(B.) Regulations for the mixed courts of justice.

XII. The present treaty shall be ratified, and the ratifications thereof shall be exchanged at London in six months from this date, or sooner if possible. It shall continue and remain in full force for the term of ten years from the day of exchange of the ratifications, and further, until the end of one year after either of the contracting parties shall have given notice to the other of its intention to terminate the same, each of the contracting parties reserving to itself the right of giving such notice to the other at the end of the said term of ten years. And it is hereby agreed between them that, on the expiration of one year after such notice shall have been received by either from the other party, this treaty shall altogether cease and determine.

In witness whereof the respective plenipotentiaries have signed the present treaty, and have thereunto affixed the seal of their arms. Done at Washington the 7th day of April, in the year of our Lord 1862.

WILLIAM H. SEWARD.
LYONS.

EVENINGS AT HOME AT THE NAUTICAL CLUB:—*State of the Case of Monster Guns and Iron Sides—How Fixed Fortifications are Outdone by Moving Batteries—The Wooden Walls Outdone by Iron—The National Life-Boat Proceedings.*

The Chairman remarked, in commencing their evening discussions, that they had separated from their last on the all engrossing subject of

future naval warfare; a subject which was not likely to be set aside for a long time, inasmuch as the relative strength of guns and iron targets representing ships' sides was not so easily decided, as the former was increasing as well as the latter; still to the former there must be a limit, and that dependent on the power of managing them readily, and the physical strength of the gunners to withstand the effects of their management. As much destruction as possible, even to annihilation was the object of the gun, and the corresponding strength to resist its effects was that of the target representing the side of a ship. All this was yet undecided. A gun of 150 pound shot had been tried; one of 300 pounds, and one of 600 pounds had been mentioned. Where was all this to stop. The *Great Eastern* seemed to have settled the question as to the size of ships, and the 600 pounder, if it ever be made, will perhaps settle the size of guns. Since they last met, when they had considered the question between ships and standing forts, this subject had been fairly illustrated at New Orleans, and had satisfactorily proved the justness of their decision. In the grey of the morning, about two or three o'clock, when smoke made darkness, the federal ships (the moveable batteries) had passed the vaunted fixed fortifications, and New Orleans was helpless. The manner in which this was effected is related thus in the *Daily News* of the 24th May.

By a recent arrival from Havana we have a detailed account of the attack on New Orleans up to the day of the actual surrender of the city. The extent and carefulness of the preparations for this very brilliant naval feat exceeded anything which has been attempted before by the navy of the United States. The ingenious devices to guard the vessels, and to protect them from shot and the butts of the dreaded rams, will be read of with interest in Europe. Taken as a whole, this attack stands out as the most important—whether we consider the skill displayed, the colossal nature of the preparations, the splendour of the success, or its remote consequences—which yet adorns the annals of American naval warfare.

Forts Jackson and St. Phillip are exceedingly strong fortifications, built under the supervision of Beauregard, who is reported as saying they could withstand the navies of the world. They were relied upon as being impregnable, and throughout the South the capture of the city was regarded as almost beyond a possibility. This idea was very general. The Southern press up to the day when the news was borne on lightning wings to Richmond, Charleston, and Memphis, had its columns filled with descriptions of the measures adopted for the defence of this great Southern metropolis.

The bombardment began on the 16th of last month, and continued with scarcely a cessation for six days and five nights. It is stated that for seventy consecutive hours five shells a minute were thrown. During this time, by a series of operations, the chain across the river was cut, and as the passage was opened, Commodore Farragut resolved

to strike a vigorous and bold blow by running his fleet by the forts and seizing the city. This was no child's play. The stream was narrow, and was commanded for a long distance by the cross fires of the two forts. Above them lay thirteen armed rebel steamers, and among them the *Merrimac* and the ram *Manassas*. But the prize was worth the risk. The flag officer resolved to run the gauntlet of the forts, and then grapple with the Southern fleet, capture or drive them before him, and proceed at once to the city.

New Orleans, trusting to its forts, had within only an inferior, though still a formidable force of steamers, gunboats, and floating batteries. When, therefore, the forts were passed, it fell an easy prey to the invader. But how came the forts to be passed? They mounted, after a bombardment of twenty-one days, 100 heavy guns. They were so strong that even after New Orleans was taken, the commodore applied to have the *Monitor* sent to assist in effecting their reduction. They were placed so as to rake the approaches for two miles, while opposite them the ships were obliged to pass at only grape and canister distance. As the attacking fleet engaged them it had to contend with the additional difficulty of a strong head current, which brought down fresh ships into its midst. The forts opened when the fleet was a mile and a quarter distant, and continued firing until it was past. The guns were not ill served. They rained down a storm of shot, which sunk some vessels and disabled others. Yet, after enduring all this *feu d'enfer*, the assailants found themselves, in an hour and a half from weighing anchor, within the forts, and with New Orleans lying at their mercy.

The fleet, with the exception of three gunboats, had succeeded in passing the forts with a loss estimated at 120 killed and wounded. They then dashed on the Southern flotilla. The ram *Manassas*, in attempting to sink the *Mississippi*, soon found herself going to the bottom. Her foe was too much for her. The gunboat *Verona*, after repeated brilliant exploits, was at last pierced by the beak of the iron-clad Southern steamer *Webster*, and while sinking poured such a broadside into her foe that both went down together.

Of the thirteen Southern steamers, only two, it is said, escaped to tell the fate of their companions. Then the flag officer, seizing the Southern coal, steamed to the city and demanded its immediate surrender. The news, which came by the way of Cuba, was up to the day of the famous correspondence between the Union sailor and the mayor. At that date the forts still held out, but are now undoubtedly in the possession of General Butler; and from Southern accounts, coming to us by the way of Memphis, we are informed that the capital of the State has been seized.

So much for the fixed forts of New Orleans,—a ship or two sacrificed to their fire, and the rest run past them.

And so it would be with the Spithead forts, observed the Commodore, should they ever be built and attacked.

That may no doubt be the case, observed the Chairman; but might not such a fort be desirable for refuge; a weaker ship might find protection under it?

When England loses her supremacy at sea, replied the Commodore, her fate is certain. Not all the forts you can build will save her. But give her ships of the right sort to meet her enemy anywhere, and guns that will not burst, and while you have the right men to manage them, England will be as safe as she always has been.

Yes, sir, continued the Commodore, evidently warm in his subject, the real guardian of these islands of ours has been our ships, our navy; and as long as islands they continue to be and those ships command the seas,—the approaches to their shores,—they must still be so or, as I have said, sir, our fate is sealed. And what if they are to be all transmogrified into long, low, snake-like, hybrid things, made up of steam and iron? these must do their duty as the majestic race of real ships have done before them! But alas! who can look at this picture, this representation (in the *Mechanic's Magazine*) of the approaching fate of our glorious wooden walls without exclaiming, "What would Nelson have said!" and all those sea kings of former days, who have swept the seas of our enemies? He would not enlarge on the subject, it was too painful to dwell on; but he hoped that the Club would preserve among their records the commencement of the great change taking place in that power which had always been the right arm of this country, and that, although apparently reduced, its effective strength might never suffer. The following description of Captain Coles' cupola ships, appeared to be an outline of what awaited the navy of Great Britain. The description runs thus:—

We beg to draw attention to a cupola ship for foreign service, Fig. 1, showing the side-plates let down for action. Fig. 2 shows a boat for coast defences. It is fitted with two shields capable of mounting two guns each. Fig. 3 represents a three decker partially reduced and converted into a shield of large dimensions. The following remarks, sent by Captain Coles to a contemporary, are interesting:—

Since giving the lecture on this subject in June, 1860, much has come to pass, and I am pleased to be able to say that all my statements have been proved, and more especially the last paragraph. As various reports have been made relative to my vessels being sea-going, I will shortly describe their rig,—1. The mast I propose to be of iron, peculiarly constructed, requiring very little rigging, indeed, only one large lower shroud of a side, and one topmast backstay: the masts are all in one, on the polacca principle, with Cunningham topsails. The masts and yards for the three classes of sea-going ships are all the same size, lower yards being 70ft., topsail yards 60ft., enabling ships to supply each other on foreign stations with a spare yard. In rigging these vessels it has been my study to give the greatest amount of canvas with the least area of masts and yards when steaming head to wind. The manner in which our line-of-battle ships and frigates are now rigged retards them greatly, if not paralyses their movements alto-

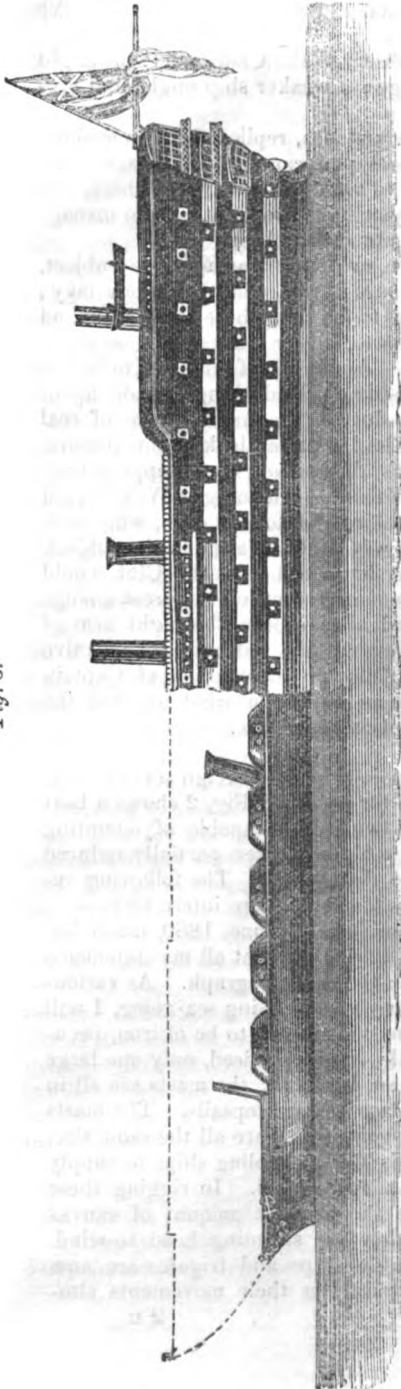


Fig. 3.

gether when sailing under steam in boisterous weather.

The section of the three decker cut down shows the space on the lower deck of each side of the shield,—viz., 16ft. each side; this is a clear space fore and aft, allowing the half of the ship before the engines for the men's messes, and

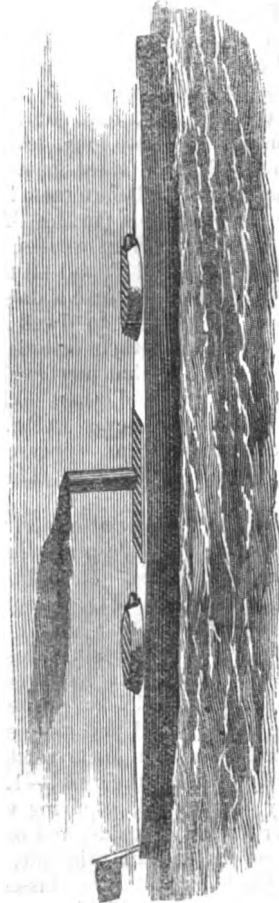


Fig. 2.

abaft for the officers' cabins. This is the plan I originally sent in to the Admiralty in 1859, but later I devised a double or cellular side, as shown in lecture at the United Service Institution in 1860. The ventilation of this ship is the same as any other flush deck vessel—by means of hatchways, with the addi-

tion of each cupola acting as a gigantic ventilator, the top of the cupola having an opening of 9ft. diameter protected by bars, and the sides open to the lower deck, admitting on all occasions a clear current of air besides the one through the hollow pivot. Doubt has been expressed as to inconvenience from concussion or smoke. The one on board the *Hazard* at Portsmouth, with two 110-pounders, was covered over and around the openings with tarpauling, both guns were fired simultaneously, with the usual crew of seven men to each gun and six lookers on inside, when not the slightest inconvenience was experienced from smoke or concussion. The conversion of heavy frigates and line-of-battle ships, constructed on the old model, into iron-plated vessels, fitted with my shield, could be effected at a comparatively small cost. As regards their capacity for carrying heavy ordnance, Sir William Armstrong truly said in his letter to the *Times*, this cupola solves the problem of working the heaviest guns,—indeed, it gives unlimited power of applying mechanical means and engineering skill to the working of the gun, which is under such perfect control that it could be fired easily when it would be impossible to

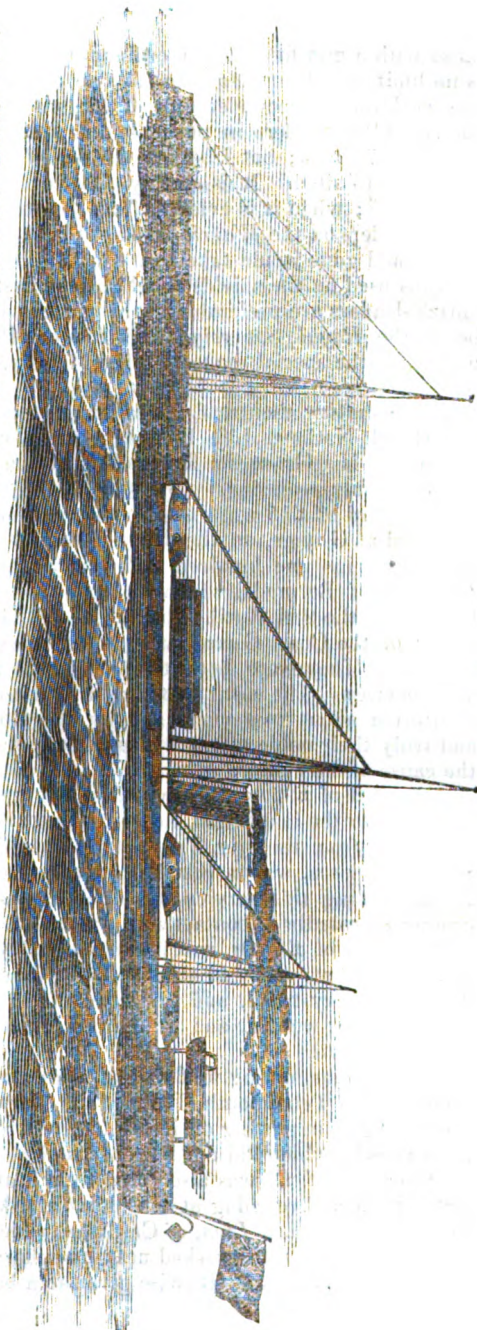


Fig. 1.

do so with a gun fitted in an ordinary port. Indeed, I believe there is no limit, and I hope soon to have an opportunity of proving that I can work the 150-pounder gun of 12 tons as easily as we now work the two 110-pounders in one shield. This shield weighs, with guns complete, 75 tons; but I believe the size of the gun, as far as working it, to be unlimited. It is merely a matter of fewer and larger guns and shields; when it is evident, from the results at Shoeburyness with 150-pounders on the *Warrior's* sides, that a ship carrying one of these shields and guns would take her.

Guns used on the shields should be the best the country can supply; muzzle-loaders are preferable to the present breech-loaders; they will be in the *Royal Sovereign* and *Prince Albert*. The latter ship is named by the special request of her Majesty.

The Secretary then read the following report of the last meeting of the Royal National Life Boat Institution, which took place on the 8th May. His Grace the Duke of Northumberland, K.G., President of the Society presiding.

A reward of £15 was voted to the crew of the institution's lifeboat stationed at Grange, on the back of the Isle of Wight, for rescuing on eight trips one hundred and thirty-four persons from the ship *Cedarine*, of Bermuda, which during thick weather had struck near Grange on the 2nd April. The Rev. J. P. Gaze and Mr. Cutajar, the officer of the Coast Guard, very laudably exerted themselves on the occasion. They were both thanked by the institution for their valuable services. The cost, £283, of this life-boat was presented to the institution about two years ago by the Royal Victoria Yacht Club, and truly their noble gift has thus already been of essential service to the cause of humanity.

A reward of £25 was also voted to the crew of the *Caistor* lifeboat, belonging to the institution, for rescuing amidst great peril the crew of seven men from the brig *Trial*, of Poole, which, during a strong wind and a heavy sea, was wrecked on the Barber Sands, on Sunday last. In performing this service the lifeboat was seriously damaged by coming repeatedly in contact with the wreck.

A reward of £4 10s. was likewise voted to the crew of the institution's lifeboat, stationed at Aberdovey, for saving the smack *Merrion Lass*, of Aberystwith, and her crew of three men. The vessel had, during stormy weather and a high sea, struck on Aberdovey Bar, on the 22nd April.

Expenses amounting to £26 15s. were also ordered to be paid to the crews of the Teignmouth, Palling, and Yarmouth lifeboats, either for assembling or in putting off in the night in replies to signals of distress from vessels, which did not however require their assistance.

A reward of £7 was also voted to a boat's crew of eight men, for putting off and rescuing at considerable risk of life the crew of three men from the smack *Lion*, of Cardigan, which, during a gale of wind, and a heavy sea, was wrecked near Fishguard on the 12th April.

A reward of £5 was likewise given to a boat's crew of five men, for

rescuing at much risk of life the crew of the smack *John and James*, of Chester, which, during blowing weather, had struck outside Aberystwith Harbour on the 5th April.

Various other rewards were also given for saving life from different wrecks.

Captain M'Donald, R.N., inspecting commander of the Coast Guard at Banff, was thanked by the society for his valuable services in assisting to establish two lifeboats on the N.E. coast of Scotland,

During the past month the institution had sent two new lifeboats to Dublin Bay—one was to be stationed at Kingstown and the other at Poolbeg. Some 'satisfactory trials had been made with the boats on their arrival on the Irish coast. Another lifeboat was building for Howth.

A lifeboat was ready to be sent to Kirkcudbright, on the Scotch coast. The cost (£250) of the lifeboat and her carriage had been presented to the institution by a gentleman resident in Manchester.

It was reported that a full-sized lifeboat, belonging to the institution, was to be seen in the gardens of the Royal Horticultural Society, which adjoin the International Exhibition. The boat had been refused admission into the exhibition by the commissioners, although their naval superintendent had requested the society, on the 23rd April to send her to the building. One would have thought that it would have been emphatically entitled to a place amongst the most conspicuous products of our skill, for while it would be impossible to overrate the importance of boats of this class, which were last year instrumental in saving 743 lives from shipwrecks on the British coast, it is equally true that in their construction England stands not only unrivalled but almost alone. Foreigners are thus to a great extent deprived of the opportunity of estimating the perfection to which the British lifeboat has attained.

Payments amounting to nearly £1000 were made on various lifeboat establishments. It was reported that on the recommendation of the Attorney-General, the Lord Chancellor had ordered £400 from a lapsed Chancery fund to be appropriated to the National Lifeboat Institution.

The proceedings then terminated.

[We regret being obliged to curtail our Club discussions from a press of other matter.—ED.]

THE PRESENT CONDITION OF MERCHANT SEAMEN, AND HOW IT MAY BE IMPROVED.

St. John's Lodge, near Aylesbury, May 1862.

Sir,—I feel sure that the above subject will always claim space in your columns: would that I were as sure of being able to treat it in the manner it deserves. But it seems right for some one to call at-

tention to it, as it has too long exemplified the truth of the old adage "What is everybody's business is nobody's business."

The peculiarities of a sailor arise from the circumstances with which his profession surrounds him, by which some of human nature's weakest points are laid bare, courting the attacks of numerous enemies. Unlike the young landsman he never has to provide for himself, but is in this point treated as a child so long as he goes to sea; which prevents him from acquiring a most important habit, and leaves him a prey to the thousands of parasites who live on the hard earned pay of seamen, and at the same time hang like dead weights upon them, it being their interest to do all in their power to prevent Jack from rising in the scale of society. That they succeed but too well may be seen by any one visiting the resorts of sailors, inhabited as they are by the veriest scum of the earth, a misery to themselves and a nuisance to the whole neighbourhood in which they dwell.

The great question is—How is this to be remedied? Something has been already done in the shape of Sailors' Homes, Savings' Banks, &c.; and to this may be attributed the progress which sailors have made during the last few years. But an immense deal remains to be done, both for them and for those who are tempted by such easy prey to lead the most degraded of lives; for the sailor-parasites are more likely to become useful members of society when the sailor-temptation is lessened by sailors going to the Homes and making a more provident use of their money. We ought also to have Homes for married sailors, where their wives and families could live at moderate terms, with the means of earning a little money; also a Benefit Fund for old and disabled sailors. This, by raising the moral standard of seamen, would proportionably increase their value to their employers.

The second question is—Who ought to get up these Homes and a Benefit Fund? The self-evident answer is—the employers. Government provides for its sailors and soldiers; the squires of villages get up benefit clubs and other societies for the advantage of those who work on their land; factory-owners get up schools and societies for the benefit of their artisans. It therefore stands to reason that merchants and shipowners should do this for sailors.

It is to do their work that sailors are induced to enter that peculiar line of life which quite unfits them for managing for themselves when they step on shore, and the least they can do is to devote a little of their time and ability towards providing for them when they arrive home.

We would not ask the merchants and shipowners for money. We think that as a rule sailors are well paid. What we want is a little of their head and heart work to plan a useful fund to which sailors may subscribe, and thus insure a provision for themselves in old age, or to their widows and orphans. We hear that there are £600,000 of unclaimed sailors' wages now lying idle, and also a surplus of about £200,000 in the hands of the Trinity House of overplus income. Now this last does not really belong to sailors, but to shipowners;

still they might request it to be added to the other, and form a nucleus for a grand provident fund to which all sailors should be induced to subscribe, and to which all dead seamen's wages and effects, when unclaimed, should be paid. The £800,000 to start with would be a good argument to induce sailors to subscribe.

But, independent of these sums, we think that sailors might be persuaded to subscribe freely to a fund well guaranteed by Government or by our first merchants and shipowners, especially if the method of subscribing to this fund were adapted to the way in which they receive their pay,—I mean in lump sums.

Let it be soundly calculated how much pension could be given to a sailor when fifty-five or sixty years of age, or when disabled, or to his widow or orphan children, after he had subscribed £20, or £30, or £40, or £50, and so on. Then let him pay it in lump sums at the end of his voyage, not yearly. An old shipmate or comfortable ship might be going to sail directly on his arrival home, then Jack, wishing to go, would perhaps pay a lump sum to the fund, instead of wasting his money in ruining himself and others.

Something of this kind must be done before sailors can steadily improve, and the sooner some Christian friends commence it the better. A good fund, more Sailors' Homes, Homes for married sailors, would be a grand step. Then all commanders and officers understanding the benefits could, whilst at sea, reason with and persuade their men to support these useful methods devised to help them. There would be no reason why commanders and officers should not subscribe to a similar or the same fund,—it would be a great boon.

It is useless to say that sailors are so ungrateful it is no use helping them. Sailors are human beings, made reckless by the peculiarities of their profession, and what they need is that those wise and provident heads into whose service they have thrown themselves should work with their whole hearts to remedy the great difficulty, which is chiefly the result of their circumstances.

Yours faithfully,

HENRY TOYNBEE.

To the Editor of the Nautical Magazine.

[We hope to see this excellent proposal taken up and discussed to maturity in these pages.—ED.]

New Books.

NARRATIVE OF THE CIRCUMNAVIGATION OF THE GLOBE by the Austrian Frigate "Novara," undertaken by order of the Imperial Government in the years 1857-59.—By Dr. Karl Scherzer. Vol. I. Saunders, Otley, & Co., London, 1861.

A goodly volume is this, reminding us of the days of quartos, when such narratives could only assume that form, handed down to us from the dark ages of Cook and Anson, continuing until those of Parry and Beechey, when symptoms of change came over the scene, and now they are unheard of. Voyages round the world have long lost the charm with which they were once en-

dowed,—even a journey to the pyramids or the source of the Nile is no longer attractive;—the roads are cut up,—the scenes commonplace,—the giant steam has penetrated everywhere,—discovery is at an end,—and there is nothing new under the sun, even at the antipodes. Be it so. There may be nothing new, but many a volume might be filled with what there is to learn in many strange places between us and our antipodes. So the *Novara* sallies forth from Trieste, under the auspices of the Grand Duke Maximilian, and here are the first fruits of her labours in the field of science armed with instructions for observation from that profundity of research and erudition, the venerable Alexander Von Humboldt.

Our space at the present moment compels us to be brief. But we propose in another number or two to accompany our German voyagers on their adventures even through our well known haunts of Rio, the Cape, St. Paul, Ceylon, Singapore, Canton, the Yangtse, Sydney, Auckland, Tahiti, Valparaiso, and Cape Horn, and thus home through the Straits, with the view of novelty hunting through these several points of their voyage. From a cursory glance here and there into this volume, the style in which information is conveyed, both in narrative and illustration, is not only attractive but interesting in some new points of view.

POPULAR AND MATHEMATICAL ASTRONOMY, *with the Principal Formulae of Plane and Spherical Trigonometry*,—By W. T. Read. Longman.

Mr. Read, experienced as a teacher in Greenwich School, takes a just view of the importance of impressing every particular of information given to a pupil vividly in his mind. Hence he conveys the astronomical knowledge he is for inculcating in a number of brief sentences on each branch of the subject, and adds a string of questions to which they are the answers. This is evidently a sure way of storing the mind of youth with facts, the good effects of which Mr. Read may have himself witnessed at the establishment to which he belonged, so well known for turning out well informed youths. It is an excellent system, and really the first accessory to the true art of teaching, which must render this a really popular book.

THE STUDY OF STEAM AND THE MARINE ENGINE,—By S. M. Saxby, Esq, R.N. Longman, 1862.

The author of this little treatise, who has an important appointment in H.M. service, seems to hold to the doctrine "Enough for the purpose." And this he keeps before him when throwing together in a small compass all that the engineer requires to know for his duty. This is decidedly a sound view of the subject, as thereby certain positions in it are gained from which the pupil can if he pleases launch out into further inquiries, which, although useful and satisfactory, are not absolutely required of him. It is thus that, seeing the scattered condition of that information which the engineer requires, Mr. Saxby has here given him in a collective form all the information on steam and elementary mathematics that his station demands he should know. After taking his pupil through geometry and plane trigonometry, the composition of logarithms, and glancing at the various mathematical curves and the application of mathematics to mechanics, he comes to the consideration of steam and its various qualities and applications, and enters largely into the subject of the component parts of the marine steam engine and its management in connection with principles. On the whole we think Mr. Saxby has taken a just view of the case he has to deal with; and his book bids fair, on account of its general character as far as the engineer's wants are concerned, to become a favourite work with that officer.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

JULY, 1862.

THE CAPTURE AND DISPOSAL OF THE PORTUGUESE SLAVER
"NEGRINHA."

I always considered it a most fortunate thing on joining a ship if I found that none of my messmates had ever been sent away in a slaver. In this case I could make sure of an attentive audience at least once a month, when I related how and where we captured the *Negrinha*, slaver. But as the narrative always occupied considerably more than an hour, if justice was done to the subject, it was necessary to obtain from the first lieutenant permission for half an hour's light. Even then the master-at-arms would be kept waiting sometime at our berth door before the lights and I were finally extinguished.

On joining the *Excellent*, gunnery ship, I found more than twenty messmates, none of whom had ever seen a slaver, and I made sure that all of them, collectively and individually, would be astonished at the wonderful adventures of Paddy Ashe! But how early in life do we learn disappointment, and that real happiness is not to be attained in this world. It was true that none of my messmates had ever been sent away in a slaver, but then we had Fitzjames and Charlewood in the mess, who had just returned from the Euphrates expedition under Colonel Chesney! And Fitzjames, with a volubility rarely met with in a midshipman's berth, would carry all before him, and Ashe's slaver did not dare show a stitch of canvas when the wind was blowing from the East, and he was amongst us. Highly illustrative this of Darwin's "struggle for life;" or perhaps a more

homely simile might be made by comparing us to rival organists, who have made their entrance into a village by opposite roads—the one that has a monkey is sure to drive the other out. I had no monkey and dared not roll up my green baize when Fitzjames was present. My only chance was to take advantage of his absence; but I never could fairly warm up with my subject before Fitzjames would appear, and cut short my tale with his horrid remark—"There's Ashe and his confounded little slaver again." And if I replied "Well, and you are always bothering us with your Euphrates expedition," "My dear fellow," he would observe, "that is something like a yarn," and off he would go from my shoulders right into the Euphrates. Of course the group of listeners that I had with difficulty collected to wonder at my adventures were now fascinated by the gorgeous scenery so vividly described by Fitzjames.

Alas, poor Fitzjames!—the sheet anchor of Sir John Franklin's unfortunate expedition. No one was more deservedly admired in our service than he was, and none was there whose loss was more generally felt. When the sun had sunk below the horizon of our voyagers for the third time, and the arctic winter with all its dreary blackness had again set in on Franklin's party, reduced in numbers and debilitated by scurvy,—then, when all hopes of rescue were really gone,—then, but not till then, did the worthy, excellent Fitzjames lie down to die. When he died their sun indeed had set!*

But now I have to tell my story to another generation. What a change in the scene twenty years has wrought. The fleet under Sir Robert Stopford, in 1840, I consider to have been the culminating point in the history of the British navy. Then it was a withering rebuke to give a man by telling him that he was "not a sailor but a tinker." Alas, alas! to think that I should live to see the day that a tinker would be considered the better man of the two. Yet so it is, and I can compare it only to the changing of dissolving views. Here we have a line-of-battle ship, with sails loosed and hauled out by their bowlines, yards squared, copper cleaned, and snowy hammocks well stowed. The picture rapidly fades away on the screen, and as quickly comes into bold relief an iron coal (Cole) box, with her smoke stack! A sailor with a pigtail should at once be placed in the British Museum, with a flint musket in his hand.

But to return to the glorious old times. When, at eight p.m., the desks were ordered off the table, grog and biscuit placed thereon, and after the growls of the midshipmen of the last dog-watch had gradually subsided, things began to look pleasant,—then, by a little judicious treatment on my part, I could manage to get my story asked for. "I say, Ashe, old fellow, we have not had that slaver yarn of yours for some time,—let us have it." I think that I generally began by

* Our readers will remember the first Chinese war, in which the proceedings of our fleet were so cleverly and facetiously described in rough verse, addressed to a friend. It appeared in our volume for 1844, and was the production of Fitzjames.—ED.

saying—"Unfortunately, none of you have ever seen a slaver. Well, never mind. We were cruising off the island of Granada—such a beautiful island, and the people so kind—horses, dinners, and parties every evening, and she, dear girl—but I say, 'Tom, pass the decanter, till I drink her health.'" By this time I had my messmates in hand, and could keep them wound up until our lights were put out. But I am no longer surrounded by my messmates, nor have I now the vivacity of youth—two great stimulants necessary to the success of a yarn. The graphic description of the chase, illustrated by two pieces of biscuit, a large piece bitten off one in order that the relative size of the schooner and frigate might be properly represented,—then the decanter doing duty for the island. All these must now be dispensed with, and the narrative without its adjuncts must stand on its own merits. Call it—

The Capture of the Negrinha, Slaver.

One morning at the latter end of August H.M.S. *Vestal* was under easy sail to windward of the island of Granada, when the dull monotony of cruising was broken by the mast-head man singing out "Sail on the starboard bow." As we were completely out of the way of merchantmen, the report produced great excitement, and in a few seconds our ship was under all sail in chase. By sunset we had gained sufficiently upon her to be enabled to make out that she was a suspicious looking schooner. At six bells in the first watch we had her within range, and after one or two shot had fallen pretty near her, she "let fly" every thing, and we brought her to under our lee.

Our prize was the *Negrinha*, schooner, under Portuguese colours, with 290 slaves on board. Lay and I were sent on board to take charge and to follow the frigate into Granada. Lay, who was the senior midshipman, had served sometime on the coast of Africa, and felt at home in these matters. He ordered the hatches to be taken off, for during the chase the miserable creatures beneath them had been closely battened down, and he went below to separate the living from the dead. The latter were brought on deck and thrown overboard. Whilst this was going on, I found out the lead of the ropes, and had things put to rights on deck.

The moon, in her last quarter, had now risen, giving sufficient light for me to distinguish the fearful state of things around me. This small schooner (not one hundred tons) had been literally crammed with living human beings. The stench that arose from between decks baffles all description. A poor Negro in the last stage of dysentery was lying on the locker close to where I was standing. As the evaporation was great, this poor naked wretch was suffering from cold, and had drawn the Portuguese flag around him. But when the mate saw the emblem of his country applied to this purpose, he gave the dying Negro a kick and dragged it from him. The English ensign was instantly unbent from its halyards, folded, and placed over him; and this poor creature, instead of dying a slave under the flag of Portugal, died a free man sheltered by the glorious banner of old England.

As it would be impossible to allow all the slaves to move about on deck at once, Lay was obliged to allow the same regulations to be followed that were in force before the slaver was captured. The Negroes were fed three times a day on rice and palm oil. On these occasions they came on deck and were placed in groups of ten; then the cooks went round and emptied a bucket of rice on the deck in the middle of each group, and another cook poured a cupful of oil on the top of it. If one of these hungry creatures dared to touch a grain of rice before the signal was given, the boatswain flew at him and nearly flayed him. When all was ready the captain gave a signal, and then the slaves uttered a cry that had a most unearthly sound. The deep bass of the men, together with the shrill treble of the women and children's voices, produced such a discordant cry of misery that must have reached to heaven. What it was for I could not make out, unless it was meant for grace! However, upon another signal being given, these half starved wretches began to feed by stuffing handfuls of rice into their mouths, to the great danger of choking themselves; and as the heap of rice became less, so their motions became accelerated, until this extraordinary repast ended in a regular scramble.

A group of children (boys and girls) that were immediately below where I was standing had attracted my attention, and I observed that one little girl was fat and glossy, whilst the others were thin and rough skinned. I remarked that she never filled her mouth so full that, to prevent choking, she would have to cough, and so lose a portion of her food, as did the others; but she always kept the supply only equal to the demand, and so distanced them all. When it came near the end, and the scramble commenced, she made two balls of rice and placed one under each armpit, and then her hands and mouth were ready for the scramble.

There was a poor emaciated boy,—his head like a skull merely covered with skin, the whites of his eyes were yellow, his teeth were covered with a stringy saliva, the flesh of his arms and legs was completely wasted away, showing the poor muscles, and his ribs were plainly visible. He, poor boy, was not strong enough to fight for his food, and each day, as he got weaker, he fared worse. On one occasion he managed to get his arm through the crowd, and succeeded in securing a handful of rice; but as it was near the end, another boy captured it and put the contents into his own mouth, and then he picked every single grain of rice from between this poor boy's fingers, and ended by sucking off what little palm oil there was sticking to them. Again this poor child had to draw back his unsuccessful arm. He had not moisture enough in his frame for tears, and scarcely sufficient breath for a sigh!

My little fat girl was now enjoying her ball of rice, and when she saw the unsuccessful attempt of the poor boy, she broke her ball of rice in two, and immediately gave him half. This act of generosity on her part went direct to my heart, and I instantly procured a coloured shirt and gave it to her. When she put it on, her companions thought her the most fortunate and favoured of human beings. When

the slaves were landed at Granada I spoke to an officer of the commissariat, and my little fat girl (who I called Annie), instead of being sent to work on an estate, was taken into service, and turned out a valuable and faithful domestic.

The women and children were allowed to be on deck as much as possible, but the men only to their meals. In the course of my observations I saw the children amusing themselves by playing "cat's cradle." The figures were similar to ours, with, I think, one or two added. On one occasion I joined, and their delight was great when I made a slip, or was ignorant of the way to take off the cradle.

A poor woman I found had given birth to a child, but from the want of proper and sufficient food she had not nourishment for it. I could not make pap, but I made her drink some porter, which had the desired effect, proving a very good substitute.

When a shower of rain came on at sea, the women and children were sent on deck to wash, and they appeared to enjoy the splashing as much as young ducks do, as a great treat. They were sometimes given chalk or whitening, which they converted into a paint, and with great ingenuity and taste they ornamented each other on the face and neck with it, and these young girls, with a white streak down the nose, would look just as self-satisfied as a young lady does when she has given the last finishing touch to a full dress before her glass. Human nature is the same in the naked savage as in the most cultivated of the fair sex,—that desire to make the sterner sex surrender at discretion, either by an irresistible streak down the nose, or by a bewitching wreath encircling a snowy brow. The desire is common to both. The children never missed an opportunity of stealing. On one occasion a piece of fat pork was stolen, and when the boatswain went round with his cow cane, these naked creatures would stand up to show that they were not the receivers of stolen goods, and by showing that their hands were not greasy that they had not partaken of the booty.

One night I heard a sucking noise, and on looking beside me I saw two boys with their teeth fastened in a piece of fat raw pork, trying to tear it in pieces. The heavier boy, when he gave a pull, would draw the other boy down on him, who would then give it a shake; but at this time of the play the boatswain made one of the party, and the scene ended in a hornpipe, the time being well marked on their naked backs with his cow cane. On another occasion I saw a group of children that had found a mouse's nest, with young ones, that looked like raw pieces of meat, with two little black currants for eyes. But very soon they were seized, and each of a small party held one by the tail, and by placing it on the top of the tongue allowed it to crawl down the throat as far as the tail would let it go, when they pulled the young mouse back again by it, so that this great enjoyment might be prolonged! To satisfy my curiosity I placed myself a little nearer to watch the proceedings more closely: but seeing this, the children became frightened, let go the tail, gave a chop, and instantly shut

their mouse-traps! However, I could easily perceive, by the twinkling of their eyes, how vastly they were enjoying the delicious morsel.

The women and children were treated as well as could be expected under these horrid circumstances, but the sufferings of the men cannot be described. In order to show how they dreaded the awful confinement below I will explain the difficulty of getting them there. After their meals about ten men were placed in the square of the hatchway, when the boatswain, with a strip of bull's-hide, commenced thrashing these naked negroes with all his strength until they got from under the hatchway; then ten more were sent down and were nearly flayed by the boatswain. The second batch try to push the first batch further forward, which, as it is a matter of life and death, the first resist with all their power. Those who are pushed forward and away from the fresh air are generally found dead in the morning, and thus batch after batch is sent down to find what places they can, air or no air. The screams of these poor creatures as they are unmercifully struck by the boatswain would reach the coldest heart not steeled by the love of gain.

There is scarcely height enough between the planks on which they are placed (on the top of the large water casks) for the men to sit upright. There are but two small hatchways to give air, and each negro is shackled to another by the ankle and secured, not with a padlock, but with a forelock, which is clenched; and when one man dies the other has to come on deck, when a cold chisel is applied and the corpse removed. As dysentery is the common disease that they suffer from, it is fearful to think what torments they must endure in the condition which this loathsome disease produces, with their shackles on in this confined space.

When all the slaves are forced below, and the bolts drawn across the hatchway, the long hours of night have to be passed by these poor creatures in one position. Each slave sits upright, with his legs open and stretched out, so that another slave may sit close up, with his head over the shoulder of the one in front. And thus these poor unoffending negroes pass the time of their confinement in this painful position, listening to the dying groans of those around them. Such are some few of the miseries of what is termed the middle passage.

As soon as we arrived at Granada the slaves were sent ashore and apprenticed to the different estates for seven years, except my little fat girl, who, as I said, was taken as an indoor servant. The men were given to the West India Regiment. I heard afterwards that they all mutinied when sent on detachment, but most of them were shot down in the attempt. The crew were sent prisoners on board the *Vestal*, with the exception of a handsome young Spaniard, who appeared on the schooner's books as a passenger. We had no control over him, so he offered us a cigar, went on shore, and found his way to the Havana. We all knew that he was the captain, but as he had put the mate down as captain and himself as a passenger, we could not detain him.

After the negroes* were landed the schooner had to be cleared out and some very important defects made good before she could be sent back to the African coast to be condemned in a prize court. In the meanwhile the *Vestal* went to sea again and captured another slaver, a fine brigantine, also under Portuguese colours, with some 400 slaves on board. Lay was given charge of this fine vessel, and I had the honour of commanding the *Negrinha*. I was afraid that if I made known all her defects she would be declared unseaworthy, and of course would not be sent across the Atlantic, against the Trade winds during the hurricane months. But, in fact, had she been inspected she would have been found completely rotten. As an instance, I pulled the bolt that secured one of the chain plates out with my fingers, wrapped some spun yarn round it, and drove it in again. Some carpenters were sent on board, but I hurried out of the harbour and the *Negrinha*, under my command, commenced her voyage.

The crew consisted of eight seamen, and we had five of the original crew prisoners, including Don Miguel, the mate or captain. A master's

* The character of the African Negro has been thus alluded to in reference to their conduct during the civil war in the States of North America, and in which their conduct certainly has been most creditable to them.—ED.

"When the history of this great struggle shall be written by the pen of calm and impartial justice the conduct of the slaves will form one of the brightest of its pages. Men filled with prejudice and passion may sneer at the intrusion of the 'everlasting nigger' into this contest; but every true and noble mind will accord to this down-trodden and abused race the signal merit of rare virtues. The slaves have exhibited a character such as will not elsewhere be found in the history of slavery. The religious trust with which they have awaited the hour of deliverance, the alacrity with which they learn, their disposition to work, and in the main their industry, all conclusively show that they are capable of freedom. The coloured people of the North, notwithstanding the unjust and disgraceful prejudice which still exists, have gradually advanced in intelligence, in the accumulation of wealth, and the virtues of life. From time to time one of the coloured preachers finds his way to England, and gives evidence of his fitness for the sacred profession. Over three thousand of this class met in the city of New York to hold a jubilee in honour of the act of Congress emancipating slaves in the District of Columbia. The occasion was marked by the features which belong to the African character, and the speeches would compare with a similar gathering of whites, in grace and manner of delivery, in elevation of sentiment and intellectual power. The tone of all was hopeful, loyal, and liberty loving. The most marked and representative address was that of the Rev. Mr. Garnet, who, after paying a tribute to President Lincoln, referred to the new beauty which the stars and stripes now assumed before all the nations of the earth. He repudiated the idea of colonization as foolish, and called the attention of the coloured people to the new duties which from that time henceforward devolved on them, and told them that they must be ready to answer the call of their country, to stand up for the promotion of its interests and the establishment of human liberty. The coloured people will be very much improved in their condition by the march of events, and as fast as the chains fall from their kindred, the stigma of degradation which is now so unjustly attached to the race will grow less, and it will pass entirely under the full influence of rational justice, enlightened humanity, and pure religion."—*Daily News' Correspondent*.

assistant was sent on board to assist me, but I must, in justice to myself, here state that he never did a day's duty, and was on the sick-list all the time,—nay, he tried to make the crew mutiny, but I am happy to say that they would not allow themselves to be tampered with. My prisoner, Don Migual, messed with me, and as the master's assistant lived below, our mess consisted of three. There were two boxes or bunks on deck, one on either side of the quarter-deck; Miguel slept in one and I in the other. The prisoners lived in the hold and the crew had a berth forward.

As we were nine to five, I had no fear of a hand to hand fight; but I also knew that a smaller number could retake the schooner by treachery. I put no restraint on them, and they fared the same as ourselves, excepting that no grog was given to them. We made a show of mustering at quarters at sunset with our cutlasses, and I gave directions that they should always keep them at hand. As it was not likely that they would attempt to retake the schooner until they were on the coast of Africa, where they could run into one of the rivers after wiping their knives, I made it a point to lay off on the chart the position of the schooner each day at noon a hundred miles further off the coast than she really was, and of showing the chart to the captain. I also knew that the first thing they would do in trying to retake the schooner would be to fasten the sliding door of my bunk, murder the man at the helm, and then finish the crew in detail as they came on deck. But I had managed to loosen a panel at the bottom of my bed, so that when I heard them fastening my door I could be out through the bottom, and with a dirk, that none knew that I had in my possession, could have commenced the fray. I must confess that I should have liked to have taken those long knives away from the prisoners; but as that would have looked like being afraid, I allowed their owners to keep them; although of an evening, when Miguel would sit at the door of his bunk cutting tobacco with a long gleaming blade, I could not help feeling an uncomfortable sensation a little below my waist-coat.

Although we had nothing but ship's provisions, with the exception of a few tough fowls, we got on very comfortably. Our steward, Louis (a black) was one of the prisoners, and a first rate artist he was. The variety of dishes that he could make up out of salt beef and pork, rice and biscuit, was remarkable. Sometimes the salt beef was minced, and had a freshness about it that made me almost believe the rascal chewed it. He had two thumbs on each hand, and when he gave you a cup or plate, the sight of this black claw produced a sensation that required great strength of mind to prevent a catastrophe. I have heard of turkies being fed on walnuts to give them a nice flavour, but let their admirers taste a tough old fowl that has been fed on cockroaches, and they would be in a position to state whether the flavour produced by walnuts or cockroaches is the most delicious.

From the many incidents of our voyage I will here select one or two, which will show the truth of the saying "Necessity has no law," and how we overcame difficulties. On the day after we sailed we lost,

in a squall, ten feet of our mainmast. The mast had been already sprung and badly fished by our carpenter. Well, as we could not possibly go back and be laughed at, we sent down the wreck of the masthead and set about bolting on cleats to support the rigging, but there was not a single carpenter's tool on board, excepting a small axe. So with this we made a saw by notching a cutlass and then rubbing the sides smooth with a holy stone. When the cleats were cut out we could not get an iron hot enough in our small range to burn holes in the cleats, and there were no nails on board. We next looked for a piece of wood that had holes in it, and at last found an awning stanchion, out of which we made cleats. These we fastened on with the bolts of the slave shackles, and finally made a new masthead, turned in the rigging, and set the mainsail with two reefs down, but the craft never stayed after that.

We next found out that all the water-casks were leaking, and if they could not be stopped the most horrid of all deaths awaited us. It appeared that the carpenters, in order to clean out these large casks, had bored augur holes in them, and afterwards had driven square pieces of wood into these round holes. Now, as these casks were far too heavy to get on deck, we managed to force in the useless plug with a new one by means of an iron lever; and as there was but a small space between the heads of the casks, it was a very difficult task to perform. In the square of the hatchway there was a large cask that had a scuttle cut in it, and as we could not force a plug into this as we had done into the others, I got into it, and with our only tool (the hatchet) I knocked out the plug, and then the water running out sucked in the other plug that I held in my hand near the hole. But to perform all this I had to put my head under the water and keep it there some time, so that I looked like a seal with my black head popping up above the water. The reason that I performed this duty was simply because I preferred drinking the water that I had bathed in in preference to that used by any other person for a similar purpose.

Our sails were split and torn by every squall, and we had not a spare sail on board; moreover, we had to mend them whilst they were wet, and in so doing the few needles that we had were soon broken. To cross the Atlantic under bare poles would have been an impossibility. We however thought of examining the prisoners' bags, when, to our great joy, we found six needles; and as all our twine was expended, we drew the threads out of an old awning, and rubbed them down with soap.

If the schooner had had a single sail that we could have trusted in a gale of wind, I should have stood well to the northward and picked up a westerly wind, and then ran across to the coast; but as I had no sail that would stand a moderate breeze but the fore trysail, we had to keep out of the latitude of gales of wind and fairly to beat against the Trade winds across the Atlantic. Notwithstanding, we have been drifting about for twenty-four hours with our mainsail unbent to repair. In vain did I scan the horizon in hopes of seeing a sail, but we

were out of the track of all vessels; besides which, I had only the inverting telescope of my sextant, which, with its small field of vision, afforded a most unsatisfactory mode of looking for assistance.

As a specimen of the rottenness of the craft, the tressle trees broke short off and the topmast came down on the fore-yard. The rack also that was bolted to the ship's side was torn away with only the top-gallant sheet and topsail halyards belayed to it. When she pitched we found that she made a great deal of water, and we discovered that the carpenters, in repairing the schooner, had driven the oakum in for about two feet of the second seam above the copper, and had not replaced it with any other. To overcome this difficulty one of us had to be slung in a bowline knot over the bows, and with the hatchet force greased sinnet into the seam. As I had to set an example to my crew, instead of ordering a man to drown himself, I thought it better to go on the bows myself. But it was a very disagreeable job, for every time the schooner pitched I was several feet below the surface of the water, sticking to the bows like a limpet by means of the hatchet. As might be expected the pump now got out of order, and wanted new leather on the boxes. A dress boot supplied the leather, and from the heel of an old shoe nails were obtained fit for the purpose.

Our next misfortune was the tiller breaking off short in the rudder-head. There was a locker built over it, full of bottles, which were knocked away pretty quickly. As an immediate control over it was necessary, a timber hitch was taken with the end of the boom sheet, an awning stanchion shoved in, and the helm kept aweather. As we had no tools, the piece of the tiller that was bolted into the rudder-head was very difficult to get out.

Fever now broke out on board, but I had brought with me medicines and directions for using them, and by keeping the patients in the open air as much as possible, and with a due regard to cleanliness, no fatal cases occurred.

One morning at daylight we saw a brig to windward running down the Trade with her fore topmast studding sails set. I kept away, so that I might speak her, but, unfortunately, we had no colours to show! as the small boat ensign, the only one we had, was lost. I saw that she did not like us and became frightened, for she first tried to luff up, and then she tried to run us down. Our appearance was certainly against us,—a rakish-looking schooner, with a number of hands on deck—Spaniards, Portuguese, and others; besides all this, Master Louis, the black, came from cooking the breakfast with a long knife in his hand, which, when he found that she would not answer our hail, he flourished in a most ferocious manner. We passed close under her stern; the crew kept close under her bulwarks, and we could only see their heads peeping out; and on they went without speaking a word, which to us was very provoking. We had then been two months out and were sadly in want of stores, and this was the first sail that we had a chance of getting assistance from. There was no use in losing

temper, but I must confess that I was not a little put out. Don Miguel made another cigarette and smoked it, and when the stranger was out of sight we left off swearing about her.

One evening Louis came down into the cabin with his jacket on—a very unusual thing to do in so warm a climate: and presently Don Miguel asked me if I could take off a man's shirt without taking off his jacket? No, certainly, not I indeed. But to my great astonishment he performed before me this wonderful piece of dexterity on Louis.

I must here make a slight digression by saying, that of all the tricks I have ever seen, none have I seen more successful than this. Of course, as in all good tricks, the principal actor must have a confederate, who prepares his shirt by not putting his arms through the sleeves, but still buttons the cuffs round the wrists, and everything looks as natural as possible. In a frigate, with but two accomplices, I have kept the rest of my messmates in a bewildered state for upwards of a year. The fact is, that it is not every one that will allow his shirt to be taken off in public, and whenever I saw any timidity, I instantly offered to relieve that gentleman of his linen! This apparent willingness on my part to operate on any one, and my knowledge of human nature, gave a reality to the thing that was quite refreshing! I will only give one example of my success and then return to the *Negrinha*.

I happened to visit St. Jago, the capital of Chili, which is about ninety miles from the coast; and one morning I was calling on the English ambassador, and fell into conversation with his secretary, whom we will call Jones. Jones was observing to me that my fame had reached that city, and that he had been asked by some young ladies about this surprising performance. As we were to meet that night at a large party, I asked Jones to prepare me a shirt. Now Jones was one of those tidy Englishmen whom you might be sure would not allow the least liberty to be taken with a garment that apparently required so much time to adjust. Well: the evening came, and when I joined the party alluded to there was no Jones to be seen; but so powerful is the influence of curiosity, that soon after my appearance I was asked by some young ladies to take off a gentleman's shirt, telling me, at the same time, that it was impossible to do it. Of course my reply was, that if I unbuttoned the wristbands and collar, although the hands might be crossed in the lap, still with a little trouble the thing could be done, as I would soon show them. On which I immediately turned round to a gentleman who, I think had only a front with a collar on, and asked him to let me take off his shirt! He looked astonished at me, as well he might, and placing his hand suddenly on his neck, refused me downright. This was all right, of course,—quite to my purpose; and thus I went on selecting the timid among them, fearing very much that some one would really comply with my extraordinary request. So by way of diversion, I went up to a handsome young lady, and said, that as all the gentlemen were so very unkind, perhaps she would allow me to "*sacar la camisa*" for

her. At this there was a scream of laughter, in the middle of which my friend Jones made his appearance. I took no particular notice of his arrival, but still was persevering in my offer to take *any* man's shirt off. Now Jones was a great favourite, and he was instantly surrounded by the ladies, who intreated him to let his shirt be taken off. At such an outrageous request, from young ladies too! Jones of course looked almost abashed, adding, that it was a most unusual thing for a gentleman, who might happen to be enjoying an evening with friends, to be asked to take off so important an article of dress, and one that was so essential to comfort, and in the politest manner refused to comply. But this would not do. Another reinforcement of the fair sex renewed the attack, and at last poor Jones, with a sigh, said, well if they really must have it, they must. So I placed Jones in a chair in the middle of the room, with lights before him that all the ladies' eyes might be satisfied, and then commenced my operations by unbuttoning his waistcoat and taking off his scarf.

I never saw a gentleman so carefully dressed! the number of pins that he had in the ends of his scarf was sufficient to convince any one that there could be no collusion in the case. Next I unbuttoned the wrists and collar of his shirt, and then requested that he would sit up for one moment whilst I drew the tail from under him; after which I found that the interior garment required a little coaxing. But nothing daunted, I went deliberately on with my work, not minding trouble. All the while the most intense interest in the proceedings was evident among the company. Some said that by turning the shirt inside out it might possibly be taken off: others made large bets that it could not be done: while at the same moment my task was accomplished. And great was the astonishment on seeing me draw Mr. Jones's shirt completely off his back. Of course as the gentleman stood merely in his dress coat and only a flannel on, an involuntary scream came from the ladies, that was prolonged in convulsive laughter, and poor Jones disappeared from the scene, dragging after him his shirt by the sleeve,—a good specimen how easily the *que* is cheated. But I was known in Chili and Peru as "*el hombre que puede sacar la camisa*," and this exploit added not a little to my fame.

To return to the *Negrinha*. I must confess that my knowledge of navigation was rather limited, although I was in charge as commander of that vessel: for in those days midshipmen only being required to send a day's work to their captain, (which day's work they generally copied from the second master,) never took up the subject until they were going to pass their examination. But if the theoretical was at fault, the practical was a complete failure; for on the second day the log-line was carried away. Now I knew nothing in those days of the proportions between the knot and the glass, if there had been any spare line in the *Negrinha*. But we had nothing to replace it with, so that we had to make a guess at our dead reckoning for the rest of the cruise, and I was not a good hand at guessing either. On leaving the ship, the first lieutenant said, Ashe, as you have nothing but a quadrant, you had better take my sextant, and the surgeon, giving me

an old silver watch, added, and this also may be of service to you: thanks for both, for without them I do not think that we should ever have got across. But as to keeping a dead reckoning, I had not the means, and thus I had to get across the Atlantic depending alone on my sextant. The watch, after a fall, would only go for five hours. My star latitudes were very good, but my longitude was a far more ticklish question, for I had never taken a lunar. However, I had plenty of time now for practice; the watch was sufficiently good to keep elapsed time for twenty minutes, so I took my distances and calculated the altitude.

But we were upwards of two months without seeing land. I could hear the men asking each other, "If there was any land at all on this side of the Atlantic?" And although by the reckoning we were only twenty-five miles from the Cape de Verd Islands at noon, I did not dare say so, in case we should not have made the land for another week, for the crew would then lose all confidence in me. At sunset I strained my eyes looking to windward for it, but could see nothing of land. The wind too was falling light.

About six bells in the first watch, the man who had charge of the deck came to my bunk and said that he thought he saw land on the weather beam. I instantly jumped out, and tried not to be in the least surprised, and coolly remarked that we were not more than a few miles from it. As a fog came on and I could see nothing of land, and also as the wind had died away, I went back to my bunk, but not to sleep. At daylight there was a dead calm with a fog. The news was quickly passed from one to another that Mr. Ashe had said that we were passing the Cape de Verd Islands, but I could see by their faces that they did not believe it; and I could not blame them, for I did not believe it myself! It was nervous work, too; for I had crossed the Atlantic in a craft that never went five knots an hour, and would not stay. And now, from the observations of my sextant alone, I had said that we were between the two islands of Jago and St. Vincent. However, about noon the fog rose, and there was land on both sides of us, the little schooner being nearly amid channel.

It was a most fortunate landfall; but the sudden end to my anxieties made me very ill for the rest of the day. I was not aware of the tension that had been exerted on my nervous system for upwards of two months, in consequence of having to keep that rotten old ship together without any other carpenter's tool than a small axe.

We were now all in great spirits, and after ten days more of light winds and calm, we managed to reach Sierra Leone. Here I met my messmate Lay, who had started some days after me in the *Phoenix*, and had gone to Halifax on his way to report to the Admiral. Of course when he arrived at Sierra Leone he was much surprised and alarmed at not seeing me there. Our vessels were condemned at the Prize Court, and we were to join the senior officer on the coast, to wait a passage to England.

During the time that we were waiting for a man-of-war to arrive, that we might report ourselves, we exposed ourselves as much as we

could to the effects of the climate, by riding about in the sun, as if it was the most healthy country in the world.

One morning I was hack posting with a merchant, who told me that he had bought a fine vessel, a condemned slaver, and had put a cargo on board, and now only wanted a captain and crew to take her to England. I explained to him in a moment that I was just the man he wanted, and the bargain was settled. I put the crews of both Lay's and my own slavers on board, I shipped Lay's petty officer as mate, and gave my messmate a passage to England.

The *Felix*, for that was her name, was a beautiful brigantine of 284 tons, well found in everything. We had a capital mess and lived like fighting cocks. We ran home in twenty-eight days, and were as fortunate in making a good landfall as we were in the *Negrinha*. I was bound to the West India Docks; but, unfortunately, off Beachey Head the rudder was so much damaged that we had to run into Portsmouth, and of course I had to report myself to the Admiral. My messmates were ordered on board the *Britannia*, and I was told that if I could not be off again before the return of post, I should be ordered by the Admiralty to give up my command. I had only until four p.m. the next day for preparation. However, by eight the next morning the rudder was shipped, but when I went on board I found that all my men were on shore except the mate, who told me that the crimps had got hold of them.

Off I went at once to Lloyd's Agent, and told him to send me eight seamen instantly; and in less than twenty minutes they were on board and the sails loosed. When the crimps saw that we were about to start, and that in consequence the men would lose all their prize-money and pay, and thereby they would lose by the transaction, they brought my men off immediately. At first I refused to take them on board, but said that if they chose to give the men that I had hired a day's pay they might return to their duty.

Before three o'clock I had the Admiral out of sight, and in a few days the voyage of the *Felix* was ended, and I had a jolly good lark in London with the £25 that they gave me for bringing her home. Then I went down to Portsmouth and, with my messmate Lay, passed the examination at the College, and found out that my late commands had been the means of getting me well up in the theory and practice of navigation.

E. D. ASHE.

THE EMILY ST. PIERRE.

We find the substance of the following narrative relating the capture and recapture of the *Emily St. Pierre* in that elaborate weekly print on maritime affairs, called *Mitchell's Maritime Register*, it runs thus:—Great sensation has been caused at Liverpool by the arrival of

a vessel captured by a Federal ship-of-war, while making an attempt, as alleged, to run the Charleston blockade, but on board of which the position of captors and captured had been daringly reversed, and the prize crew brought to Liverpool as prisoners of the captured ship. Early on Monday the *Emily St. Pierre* arrived in the Mersey, and as she was reported in previously received American news to have been captured off Charleston by the United States war steamer *James Adger*, considerable curiosity was manifested as to the cause of her appearance in British waters. But the mystery was soon explained—she *had* been captured by the United States ship *James Adger*. She had been taken possession of by a prize crew, the men who were left on board the *Emily St. Pierre* had regained possession of her, the course had been changed for Liverpool, instead of Philadelphia, and hence the arrival of the ship in the Mersey with a portion of the crew of the American ship. Such were the conditions of the whole case:—the following are the circumstances under which she had been recaptured.

The *Emily St. Pierre*, a fine ship, of 884 tons, sailed a considerable time ago from Calcutta for St. John (N.B.), with orders to call off Charleston bar, to ascertain whether or not any blockade of that port existed. She had a cargo of gunny cloth, and was in charge of a crew of thirteen or fourteen men, under the command of Capt. Wilson. While off the port of Charleston she was espied and captured by the United States ship *James Adger*, one of the blockading squadron, and which caused some months back such a *furor* in connection with the West India Mail steamer. The major part of the crew of the *Emily St. Pierre* was taken on board the *Florida*, and the custody of the captured ship was transferred to a prize crew of sixteen men of the man-of-war, under the command of a lieutenant of the United States Navy. The Captain, who is a Scotchman, was to have been sent on board also, but the ship was very crank, and as the Prize Lieutenant did not understand her, Capt. Wilson suggested that, if he were allowed to remain on board, he would sail her.

Capt. Wilson, Cook and Steward, were alone allowed to remain on board their own ship, and she was put on her course for Philadelphia. Things went on pleasantly for some time, but the prisoners were not unmindful of any opportunity that might arise for the recapture of the ship. The recapture of the ship was carried out quickly and expeditiously—while half the prize crew were below, and while the other half were off their guard—without blood being spilt and without the use of fire arms being resorted to.

When the *Emily St. Pierre* had thus been retaken by her original possessors, her course was forthwith changed, and hence her safe arrival in the Mersey on Monday. The prize crew were at once set at liberty, and will be left to pursue their own desire as to their future conduct, having been informed that their presence on board the *Emily St. Pierre* would be dispensed with as soon as she entered British waters.

It appears that the moment Capt. Wilson was aware of the intention of leaving him on board the *Emily St. Pierre*, he came to the

determination that the ship should not be taken to Philadelphia, and resolved that he would re-capture her if practicable, and bring her into a British port. He inquired of the Cook and Steward whether they would assist him in his efforts to retake her; one of them at once consented to do so, but the other deliberated upon his conduct. Afterwards, however, he agreed to assist. The Captain turned over in his mind the best means of effecting his object, and soon came to a conclusion as to the proper course to be adopted in the emergency.

The prize Master's Mate was asleep in the cabin on the morning of the second day after the capture; and he determined to secure him in the first instance. The Cook and Steward were armed, and were instructed by Capt. Wilson of the course they were to adopt. Some cloth was thrown over this officer's head; his arms were secured by Capt. Wilson, and irons placed upon his hands; and he was also prevented from creating any alarm by a gag being placed in his mouth.

Captain Wilson returned to the deck, and in a familiar manner inquired from the Lieutenant of the prize crew, "Well, Stone, what is the position of the ship?" The officer replied that they were somewhere off Hatteras, and were about to change the course. The Captain invited Lieut. Stone into the cabin to prick upon the chart the position. Lieut. Stone accompanied the Captain into the cabin; the door was closed, and the Cook and Steward being also present, Capt. Wilson drew a belaying pin—he did not take a pistol as he was anxious to prevent any noise being created—and demanded that Lieut. Stone should quietly consent to a pair of irons being placed upon his hands. In the presence of such a force, the officer was compelled to submit to being placed in irons, and also to a gag being inserted in his mouth.

That officer being then secured in his cabin, Capt. Wilson returned on deck where he met three of the prize crew; and one being a very powerful fellow, he was doubtful as to his treatment of these men, who were still, in common with the rest of the Crew, in ignorance of the proceedings below. Capt. Wilson's ready wit, however, soon suggested an expedient. He ordered them to go aft and get out of a scuttle a coil of rigging, of which Lieut. Stone was represented as being in need. The three men, suspecting nothing, entered the scuttle; but, as soon as they were within, the hatch was placed over it, and they were thus fairly imprisoned. In the mean time the fore-castle door had been fastened up, and in this manner the whole of the watch below was prevented from taking any part in the affray.

Still the other men of the prize crew were unconscious of what was going forward; and Capt. Wilson sent forward one of his men to ask whether they would assist in navigating the ship to a British port, as he was determined that she should not go to Philadelphia. One man consented to assist him; others, who refused, were placed with the three men in the scuttle. After the men on deck had been disposed of in this manner, the watch below were brought out of the fore-castle one by one, and interrogated as to whether or not they would assist Capt. Wilson in navigating the vessel. Three consented in the whole

to this course ; but only one of these was a sailor, the others being landsmen. In the course of a few days, however, two more of the prizemen expressed their willingness to assist Capt. Wilson ; but one of the men was afterwards confined in consequence of violence.

With this slender crew Capt. Wilson was compelled to navigate his ship to Liverpool ; and in the course of the voyage encountered a furious gale, which broke the tiller ; but in this emergency also the ingenuity of Capt. Wilson was equal to the occasion ; the serious defect was remedied, and the ship was safely brought to Liverpool.

A subscription is being raised on the Liverpool Exchange for Capt. Wilson, and for the Cook and Steward. Up to Wednesday one hundred guineas had already been subscribed. Lieut. Stone and the other members of the prize crew who were brought to Liverpool by the *Emily St. Pierre*, after her recapture, sailed on Wednesday for New York in the Inman steamer *Edinburgh*.

Thus was the first of this transaction completed. But such an event was not likely to pass by without recognition by the owners of the ship and their friends. The re-capture of a valuable ship had been accomplished by a piece of good management, without any harm whatever being done, and such a display of good management achieved at no small risk, and in spite of all difficulties, even as an instance of the intrepidity of a British seaman, was not to be passed by unregarded. Accordingly it appears from the same journal, that a few days afterwards the rooms of the Liverpool Mercantile Marine Association were crowded almost to suffocation by the merchants and mercantile marine officers of Liverpool, to witness the presentation of a magnificent testimonial to Captain William Wilson, of the British ship *Emily St. Pierre*, for his pluck and gallantry in re-capturing his ship, which had been seized by the United States cruiser *James Adger*, off Charleston. The occasion was also availed of to present the cook and steward of the ship with a substantial acknowledgment of their bravery, in assisting Captain Wilson in his deed of daring. James Beazley, Esq., was voted into the chair. Amongst those present were Messrs. A. Shand, Jas. Banks, Rickarby, Captain Judkins, Messrs. J. Wilson, Furnie Brothers, G. Hardy, M. Gandy, A. Wilson, R. Abbott, &c.

The testimonials, of a costly and handsome description, consisted of a magnificent gold pocket chronometer, a complete tea and coffee service in silver, a dozen silver teaspoons, with the accompanying adjuncts of a pair of sugar tongs, caddy spoon, sugar spoon, and coffee tray. The coffee service, particularly, was of the most chaste and elaborate design, and every article partook of the elegance of form which bespeaks the hand of the master. On the centre of the silver was engraved the following inscription :—“ Presented, with a silver coffee and tea service, and gold pocket chronometer, to Captain William Wilson, by 170 merchants of Liverpool, in token of their admiration of his daring gallantry in re-capturing his ship, the *Emily St. Pierre*, of Liverpool, on the 21st March, 1862, with the assistance

of his cook and steward only, from a prize crew, consisting of two officers and thirteen men of the United States Navy.—May 3rd, 1862.”

The chairman, addressing Capt. Wilson, said :—I trust you may long live to enjoy with your wife and family those comforts which in a happy home centre around that most delightful of all gatherings—the social tea party—(hear, hear, hear)—and I doubt not your children and children’s children, as they, in their turn, assemble around their evening table, and recount the heroic deed which you accomplished, will feel that they have descended from a brave man—(loud cheers)—of whose memory they may justly feel proud—(hear, hear, and renewed cheers). I am also authorized to state, gentlemen, that the owners of the *Emily St. Pierre* intend to present Captain Wilson with the sum of two thousand guineas—(loud cheers).

Captain Wilson, who was received with loud cheers, said : Gentlemen,—I may be forgiven if, in reply, I read the following, as I feel I could not trust myself to give the facts of the case in any other way. Captain Wilson then narrated the facts connected with the re-capture of the ship, and said :—I desire in this public manner and on this pleasing occasion to offer my thanks to Almighty God for his great and marvellous help in all my trying circumstances—(cheers). My thanks are also due to my faithful cook and steward, who, this day, receive a reward for their brave services at your hands—(loud cheering). For myself, gentlemen, I can only say that I did my duty in trying to re-capture my ship against tremendous odds, and you are here to-day to rejoice over my success—(applause). It is unbecoming to be proud, but we are permitted to be thankful. For this handsome token of your kindness I thank you, and I pray that your generous deed will be a spur to the British sailor who, in the hour of trial and heavy responsibility, may be encouraged that their efforts for the right and true will not be lost sight of nor go unrewarded by the first maritime nation in the world—(loud and repeated cheering).

The chairman said he should have announced that the owners had not forgotten the cook and the steward, but that they had also made a handsome payment to them.

Mr. Alex. Shand then rose to present a purse to Matthew Montgomery, the steward, a native of Dublin. He had great pleasure in presenting the purse, containing twenty guineas, to Matthew Montgomery, as some mark of esteem for the genuine British pluck of the sister island—(cheers).

Three hearty cheers were given for the steward.

Mr. Fernie then rose to present a purse to the cook, Louis Schelvin, a German, belonging to Frankfort-on-Maine.

Captain Sproule, addressing Captain Wilson, said that at a meeting of the Council of the Mercantile Marine Service Association, held on the previous day, an anxious desire was expressed that the association should in some way mark the esteem and admiration of the members for his gallant conduct—(cheers)—and it was resolved that a gold medal be presented to Captain Wilson, and that silver medals, with suitable inscriptions, be presented as well to the cook and steward.

Captain Henderson said that the officers and crew of the *Emily St. Pierre* had deputed him to present a splendid sextant to Captain Wilson for his bravery and noble conduct in rescuing his ship, and for his kindness to them during the voyage—(cheers).

Captain Wilson, who was quite overcome by emotion, said he wished he should never live to dishonor the association which had presented him with a gold medal to-day—(hear, hear). As to his officers and crew, a few of whom were present, he begged to return to them his sincere and grateful thanks for their kindness to him. He could only hope that the British public would always receive British sailors into their heart, and cherish them as some of the most valuable subjects of the throne.

Amidst a volley of cheers which these sentiments occasioned, a vote of thanks to the chairman was passed, and thus terminated the affair of the *Emily St. Pierre*; one that while it occasioned no harm to her captors, and was nothing discreditable to them, will be referred to on many an occasion hereafter as a deed of British daring, reflecting honour on the mercantile marine of Great Britain.

THE CLARENCE'S HURRICANE—of *January last*.

In an early volume of this journal* Redfield explained his "Hurricane theory," for which seamen have good reason to remember his name with gratitude. It was well discussed and well tested, and although some anomalies have occurred, arising more we believe from the proximity of these phenomena to each other at the same time, than from any other cause, to raise doubts in some persons of the efficacy of the theory applied practically, it has established itself by experience; and if we now hear of a ship suffering by a hurricane, it is more from the neglect of his theory than from following his advice. The readers of the *Nautical* know full well how often these pages have recorded the success which has attended those who have adopted it, even to looking into the storm circle, witnessing the hurly burly scene it displays and then standing out again. It has in fact been "a word to the wise," by which they have profited; but not so with certain ships, to which in their present weak handed condition it is peculiarly essential, since it gives them timely notice, weak as they may be, to adopt precautions for avoiding it. These precautions were wisely adopted on board the *Clarence*, whose account of a hurricane which she experienced in the usual track of these storms appears in the sequel. It

* From which it was repeated with chart and all in the *Atlantic Memoir*, from our volume for 1835, and in which work it has stood ever since to the present day, and now ornaments the bulky valuable work of Mr. Findlay, published last year.

is to be regretted that the good management of the *Clarence* was not followed by others on this occasion ; but the ships to which we have alluded, to the number of twelve, were obliged to bear up for the Mauritius to repair damages, while the *Clarence* came clear out of it, and pursued her voyage as if nothing had happened, and yet four ships had *founded with all hands*, and another had to be abandoned, having been totally dismasted and become waterlogged from the rough treatment she had received.* We regret to see this, for it looks like returning to the old system, and our ships if they persist in doing so, will find to their cost, that the principle of the hurricane is the same now as it was in the days of Redfield.

It will be seen in the following account that the *Clarence* was well handled ; and she might have had less of it if she had stood out of the circle to the S.E., the day before she hove to with her head in that direction, under a tarpaulin in the mizen rigging.

*Abstract from the Log of the East India Ship Clarence—
Calcutta to Trinidad.*

January 1st, 1862, a.m.—Threatening appearance to southward and squally, shortened sail to topsail and foresail, wind W.N.W.; daylight, made all plain sail; lat. at noon $10^{\circ} 1' S.$, long. $82^{\circ} 19' E.$; course S. $22^{\circ} W.$, 218 miles; bar. 29.87; symp. 29.68; th. 83° ; anr. 29.96. P.M., unsteady with rain, wind N.W.

January 2nd, a.m.—Squally in top gallant sails; daylight made sail, wind S.W.; noon, lat. $11^{\circ} 33' S.$; long. $81^{\circ} 45' E.$; distance, 97 miles; bar. 29.87; symp. 29.75; th. 80° ; sunset, squally with constant rain, shortened sail to topsails and foresail.

January 3rd, a.m.—Breeze gradually increasing, with constant rain, wind unsteady from the westward; 4h. stowed jib and mainsail; 7h. in second reefs of topsails; 9h. furlled foresail and mizen topsail; 10h. every appearance of worse weather to the southward and westward, and the glasses low, wore ship to the northward, and shortened sail to close reefed fore and main topsails and fore top staysails, down royal yards, split fore topmast staysail, shifted it with best; noon, hard gale, thick weather and rain; lat. D. R. $13^{\circ} 6'$, S., long. $81^{\circ} 53' E.$; distance 94 miles; bar. 29.77; symp. 29.60; anr. 77. P.M. weather looking finer 5h., wore to southward and set main trysail, wind N.W.

January 4th.—Moderating, but squally and sea going down, wind North; made sail to single reefs and topgallant sails; passed the American bark *Cheshire* with loss of main topsail yard, standing as ourselves; sunset, squally with heavy rain, in topgallant sails, jib and mainsail; lat. at noon $13^{\circ} 25' S.$, long $82^{\circ} 00' E.$; bar. 29.81; symp. 29.70; th. 79° ; wind N.E.

* These we are informed were the *Nugget*, *Arcthusa*, *Moulton*, and *Marmion*, the *Lady Flora Hastings* being abandoned, her crew taken off by a French barque. We may well ask, what are our merchant commanders about? Four ships foundering with all hands in a hurricane! This is retrograding to the old times when nothing was known of the nature of these storms.—Ed.

January 5th a.m.—Increasing to a heavy gale with hard squalls, and a high sea rising and torrents of rain ; shortened sail to close reef fore and main topsail-, foresail and staysail ; wind N.E. ; noon, lat. $16^{\circ} 29' S.$; long. $79^{\circ} 45' E.$; distance 226 miles ; bar. 29.76 ; symp. 29.67., th. 78. P.M. Blowing a severe gale from N.E., with torrents of rain, the squalls increasing in violence, and expecting that a hurricane must be to the westward furled foresail and fore topsail, and rounded to on port tack under close reefed main topsail, main trysail and staysail, wind E.N.E. ; 6h. p.m., observed a ship scudding to the southward, down fore and mizen topgallant yards.

January 6th, a.m.—Gale moderating but with constant rain, E.N.E. ; noon, lat. D. R. $17^{\circ} 19' S.$, long. D. R. $79^{\circ} 35' E.$; distance 51 miles ; bar. 29.75 ; symp. 29.66 ; th. 79 ; at 2 p.m., the weather partially clearing, set reefed foresail and bore away to the S.W. ; 3h. passed a ship, hove to on port tack ; 6 p.m. squalls increasing with constant heavy rain, furled foresail, and rounded to on port tack, ship under close reefed main topsail, main trysail and foretop staysail, mid-night heavy gale, with hard squalls and constant rain ; wind E.byN.

January 7th, a.m.—Heavy gale, hard squalls and constant rain, wind E. ; 7h. set reefed foresail and run to the westward ; 8h. squalls increasing in violence ; 11h. increasing with a confused sea, furled foresail, and rounded to on port tack, knowing that a hurricane must be to the northward, and going in a S.W direction, stowed main topsail and fore top staysail, and down main topgallant yard, passed studding sail gear round topsails and courses, and extra gaskets on all the fore and aft sails ; noon, lat. $18^{\circ} 50' S.$, long. D. R. $78^{\circ} 52' E.$; distance 101 miles ; bar. 29.50 ; symp. 29.46 ; th. 76 ; p.m., increasing to a hurricane, with violent squalls and a mountainous sea running, with constant rain, ship lying with a tarpauline in the mizen rigging, and taking water over bows and stern at the same time, battened all the hatches down ; wind, E. ; midnight, violent hurricane with terrific squalls ; lightning to eastward.

January 8th, at one a.m.—Barometer lowest, 29.14, and then began to rise rapidly, and the wind to veer, but still blowing a hurricane ; port jolly boat blew in board, wind having the sound of horns blowing ; noon, lat. $20^{\circ} 30' S.$, long. $78^{\circ} 50'$; distance 70 miles ; bar. 29.69 ; symp. 29.65 ; th 77 ; wind, N.E. ; moderating and the rain clearing off, but with a high turbulent sea ; set close reefed main topsails ; wind, N.E.byN.

January 9th.—Gradually clearing to fine weather ; made sail to single reefed topsails ; wind, E.N.E. ; passed a French ship standing to the northward, with loss of topgallant masts and jibboom ; lat. at noon by observation, $24^{\circ} 14' S.$; long. $77^{\circ} 48' E.$; distance 61 miles ; bar. 30.5 ; th. 77 ; symp. 29.94.

MICRONESIA—of the Pacific Ocean.

(Continued from page 308.)

[In pursuing Dr. Gulick's interesting papers on these minute islets of the Pacific Ocean, we introduce here, before their conclusion, the table of positions which he has assigned to them. We observe that it differs considerably in many places from their positions in our charts, as laid down in the collection of maritime positions of the late Lieutenant Raper. We do not pretend to say that either is right, believing it to be far more probable that both are wrong. And until the whole subject is taken up with proper means for establishing normal positions among them, and from thence working out those of the intermediate islands, they will remain in their present uncertain condition. It must be observed, also, that in the following collection it mostly happens that no particular part of the island is specified, so that where an island is large, it admits of a considerable range for difference of position. At the same time we consider the positions assigned by Dr. Gulick as highly valuable, and entitled to confidence, coming, as they do, as the accepted positions of the latest navigators, although we have no means of knowing how they have been determined. The native names of the islands themselves are carefully preserved. We now give Dr. Gulick's own account of them.]

A Table of the Names and Positions of the Islands of Micronesia.—
By L. H. Gulick.

The following table is an abridgement of a fuller one, the result of eight years' research, and which has been compiled with the greatest care from all accessible reports of voyagers, and from natives either themselves residents of the various islands, or who have visited all but a very few of them.

The native names have, for the first time, been given to every island throughout Micronesia. The spelling has been conformed to the system of Lepius, which has been adopted by the Micronesian Mission, though diacritical marks are omitted.

I have not attempted to give all the foreign synonyms of the islands, nor even those having the highest claims from priority, but only those by which the several islands are best known.

The estimates of population are not, in the great majority of cases, given as the result of accurate enumerations, but are the shrewdest approximations our present knowledge allows us to make.

The positions of the Ladrone Islands are not given, because so well known and so ethnologically unimportant.

It is in the northern part of the Ralik Chain and in the Caroline Islands between Ponapi and Truk that the most important corrections of previous reporters will be found.

The Gilbert Islands.

Arorai or Hope Island; the *Elizabeth*, 1810. South point, lat. 2° 40' S., long. 177° 1' E., M. Dutaillis. Population, 2,000.

Tamana or Rotcher Island; Captain Clerk. $2^{\circ} 35' S.$, $176^{\circ} 15' E.$, Captain V. Smith. Pop. 3,000.

Onoatoa or Clerk Island; Captain Clerk. $1^{\circ} 50' S.$, $175^{\circ} 30' E.$, Captain V. Smith. Pop. 4,000.

Nukunau or Byron Island; Commodore Byron, 1765. $1^{\circ} 25' S.$, $176^{\circ} 45' E.$, Captain V. Smith; $176^{\circ} 35' E.$, Captain Handy. Pop. 5,000.

Peru or Francis Island; Captain Clerk. $1^{\circ} 25' S.$, $176^{\circ} 15' E.$, Captain V. Smith; $1^{\circ} 15' S.$, $176^{\circ} 6' E.$, Captain Handy. Pop. 1,500.

Tapiteouwea or Drummond Island; Captain Bishop, 1799. S.E. point, $1^{\circ} 28' S.$, $175^{\circ} 13' E.$ N.W. point, $1^{\circ} 8' N.$, $174^{\circ} 50' E.$, Wilkes' chart. Pop. 7,000.

Nonouti or Sydenham Island; Captain Bishop, 1799. S.E. point, $45' S.$, $174^{\circ} 30' E.$ North point, $30' S.$, $174^{\circ} 20' E.$, Wilkes. Pop. 6,000.

Aranuka or Henderville Island; Captains Marshall and Gilbert, 1788. Centre, $12' N.$, $173^{\circ} 40' E.$, Wilkes' chart. Pop. 1,000.

Kuria or Woodle Island; Captains Marshall and Gilbert, 1788. Centre, $14' N.$ $173^{\circ} 27' E.$, Wilkes' chart. Pop. 1,500.

Apamama or Simpson Island; Captains Marshall and Gilbert, 1788. S.E. point, $26' N.$, $173^{\circ} 51' E.$ N.W. point, $30' N.$, $173^{\circ} 54' E.$, Wilkes' chart. Pop. 5,000.

Maiana or Hall Island; Captains Marshall and Gilbert, 1788. South point, $51' N.$, $173^{\circ} 3' E.$ North point, $1^{\circ} 2' N.$ $173^{\circ} 4' W.$, Wilkes' chart. Pop. 4 000.

Tarawa or Knoy Island (improperly Knox Island); Captains Marshall and Gilbert, 1788. S.E. point, $1^{\circ} 22' N.$, $173^{\circ} 12' E.$ S.W. point, $1^{\circ} 22' N.$, $173^{\circ} 0' E.$ North point, $1^{\circ} 39' N.$, $173^{\circ} 3' E.$, Wilkes' chart. Pop. 3,500.

Apaiang or Charlotte Island; Captain Marshall, 1788. South point, $1^{\circ} 44' N.$, $173^{\circ} 7' E.$ North point, $1^{\circ} 58' N.$, $172^{\circ} 59' E.$, Wilkes' chart.

Marakei or Mathew Island; Captains Marshall and Gilbert. $2^{\circ} N.$, $172^{\circ} 25' E.$, Wilkes. Pop. 2,000.

Butaritari or Tonching Island. South point, $3^{\circ} 1' N.$, $172^{\circ} 45' E.$ N.E. point, $3^{\circ} 10' N.$, $172^{\circ} 56' E.$ N.W. point, $3^{\circ} 13' N.$, $172^{\circ} 40' E.$, Wilkes' chart. Pop. 1,500.

Makin or Pitt Island. N.W. point, $3^{\circ} 20' N.$, $172^{\circ} 57' E.$, Wilkes. Pop. 500.

Banaba or Ocean Island; ship *Ocean*, 1804. $50' S.$ $169^{\circ} 45' E.$, Captain V. Smith. $48' S.$ $169^{\circ} 49' E.$, Captain Cheyne.

Nawodo (Onavero) or Pleasant Island; Captain Fearn, 1798. $25' S.$, $167^{\circ} 5' E.$, Captain Cheyne. $167^{\circ} 10' E.$, Captain Fearn. $167^{\circ} 20' E.$, Captain V. Smith.

The Marshall Islands,—Ratak Chain.

Mili or Mulgrave Island; Captain Marshall, 1788. S.E. point, $5^{\circ} 59' N.$, $172^{\circ} 2' E.$, Wilkes. N.W. point, $6^{\circ} 20' N.$, $171^{\circ} 28' E.$, Duperrey. Pop. 700.

Majuro or Arrowsmith Island; Captains Marshall and Gilbert, 1788. S.E. point $7^{\circ} 5' N.$, $171^{\circ} 23' E.$, U.S. Exploring Expedition. W. point, $7^{\circ} 15' N.$, $171^{\circ} E.$, Captain Brown, of the *Morning Star*. Pop. 1,000.

Arhno or Daniel and Pedder Island; Captains Marshall and Gilbert, 1788. N.E. point $7^{\circ} 30' N.$, $175^{\circ} 55' E.$; S.W. point, $7^{\circ} 11' N.$, $171^{\circ} 40' E.$, U.S. Expl. Exp. Pop. 1,000.

Aurh or Ibbetson Island. N.E. point, $8^{\circ} 18' N.$, $171^{\circ} 12' E.$, Kotzebue. Pop. 1,000.

Maloelab (Kawen) or Calvert Island; Captains Marshall and Gilbert, 1788. S.E. point, $8^{\circ} 29' N.$, $171^{\circ} 11' E.$; N.W. point, $8^{\circ} 54' N.$, $170^{\circ} 49' E.$, Kotzebue. Pop. 1,000.

Erikub or Bishop Junction Island; Captains Marshall and Gilbert, 1788. South point, $9^{\circ} 6' N.$, $170^{\circ} 4' E.$, Kotzebue. Uninhabited.

Wotje (Otdia) Romanzoff Island; Captains Marshall and Gilbert, 1788. N.E. point, $9^{\circ} 33' N.$, $170^{\circ} 10' E.$, Kotzebue. Pop. 300.

Likieb or Count Heiden Island; Kotzebue, 1817. N.W. point, $10^{\circ} 3' N.$, $169^{\circ} 1' E.$, Kotzebue. Pop. 300.

Jemo or Steeple Island; Captain Bishop, 1799. $10^{\circ} 27' N.$, $169^{\circ} 45' E.$, Kotzebue. Pop. 200.

Ailuk or Tindal and Watts Island; Captain Marshall, 1788. North point, $10^{\circ} 27' N.$, $170^{\circ} E.$, Kotzebue. Pop. 200.

Mejit or New Year Island; Kotzebue, 1817. $10^{\circ} 8' N.$, $170^{\circ} 55' E.$, Kotzebue. Pop. 50.

Utirik or Button Island; Captain Marshall, 1788. $11^{\circ} 20' N.$, $169^{\circ} 50' E.$, Captain Moore, of the *Morning Star*. Pop. 20.

Taka or Souworoff Island; Captain Marshall, 1788. Middle islet, $11^{\circ} 5' N.$, $169^{\circ} 40' E.$, Captain Moore. Pop. 20.

Bikar or Dawson Island; Captain Marshall, 1788. Middle of the group, $11^{\circ} 48' N.$, $170^{\circ} 7' E.$, Kotzebue. Uninhabited.

Taongi or Gaspar-Rico; 1625. Centre, $14^{\circ} 30' N.$, $169^{\circ} 42' E.$, Lieutenant Smyth. Uninhabited.

Ralik Chain.

Ebon or Boston Island; Captain George Ray, 1824. Centre, $4^{\circ} 39' N.$, $168^{\circ} 50' E.$, Captain Hagemester, in Findlay. Pop. 1,000.

Namerik or Baring Island; Captain Bond, 1792. Centre, $5^{\circ} 35' N.$, $168^{\circ} 18' E.$, Captain Handy. Pop. 400.

Kili or Hunter Island; Captain Dennet, 1799. Centre, $5^{\circ} 46' N.$, $169^{\circ} E.$, Captain Dennet. $5^{\circ} 40' N.$, $169^{\circ} 15' E.$, Captain Handy. Uninhabited.

Jaluit or Bonham Island; brig *Elizabeth*, 1809. South point, $5^{\circ} 47' N.$, $169^{\circ} 36' E.$; N.E. passage, $6^{\circ} 8' N.$, $169^{\circ} 34' E.$; North point, $6^{\circ} 22' N.$, $169^{\circ} 22' E.$, Captain Brown, of *Morning Star*. Pop. 500.

Ailinglabelab or Menchicoff Island; Captain Bond, 1792. South point, $7^{\circ} 15' N.$, $168^{\circ} 46'$; North point, $8^{\circ} 10' N.$, $168^{\circ} E.$, Captain Cramchenko. Pop. 200.

Jawat or Bonham Island; brig *Elizabeth*, 1809. Centre, $8^{\circ} 25'$ N., $168^{\circ} 17'$ E., Kotzebue's chart, quoted in Findlay's *Directory*. Pop. 50.

Lib or Princessa Island; Captain Dennet, 1797. Centre, $8^{\circ} 20'$ N., $167^{\circ} 30'$ E., Captain Dennet; $8^{\circ} 15'$ N., $167^{\circ} 28'$ E., Captain Moore. Pop. 50.

Naino or Margarretta Island; ship *Ocean*, 1804. South extreme, $8^{\circ} 55'$ N., $167^{\circ} 42'$ E., Findlay. South point, $8^{\circ} 38'$ N., $167^{\circ} 50'$ E., Captain Moore. This island, with Kwajalein, Ujæ, and Wattho, requires further examination. Pop. 50.

Kwajalein or Catherine Island; ship *Ocean*, 1804. North islet, $9^{\circ} 14'$ N., $167^{\circ} 2'$ E., ship *Ocean*, in Findlay. Pop. 100.

Læ or Brown Island; Captain Brown, of the *Morning Star*, 1858. Centre 9° N., $166^{\circ} 20'$ E., Captain Brown. Pop. 500.

Ujæ or Lydia Island; ship *Ocean*, 1804. Centre, $9^{\circ} 4'$ N., $165^{\circ} 58'$ E., ship *Ocean*, in Findlay. Pop. 500.

Wottho or Shanz Island; Captain Shanz, 1835. Centre, $10^{\circ} 5'$ N., $166^{\circ} 4'$ E., Captain Shanz. Pop. 40.

Ailinginae or Rimski-korsakoff Island; Kotzebue, 1825. S.W. point, $11^{\circ} 8'$ N., $166^{\circ} 26'$ E., Kotzebue. Uninhabited.

Rongerik or Rimski-korsakoff Island; Kotzebue, 1825. East point, $11^{\circ} 26'$ N., $167^{\circ} 14'$ E., Kotzebue. Pop. 80.

Kongelab or Pescadores; Captain Wallis, 1767. Centre, $11^{\circ} 19'$ N., $167^{\circ} 24'$ E., Kotzebue. Pop. 120.

Bikini or Escacholtz Island; Kotzebue, 1825. West part, $11^{\circ} 40'$ N., $166^{\circ} 24'$ E., Kotzebue. This island needs examination. Pop. 50.

Eniwetok or Brown Island; Captain Butler, 1794. North point, $11^{\circ} 40'$ N., $161^{\circ} 5'$ E.; centre of the South line, $11^{\circ} 20'$ N., $161^{\circ} 5'$ E., Lutke's chart. Pop. 30. Marshall Islands' language.

Ujilong (Casobos Island) or Providence Island; Arrecife. Centre, $9^{\circ} 36'$ N. $161^{\circ} 8'$ E., *Horsburgh's Directory*. Pop. 1,000. There is but one lagoon in this vicinity. The people speak the Marshall Islands' language.

The Caroline Islands.

Kusaie (Ualan) or Strong Island; Captain Crozier, 1804. Centre, $5^{\circ} 19'$ N., $163^{\circ} 6'$ E., Lutke. Pop. 700.

Pingelap, Musgrave Island or MacAskill Island; Captain Musgrave, 1793. Centre, $6^{\circ} 12'$ N., $160^{\circ} 53'$ E., Captain MacAskill. Pop. 300.

Mokil, Duperrey Island or Wellington Island; Duperrey, 1824. N.E. islet, $6^{\circ} 41'$ N., $159^{\circ} 50'$ E., Duperrey. Pop. 80.

Ponapi or Ascension Island; Quirosa, 1595. Lee harbour, $6^{\circ} 48'$ N., $158^{\circ} 19'$ E., Lutke. Pop. 5,000.

Ant or Frazer Island; 1832. N.E. point, $6^{\circ} 42'$ N., $158^{\circ} 3'$ E., Captain Cheyne. Uninhabited.

Pakin; Captain Lutke, 1828. Centre, $7^{\circ} 10'$ N., $157^{\circ} 43'$ E., Captain Cheyne. Pop. 50.

Ngatik or Raven Island; Tompson, 1773. East point, $5^{\circ} 47'$ N.,

157° 32' E., Lutke, in *Findlay*. West point, 5° 47' N., 157° 22' E., Lutke's chart. Pop. 30.

Oraluk, San Augustine Island or Bordalaise Island, &c.; Captain Tompson, 1773. Bordalaise Island, 7° 39' N., 155° 5' E.; Jane Island, 7° 33' N., 155° 3' E.; Larkins Reef, N.E. point, 7° 36' N., 155° 10' E., *Findlay*. Meaburn Island, 7° 49' N., 155° 20' E., Norie's chart. The natives report this as a large lagoon with one islet on it. Further exploration is needed to accurately determine its extent. Uninhabited.

Nukuor, Monteverde Island or Dunkin Island; Monteverde, 1806. Centre, 3° 27' N., 155° 48' E., *Findlay*; 3° 57' N., 154° 34' E., Captain Aiken. There is doubtless but one island in this vicinity, and that in the position usually given to Dunkin Island. Pop. 500.

Sotoan, Young William or Mortlock Islands; Captain Mortlock, 1793. South point, 5° 17' N., 153° 46' E., Lutke's chart. Pop. 500.

Lukunor or Mortlock Island. East point, 5° 30' N., 153° 59' E.; West point, 5° 30' N., 153° 52' E., Lutke's chart. Pop. 200.

Etal or Mortlock Island. Centre, 5° 39' N., 153° 32' E., Captain Cheyne. Pop. 200.

Namoluk; Captain Lutke, 1828. N.W. islet, 5° 55' N., 153° 17' E., Lutke's chart. Pop. 300.

Mokor or Hashmy Island; 1833. 5° 42' N., 152° 43' E., Blunt's chart.

Losap or Duperrey Island; 1824. Centre, 7° 3' N., 152° 42' E., Duperrey. Pop. 200.

Truk or Hogoleu; Duperrey, 1824. North point, 7° 43' N., 151° 43' E.; East point, 6° 58' N., 151° 56' E.; West point, 7° 10' N., 151° 21' E.; D'Urville's chart. Pop. 5,000.

Royalist Island (which is, I suspect, but the southern point of Truk). 6° 47' N., 152° 8' E., Captain Cheyne.

Morileu or Hall Island; 1824. N.E. islet 8° 47' N., 152° 20' E.; S.W. islet, 8° 36' N., 152° 7' E., Lutke's chart. Pop. 100.

Namolipiafane; Captain Hall, 1824. N.E. islet, 8° 34' N., 152° 1' E.; South islet, 8° 25' N., 151° 50' E.; S.W., 8° 30' N., 151° 42' E., Lutke's chart. Pop. 50.

Faiu, East or Lutke Island; Lutke, 1828. Centre, 8° 33' N., 151° 27' E., Lutke's chart. Pop. 50.

Namonuito, Anonima or Livingston Island; Ibargoita, 1801. North islet, 9° N., 150° 14' E.; East islet, 8° 34' N., 150° 32' E.; West islet, 8° 35' N., 149° 47' E.; Lutke's chart. Pop. 50.

Tamatam or Martyrs Island; Ibargoita, 1801. South islet, 7° 32' N., 149° 29' E., Duperrey's chart. Pop. 200.

Poloat, Kata Island or Enderby Island; Ibargoita, 1801. Centre, 7° 19' N., 149° 17' E., Freycinet. Pop. 100.

Suk or Ibargoita Island; Ibargoita, 1799. Centre, 6° 40' N., 149° 8' E., Freycinet. Pop. 100.

Pikelot or Coquille Island; Captain Duperrey, 1824. Centre, 8° 12' N., 147° 40' E., Duperrey's chart. Uninhabited.

Pikela or Lydia Island; 1801. Centre, $8^{\circ} 38' N.$, $147^{\circ} 13' E.$, Duperrey's chart. Uninhabited.

Satawal or Tucker Island; Captain Wilson, 1797. Centre, $7^{\circ} 21' N.$, $147^{\circ} 6' E.$, Duperrey's chart. Pop. 200.

Faiu, West; Lutke, 1828. Centre, $8^{\circ} 3' N.$, $146^{\circ} 40' E.$, Lutke's chart. Uninhabited.

Lamotrek or Swede Island; Captain Wilson, 1797. Centre, $7^{\circ} 29' N.$, $146^{\circ} 28' E.$, Lutke's chart. Pop. 200.

Elato or Hawsis Island; Captain Wilson, 1797. North point, $7^{\circ} 29' N.$, long. $146^{\circ} 19' E.$, Lutke's chart. Pop. 300.

Olimarao; Lutke, 1828. Centre, $7^{\circ} 43' N.$, $145^{\circ} 57' E.$, Lutke's chart. Pop. 200.

Faraulep or Gardner Island; Lutke, 1828. Centre, $8^{\circ} 34' N.$, $144^{\circ} 37' E.$, Lutke's chart. Uninhabited.

Ifalik or Wilson Island; Captain Wilson, 1797. Centre, $7^{\circ} 15' N.$, $144^{\circ} 31' E.$, Lutke's chart. Pop. 200.

Wolea (Ulie) or Thirteen Island; Captain Wilson, 1797. East point, $7^{\circ} 21' N.$, $143^{\circ} 58' E.$, Lutke's chart. Pop. 600.

Eauripik or Kama Island; Captain Hunter, 1791. Centre, $6^{\circ} 39' N.$, $143^{\circ} 11' E.$, Lutke's chart. Pop. 50.

Sorol or Philip Island; Captain Hunter, 1791. Centre, $8^{\circ} 6' N.$, $140^{\circ} 52' E.$, Lutke's chart. Pop. 20.

Fais or Tromlin Island; the Nassau Fleet, 1625. Centre, $9^{\circ} 46' N.$, $140^{\circ} 36' E.$, Lutke's chart. Pop. 300.

Ulithi (Elivi) or Mackenzie Group; Egoi, 1712. North point East atoll, $10^{\circ} 6' N.$, $139^{\circ} 47' E.$, Lutke's chart. South point West group, $9^{\circ} 47' N.$, $139^{\circ} 35' E.$; North point, $10^{\circ} 6' N.$, $139^{\circ} 46' E.$, D'Urville's chart. Pop. 200.

Eap; Nassau fleet, 1625. South point, $9^{\circ} 25' N.$, $139^{\circ} E.$; North point, $9^{\circ} 40' N.$, $138^{\circ} 8' E.$, D'Urville's chart. Pop. 2,000.

Ngoli (Lamoliorok), Mateletos or Spencer Keys; Villalobos, 1543. South islet, $8^{\circ} 17' N.$, $137^{\circ} 33' E.$; N.E. islet, $8^{\circ} 35' N.$, $137^{\circ} 40' E.$; Captain Cheyne. Pop. 100.

Palau or Pelew; Villalobos, 1543. South point Angour Island, $6^{\circ} 55' N.$, $134^{\circ} 8' E.$; Kyangle Island, $8^{\circ} 8' N.$, $134^{\circ} 35' E.$; East point Babelthouap Island, $7^{\circ} 41' N.$, $134^{\circ} 43' E.$; Lieutenant Raper. Pop. 3,000.

Sansorol or St. Andrew Island; Captain Padilla, 1710. Centre, $5^{\circ} 20' N.$, $132^{\circ} 16' E.$, *Horsburgh's Directory*. Pop. 200.

Anna or Current Island; English ships, 1761. Centre, $4^{\circ} 38' N.$, $132^{\circ} 3' E.$, *Horsburgh*. Pop. 100.

Merir or Warren Hastings Island; Spaniards, 1710. Centre, $4^{\circ} 17' N.$, $132^{\circ} 38' E.$, *Horsburgh*. Pop. 100.

Tobi or Lord North Island; ship *Lord North*, 1782. Centre, $3^{\circ} 2' N.$, $131^{\circ} 20' E.$, *Horsburgh*. Pop. 200.

(To be continued.)

SAXBY'S WEATHER SYSTEM.

June 17th, 1862.

Sir,—My silence in the *Nautical* since December last as to weather warning, has arisen from an unwillingness to proceed in a matter in which I find so many really great names arrayed against every species of lunar theory, as affecting weather. Take for example that of Professor Arago. In the *Annuaire* for 1846, he says, "those learned men who are honest and careful of their reputation, will *never* venture to predict the weather, whatever may be the progress of science."

But I now appeal to you as one of your oldest correspondents, if I have not in all my humble contributions to the *Nautical* on scientific subjects, exercised a due caution as to the accuracy of my assertions. I have, moreover, always frankly explained the grounds and course by which notions of some possible novelty have been arrived at.

During the years 1860 and 1861, certain views which have since been developed into a "Weather System," were kindly admitted into the pages of the *Nautical*; in them I concealed nothing; I trust I proved all I asserted; and consequently I now claim the discovery of an *indisputable* lunar theory as affecting weather. The subject is a momentous one for a maritime country, and it is high time that refutation or recognition be pronounced upon it; not for my personal gratification alone, but because indifference to it perils life and property to a great extent. The season is progressing, and in a month or two it will be time to provide for the coming winter. The National Life Boat Institution, and the Shipwrecked Mariners' Society, (two of the most important, and most humane of the many British truly charitable institutions we have,) will soon be anxiously re-estimating their probable resources to meet the disasters of the coming season, In my pamphlet on weather warnings issued last December, (see also *Nautical Magazine* for that month,) I gave a list of suspected periods up to 1st July; it contained "warnings" some months in advance, but has now nearly run out. Let any of your scientific readers take such list of some forty warnings, and compare them with actual fulfilments, and I challenge them to disprove their accuracy in any one instance: only let me be judged in accordance with what I actually state as my simple theory, and not upon what prejudiced minds would disallow.

The *really* humane will grasp at every hint and possibly available source of knowledge of coming weather, and endeavour to secure to sailors any benefit derivable therefrom. Mine is no fanciful notion. Through two and a half years it has been publicly "ventilated" in the *Nautical*, and at times in the *Daily Telegraph*, the *Sheerness*, *Shields*, *Newcastle* and *Sunderland* papers, but never once has a doubt of my accuracy been seen in them. One of the highest authorities on meteorological subjects in Great Britain, declares that "there exists no scientific impediments to the development of such a theory." As well might the authority have decided that no North-West passage existed, simply because attempts to discover it failed, until Sir Robert M'Clure announced his discovery. And thus it may prove in any one branch

of science. The Underwriters of Lloyds still tell me that the more they watch my warnings the more they believe in them. Naval officers about me say the same. Masters of passenger steamers, pilots, fishermen, and even regatta committees still ask my assistance as to coming weather, *that is to say, those who have long compared my warnings with actual fulfilments are convinced of their truth.* Yet we seem to cling to empirical indications, and prefer the uncertainties of instrumental admonitions, (uncertain because connected with *no theory which the public have heard of*), and a system of daily speculatively announced "probabilities," to one which in connection with some really reasonable lunar, or other theory, might together form a valuable means of preparation for dangers which yet overtake us unprepared. If all gales affected the barometer the case would be different, but those which I call electric or "primary," do not as a rule. (*vide Nautical for Sept. 1861, and page 17 of my pamphlet.*)

I seek not to rival or supplant, or even interfere with the authorities in their highly praiseworthy and unquestionably useful endeavours to save life and property, but irrespective of a desire to add to their means of doing good upon the coast, another motive begins to work—I begin to ask myself, having procured as it were a banquet for the needy, why should I be required and *expected* to be at the expence of distributing each mouthful along the coast. For two and a half years have I borne the charges of printing, &c., but now I would like to be relieved from such future expences. While your readers are considering the above, permit me to add a list of periods of probable disturbances up to the first of September, giving the present month of June as a means of assisting those who keep no register, but whose memories can trace "Derby days," &c., as landmarks in their recollections of weather since the 1st of June.

June 5th, 12th, 18th, 25th to 27th.

July 2nd or 3rd, 9th or 10th, 15th, 22nd or 23rd, 30th.

August 5th or 6th, 11th or 12th, 19th, 25th or 26th.

I mention June "25th to 27th," because the new moon occurring so soon after the moon attains her greatest declination, on the 25th, may prolong or increase the atmospheric disturbance.

Now I am not a private individual, hidden in the obscurities of a dense population, but have the honour of filling a responsible appointment in Her Majesty's service; and since my strength and usefulness lie especially in the respect for my opinions entertained by those (albeit themselves principally men of education and naval rank), who seek my assistance in the various departments of scientific pursuit,—it follows that if found capable of publishing fanciful or absurd opinions, I must forfeit that respect, and become thereby totally unfit for my important office. Let me therefore be excused if I urge what I have declared to be a "discovery," as an indisputable fact. Let me be judged by the public as fairly as I have been by naval officers around me.

I beg to leave the following case for consideration:—A certain man was standing on the bank of (say) the Serpentine during a hard frost, and seeing a fellow creature struggling in the water among the broken

ice, he hastily stripped off his coat, and its length just reaching the drowning man, he was by its means happily rescued. A Humane Society's man, who would not previously believe in the unsoundness of the ice at that part, was at the moment at some distance, *looking quite another way*; but on his afterwards hearing about the timely use of the coat he became angry, resenting the presumption of any one saving a life on his boat but himself, and contrasting the unorthodox use of the garment with the completeness of his own neat coils of life-line, his corks and ice ladders; even at last denying that the man was saved at all by means of the coat: he moreover publicly in the newspapers warned all drowning men to beware of being tempted to catch at such unscientific means of safety as coats of any sort, saying that drowning men should only catch at a "regulation" rope, or such apparatus as had the approval of the Royal Humane Society, (forgetting that even such ropes had upon occasions been broken, that ladders had snapped, and that even his own feet had been at times unsteady from the slippery nature of the ground which he was forced at times to stand upon.

I am precisely in the position of the man with the coat, and would save life by all possible means, but am strongly reminded of what actually happened to me, about fifteen years since at Carisbrooke Castle. When an opportunity presented itself of gathering some archers together on an interesting occasion, I was the fortunate winner of the cup: but my success induced some angry impatience on the part of my most especial adversary, indeed so much so, that he began to scrutinize my almost *impromptu* accoutrements. When he saw that my arrows were without metal "piles," (for I had considered the proper place at which to have the centre of gravity of the shaft,) he exclaimed in derision of their plain wooden-pointed ends, as compared with his carefully burnished steel points, "Excuse me, sir, but what rubbish these are!" I at once replied. "Ah! ah! my friend, is it so? *then where would my score have been had I possessed your advantages?*"

I have, &c.,

S. M. SAXBY.

To the Editor of the Nautical Magazine.

SCHOOLS FOR SAILORS.—*From the Journal of the National Life-Boat Institution.*

Everything that concerns the moral welfare and improvement of the sailor is of primary importance to a maritime power such as that of the British empire. Her strength and her commercial prosperity are alike dependent on her strength at sea, whether in ships destined for purposes of war, or in bottoms intended only for the operations of commerce. And it may be taken for an axiom that as with all other

classes of men, so with the seafaring, their physical force is closely related to, and dependent upon their moral worth. In the long run, a sober, steady, and intelligent class of seamen will produce greater results than one depraved in mind, and enfeebled, through vice, in body. The better the men in their minds, the more courageous, the more enduring, the more industrious, and the more intelligent. Such is the class of men which every captain would like to have for his crew. Give a skipper his choice, and he will reject the drunkards and profligates, and choose in their stead the sober and well-conducted.

Now, without dwelling any further on a subject the truth of which will not now be denied by the oldest "salt" amongst us, it is certain that the readiest way to produce a class of good men is to form first of all one of good boys. If boys are well trained, able-seamen will come from them: if boys are allowed to remain sunk in idleness, ignorance, and corruption, the task of converting them into first-class seamen is rendered infinitely more difficult. If we wish to maintain amongst us a large population of thoroughly good seafaring men, we must turn our attention to the early training of our boys. In fact, we can hardly begin too soon to mould the young sailor from the little lads that frequent the schools, or play on the quays and shores, of our maritime towns. No one will dispute this: everybody, connected either with the navy or with the merchant service, will assent to so self-evident a proposition; but though they will agree to it, it does not follow that they will act upon it, or take the proper steps for carrying their conviction into practice. Partly from the want of unity of purpose and system, which is so unfortunately a characteristic of our nation, and which has so often caused us the most serious losses; and partly from the culpable apathy and indifference of the legislature and the government; very little, if anything, is done upon a proper scale for the education of young sailor lads, though much talk takes place about the naval reserve and the maintenance of the shipping interest. We all call out loud enough for able seamen in the time of need, but we give ourselves hardly any trouble to train up lads for such a purpose in times of prosperity and peace. In other words, while everybody professes to be anxious about the condition of our grown-up able-bodied seamen, nobody thinks of the sailor's child—of the little fishing-boy—of the young apprentice. We build Sailors' Homes, but we do not provide Sailors' Schools.

Now this is a serious fault; for it is evident the more means we can give a lad of acquiring a general knowledge of his business, and other useful information, at an early period, the better will be our apprentices, the better our men, the better our mates, the better our masters. To put on examinations, and yet not to prepare lads for them, that is to say, not to provide special means of teaching them for the purpose, is a contradiction. If we want to secure our object, we must cast about to find the best, the readiest, and the earliest means of preparing for its attainment. We cannot begin to attend to the training of our sailor lads too soon.

It would be a very desirable, and by no means a difficult thing, to provide special means of instruction in all seaports, even through the medium of the common parochial schools. The ordinary schoolmaster can give lads all the instruction they require, even to become sailors, up to the age of twelve years or so; and the imparting of special instruction after that age might be secured by attaching a schoolmaster skilled in navigation, &c., to each town, who might instruct able-bodied coasting seamen while ashore in the winter months, and might keep school for the boys and lads, not yet apprenticed, during the summer. It would be easy to attach a special school of this kind either to the Sailors' Home in any port (as the master of the Home might at the same time be the schoolmaster) or to any one of the parish schools, by making an arrangement to that effect with the local authorities. All that would be required would be that some constituted body, such as the Trinity House, or Lloyd's, or the Admiralty, or Board of Trade, should organize a plan for supplying competent teachers for schools of this kind. The schoolmaster should be *thoroughly able* to teach, or the school would be worse than useless. Not much difficulty would be found in the payment of expenses; for besides the circumstance that sailors and seafaring men are always willing to pay for really good professional instruction, there could not be a more legitimate appropriation made of some portion of the Harbour Dues, or of the Mercantile Marine Fund, than in subsidizing schools of this description.

Is it desirable to diminish the casualties which swell the sad records of our Marine Insurance Offices? Would the underwriters at Lloyd's like to see the number of wrecks diminished by a certain notable annual percentage? Then one of the readiest ways to effect this is to improve the skill and knowledge of the seaman; to ameliorate his moral habits; to have fewer drunkards on board, since too many ships clear out only to run on the first shoal they near during a gale after leaving port; and to have men before the mast who can understand the master's instructions and act up to his orders with intelligence. Well, then, if this is to be done, let money be put upon the schools for boys; let the owners pay towards the Sailors' Schools of their ports; let Lloyd's contribute something towards them in every port of the kingdom; and let the Admiralty lend a hand, and draft off skilled teachers from Greenwich, who may be stationed all round our coasts for this laudable purpose.

At some of our largest ports, such as Liverpool, &c., schools of this kind do exist; and even a vessel is moored off the quays in which boys are received and trained. But all this is not on a scale of sufficient magnitude. For instance, in Liverpool alone it may be safely assumed there are from 5,000 to 8,000 young boys available, all of whom might, by early training, be made into good apprentices and sailors; but the means of training are not for 5,000—they are not even for 500! And yet how much better would it be for the interests of that port if, instead of picking up the scum of the streets, owners could always depend on a steady supply of boys, well taught and well

disciplined, for their ships! How well would it pay the Liverpool owners if they would, even at their own sole cost, provide means of education for the seafaring families of that enormously wealthy port!

It may be objected by some, that government is not averse to providing teachers for schools of this kind: and that the Committee of Council has even offered premiums for certificated masters who will act in this capacity. It is uncertain at present how many teachers have availed themselves of the encouragement thus held out; but the following specimen of what this encouragement is, may be found in the *Official Calendar* for 1862, issued by the government, the only information known to be printed upon the subject:—

“The certificate allowance will be dependent on the average number of *bonâ fide* sailors—seamen and apprentices—who attend during 200 evenings in the year, and will be paid at the rate of 10s. per head of the average up to the maximum which the teacher is qualified to earn by the grade of his certificate. The payments on results, which are unlimited, are dependent on the number of prizes taken by the pupils when examined by the inspector, and will be at the rate of 5s., 10s., and £1, according to the grade of the certificate.”

With all submission to the heads of the “Science and Art Department of the Committee of Council on Education,” it is pretty clear that the above regulation was drawn up by some one not practically acquainted with maritime affairs. What! sailors and apprentices to attend on shore *two hundred* evenings in the year! Tailors, not sailors, should have been printed! Catch an able-bodied seaman or an apprentice on shore 200 days out of the 365!

This is just the way in which a body of landsmen might be expected to attempt to work a seafaring institution. But it would be far better for the Government not to interfere with any of the details of the business, and to confine themselves to providing the teachers. It would also be better that either the Admiralty or the Board of Trade should take the matter in hand; and that only professional men should have the framing of any regulations affecting such a class of teachers. All this sort of thing would be better managed by a board of practical navigators, not by one of landsmen, who perhaps scarcely know a ship's head from her stern.

The peculiar kind of instruction to be given to young boys intended for sailors should turn mostly upon geometry and calculation, after the essential qualifications of good useful reading and writing are secured. Arithmetical *correctness* and *readiness* are two points that should be most particularly attended to; not the faculty of working hard abstract problems, but that of handling tables of logarithms and numbers with perfection and certainty. In other words, a sailor boy need not be troubled much with mercantile arithmetic; but he must be early and well grounded in his vulgar and decimal fractions. A knowledge of the properties of the principal geometrical figures may be imparted to a clear-headed boy, and even to one of moderate abilities, at an early age. Boys like geometrical figures when they are not made to com-

plicated, and when they see something useful in them. Without therefore, taking a boy into anything like *Euclid*, he may very well be grounded in an easy and elementary course of practical geometry, such as will stick by him when afloat, and will prepare the way for his advancing to trigonometry when he begins his regular treatise on navigation. Nearly all the time which is now wasted by navigation teachers in preparing young seamen for their Norie, &c., might be saved if they had been taught a *little* geometry, and a *good deal* of decimals when they were boys in school.

Besides this, an equally elementary and easy kind of geographical and astronomical instruction might be attempted. The subject, in the hands of clear sensible teachers, might be made attractive; and without trying at anything grand or fine—without pretending to any such nonsense as the “use of the globes,” &c., the young sailor boy might be made to understand thoroughly the forms, the subdivisions, the climates, the products of the globe, the currents and tides of the ocean, the leading phenomena of the atmosphere, the winds, &c., and the motions of the heavenly bodies. It is true that the book, which is to serve them for a text in all this, has still to be written: but it can and it ought to be written, and its publication would be an event of importance for the young sailor population of the whole country.

THE CHAPLAIN TO THE ROYAL WELSH YACHT CLUB.

LUNARS AND CHRONOMETERS, and the System of Examination for Certificates.

Sir,—Captain Henry Toynbee deserves the sincere gratitude and thanks of all connected with maritime affairs, or interested in the safety of our noble merchant vessels and the proficiency of our officers in the science of navigation.

Such efforts as Captain Toynbee's to prove to others how simple is the thing which is an undeniable bugbear to ninety-nine out of every hundred, deserve all honour.

Only those who, like myself, have had practical acquaintance with the fact, can tell with what aversion the working of a “lunar” is regarded by the majority of men; many, nay, I may say *most* of whom could master the slight difficulty with the greatest ease, but for the unfortunate and mistaken impression they have received as to the inutility of the whole thing when they shall have conquered it, and also that still more dangerous implicit belief in the perfect reliability of a good chronometer.

I do sincerely hope that the plain and unmistakeable explanation given by Captain Toynbee* may show them that the best chronometer may throw them *miles*, and a doubtful one, perhaps, *degrees* out of their reckoning by the end of a voyage, if the rate given by the maker

* In the May number of this volume.

be blindly relied upon. And therefore I trust it may rouse them out of the supineness into which they have fallen upon this important subject, and lead them to rate their chronometers more often, and to turn to with a will at the hitherto avoided lunar observation.

The utter neglect of this useful observation is indeed lamentable, and I am not, I will venture to say, at all overstating the case, when I assert that to six out of ten of our junior officers now at sea, the lunar is a sealed book.

And how can it be otherwise? there is no temptation to them to study navigation when young! and when they are older they are unused to study, find it irksome, and avoid it as much as they can.

The present system of mercantile examination is spoiling them, and has been doing so for years! Originally established, I believe, because the old voluntary system failed in producing a sufficient number of certificated officers, (as I believe the higher certificates required high nautical knowledge for their attainment), it has led to the production of a class of officers who hold certificates indeed, but who get them at a very cheap rate.

A youth can get to sea for *four years* knowing nothing of navigation, and caring nothing for it during that time, yet come home at the end of it and "*coach up*" for a second mate's examination in a few days, for the amount of knowledge he will then have gained is such as an apprentice of one year's service *ought* to be ashamed of, if that were all he understood of navigation. It is *laughed at* by the candidates themselves.

But then, if the examination be at a low standard, the strictness of it causes dozens to be rejected, and some very justly so. Many of them know just so much as will enable them "*to pass*" and no more, having been "*coached*" for the purpose; but I have known dozens of instances in which a little relaxation of the reins would have saved a truly clever man from what is considered by a sensitive nature a deep degradation.

I would not have the rigour of the examiner one jot abated where a candidate shows himself to be ignorant, and such candidates very quickly display their ignorance to a practised eye. But a certain amount of discretion should be allowed to the examiner when he sees a clever man making errors from excitement, perhaps caused by the unwonted presence of twenty or more fellow workers, and the awful sense of being under the examiner's eye, which to some men is exciting and overpowering to the highest degree.

I could quote instances from my own experience, of men who in their tutor's quiet room could work paper after paper without an error, yet rejected twice by the examiner. And this I believe to have been caused not so much by the examiner's own feelings, as by the necessity he seems to be under of rejecting men for *wrong results*, whether caused by excited feeling producing arithmetical errors, or the utter want of knowledge of the principles of the subject.

Why should not the royal naval system of allotting a certain number of good marks for each correct result, and striking off a certain number

for each incorrect one, be adopted here? In that case I would give the present requirements of a chief mate to the second mate; those of the master to the chief mate; while I would insert among those of the master an altitude of the moon, a double altitude and a lunar.

It is simply *riaculous* to say it would be too hard. Any man who had been taught, as any youth who passes through a nautical academy is taught, the science of navigation, would scorn to admit that anything was hard which was to be found in any "*epitome*." But there is the concealed sore which underlies the whole subject. Youths do not study navigation now as they did! I believe most teachers of that noble science will say, that for every *one* who is now taught before going to sea, or during the four years required to attain the second mate's certificate, ten come to them at the end of that period to be "*coached*" for passing their examination.

And finally, I think that the time which is allowed, viz., six hours on the Monday of each week might, well be lengthened for slow but correct workers, to whatever reasonable time on the Tuesday the candidate might require to finish his paper, and I venture to say that very few who went up to pass would need to claim the indulgence. All men are not equally quick, although one man may be as clever as another, and yet be rejected if he fail to finish his paper in the prescribed six hours.

There is at the present time a feeling rankling in the breast of mercantile officers, that they are unfairly dealt by at the examinations, in these matters, and I believe that the good men among them would willingly have *more to do* if the time were extended, and the system of marks introduced.

I believe that the present system will end in making ignoramuses of the greater number of the junior officers, and parrot-like learners of the seniors if it be continued for many years. I am, &c.

A. B. MARTIN.

To the Editor of the Nautical Magazine.

The foregoing is a well merited tribute to Captain Toynebee. We consider that it contains a true picture of the condition in which the lunar problem has long remained—the simple fact required to be impressed on the mind of the navigator, that errors of observation corrected themselves by those observations being taken on each side of the moon. To Captain Toynebee is justly due the credit of having pointed out this, and thereby shown the superiority of the lunar to the results of the *chronometer*, that it will even correct the *chronometer*. The lunar problem will now come with fresh and substantial claims to the attention of seamen, especially since the lunar tables have also been improved, and among the various methods proposed for clearing the distance, we may remind our readers of Raper's, brought forward by Captain Shadwell, those of Admiral Bonthune, Mr. Hebden, and Lieutenant Murray, R.N., in our two or three last volumes, besides others long established.

The remarks on the subject of examination are to the purpose. For *before* the examination of merchant officers was established it was generally understood that the commander and second officer of an E.I. ship should navigate her by *lunars* as well as by *chronometers*. But since government has sanctioned the command of the largest ships, *full of life and property, without requiring lunars*, officers have ceased to learn them, and as the old hands die out more and more ships will in consequence be lost.—ED.

CÆSAR'S INVASION OF BRITAIN.*—Nautical conclusions on the place of his departure from Gaul, and that of his landing in Britain, —By A. B. Becher, Capt. R.N.

The subject of Cæsar's invasion of Britain has been frequently discussed, with the view of forming a conclusion from the various theories advanced respecting it, both as to the place of his departure from Gaul, and that of his landing in Britain. A consideration of those discussions has led me to the conclusion that those places were Boulogne, and Lympne, a short distance west of Hythe.

It is generally admitted that the *Portus Itius*,† in Gaul, was the place of Cæsar's departure on both of his invading expeditions; which are also admitted as having taken place in the months of August, 55, and July, 54, previous to the Christian Era. The question then first to be answered is where was the *Portus Itius*, for on the position of that, the other will much depend.

Dunkerque, Gravelines, Calais, Wissant, Boulogne, and the mouth of the Somme, are severally advanced as being this *Portus Itius*, from among which, it appears that Boulogne has the most reasonable claim to that title,—because

1. Boulogne was the port of the *Morini* country, from whence communication was usually carried on with Britain, being the most commodious port for that purpose.

2. Boulogne affords complete shelter (although a tidal harbour,) to all vessels inside of it, and those of Cæsar would especially require it; on his second and larger expedition, they were purposely built for him flat bottomed, and therefore drew very little water.

3. The distance of Boulogne from Britain agrees tolerably well with that assigned by Cæsar for the *Portus Itius*.

4. Boulogne has Ambleteuse at a distance to the northward, corresponding nearly with that of a port alluded to by Cæsar, that would contain the eighteen vessels complained of as not following him on his first expedition.

5. Sanson's *Atlas* of 1641, contains a Latin map in which the limits of the *Morini* country are traced, and the position of the *Itius Portus*, or *Gesoriacus* is specified in that of Boulogne.

* Having met with the following paragraph in one of our daily prints, we throw these "conclusions" into the *Nautical* arrived at some time ago.

"The Emperor Napoleon is still actively engaged in writing the account of the conquest of Gaul by Julius Cæsar. He has sent one of his aides-de-camp to Boulogne-sur-mer, to ascertain the exact position of the *Itius Portus*. Antiquaries differ in opinion on this subject. According to Walkenaer that ancient Gallic port was Wissant. Others place it at Ambleteuse or at Boulogne. Others are of opinion that it was more to the North—at Calais or Mardyke. All these contested points are to be cleared up in the Emperor's work."

† *Itus* or *Itio*.—Ainsworth's *Thesaurus* gives it as "a going a voyage or journey, or travelling." Hence our itinerary, itinerant, &c.

6. Although a tidal harbour, Boulogne has an area with Ambleteuse and Etaples, that would admit of the embarkation of Cæsar's large army methodically conducted as it would be.

And it appears besides that the preponderance of opinion mentioned by the French author *Marette*, when writing on Boulogne, was in favour of this being the *Portus Itius*, as confirmed by Sanson's map.

Such are the reasons for concluding that Boulogne was the *Portus Itius* of the *Morini* promontory, from whence Cæsar departed on his expeditions to invade England. It may be observed here, as shewing the theory of the Somme to be untenable on one account, that the exposed character of that estuary, with an opening of three miles to the full effect of the sea, would admit of so much wave running into it, that it would not afford, like Boulogne, the shelter required for Cæsar's ships.

Before proceeding with the reasons on which the second conclusion is founded, the subject of the tide claims attention, because a wrong view of it seems to have led to the conclusion which had established Deal as the landing place.

Cæsar having departed from the *Portus Itius* on his expedition, (we will take the first) after midnight, for it was in the third Roman watch, being from twelve to three, arrives at ten a.m. the next morning (27th of August) off the shores of Britain. He drops anchor and so remains until three p.m.

There was probably more than one reason for this. One certainly was to wait for his slow ships to join him; another to avoid being drifted by the tide which was then setting to the *eastward*. And perhaps the opportunity was taken by him for communicating to his leading officers the position and approaches to the place selected for landing, from the information supplied to him by Volusenus, whom he had sent to reconnoitre the coast, and on which duty this officer was absent five days. It may be safely concluded that the usual port of landing in Britain, would not be overlooked by an officer employed on such a mission.

Now the tidal question having been wrongly answered, has confirmed a wrong conclusion, which affects of course the question of this landing place. When the ships at three p.m. left their anchorage, the tide is stated to have been then running to the eastward; whereas on the contrary it had been setting to the westward for about an hour and a half,* and would continue to do so for several hours longer, and was therefore favourable for going West past Folkstone, instead of East, towards Deal. It is not necessary to go further into this part of the subject, since Admiral Beechey's tables make it perfectly clear. Thus an eastern port for the landing place on our coast is set aside.

* On the 27th of August, 1859, by the tide tables, it was high water at Dover, (being the 4th day before full moon,) at 7h. 31m. a.m., and therefore low water about 2h. p.m. But an hour and a half before low water, the current of ebb tide in the Strait that *had been running eastward* was then setting *westward*, and continues to do so with the remainder of the ebb, and also

It is very well known that considerable changes have taken place on the coast about Romney, which coast must not be looked at in these days for its condition nineteen centuries ago, in the time of Cæsar. History tells us that even the course of a river has been changed, and we know that ships cannot get near Lympne, which place was approached by a creek. But in ancient times the whole flat of Romney was intersected by creeks, and from the evidence under consideration, it appears to be more than probable that Cæsar adopted the usual landing place, at or close to Lympne.

For, in reference to the size of his ships, built purposely for his second expedition, it may be observed that those which were saved from a severe easterly gale, were afterwards all of them hauled up on dry land, (an operation performed in ten days,) and were guarded most closely, as on them could he only depend safely for the means of returning to Gaul with the remainder of his army. This he was ultimately compelled to do, making two voyages with them. But the depth of water in which such ships would float, would favour his penetrating through creeks and shoal channels, on a shore where the rise of tide amounts to 20 feet.

The reasons for concluding that Lympne Creek was really Cæsar's landing place in this country are these: because—

1. The time occupied by the passage from *Portus Itius* (Boulogne) about nine hours, taking the time of departure as one o'clock in the third watch, admits only of somewhere in the Strait of Dover being the anchoring place of Cæsar's ships.

2. With the wind and tide in his favour, Cæsar proceeded from thence to the westward, and the cliffs of Folkstone, on which the Britons were observed following him, would then be on his right hand.

3. The short passage to Lympne Creek would allow sufficient time, after making it, for running the ships on shore in smooth water, to have the encounter as related with the Britons before night.

4. The position of Lympney (*Lemanis*) being preserved in Sanson's map before mentioned, with no other names than that of Dover near it, shows that it was a place of importance in ancient times. Certainly its sheltered creek, free from all disturbance of the waves, would render it a quiet commodious landing-place for Cæsar's army. For the same reason it was very probably resorted to as the usual port of communication with Boulogne—each being the common port of transit or embarkation for the other.

5. That such was the case derives a certain amount of confirmation from the circumstance of 250 ships, in A.D. 893, (more than nine centuries later than Cæsar's time,) having landed "a great army of

through some four hours of the following flood, according to the tables of Admiral Beechey, compartment vi, page 127, of Admiralty Tide Tables for 1862, tidal streams of the English Channel; and we are led to conclude from him that this extends over the whole strait. The whole subject has been also ably discussed in a little work by T. Lewin, Esq., published in 1859, intitled "The Invasion of England by Julius Cæsar."

Danes, *horses and all*, at Limene Mouth." Thus if Limene itself could not be approached nine centuries later, the circumstance shows that the mouth was still frequented.

6. The return passage of Cæsar's army to the *Portus Itius* (Boulogne) was performed in eight hours, under *oars* all the way. This could not have been done, if the place *from* which he returned was so far West as Pevensey, (where he is also said to have landed in Britain,) nor could he have done it if his return was to the Somme, (from whence it is contended that he embarked in Gaul,) the former journey being eighteen leagues, and the latter about twenty.

He certainly made his passage in eight hours, and the distance from Limene to Boulogne being about nine and a half leagues, gives an average rate of a trifle over a league per hour. This was fair work for *oars* even in the calm which favoured Cæsar. But he could not have made double that rate of progress *under oars*, and kept it up for eight hours, as would have been required by the Somme and Pevensey theory.

The place of Cæsar's departure in Gaul being considered as Boulogne, also that he went a short distance with the tide westward, from his first anchorage off Folkstone cliffs to his landing-place, serves along with the *distance* which he had come, and the *time* in which he performed that distance, to lead to the conclusion as to the place of his landing in Britain.

The nautical questions thus answered, show (as has been stated by *Dion*) that "Cæsar went *from* the usual port *to* the usual port." And it is for the antiquarian to consider those features relating to the movements of his troops and those of the Britons, along with the topography of the country in which Cæsar carried on his operations.

A. B. B.

The circumstance of a large number of Cæsar's ships being driven on shore from their anchorage in Dungeness Bay, by an easterly gale, would also agree with the foregoing conclusion; as they would take up the most convenient anchorage there for re-embarking his army.

EVENINGS AT HOME AT THE NAUTICAL CLUB:—*A Stray Slaver—California and the Chinese:—The Wilson Prize:—England in spite of Coles Claims Her Right to the Channel:—Whit-Monday Fare at the International:—The Look-out on the Japan Sea.—Salt Water made Fresh by Electricity—Breakwaters, Docks, and Sailors' Home at the Cape—Madagascar.*

There Rodmond, what think you of that? Fresh water out of salt by means of electricity!

That would be a wonderful electric current indeed replied Rodmond, and yet electricity does wonders: there is no doubt of that. And how

is it done? We shall hear it to night at the Club. Meantime here is a curious case for you. What think you of a vessel a year and a half ago called the *Laura*, leaving Gibraltar for New York with a cargo of fruit. It was given out that she foundered, and the amount of insurance on the ship and cargo was paid by the New York underwriters. The captain and crew have just been placed on trial in the British West Indies for slave trading. As to the ship of course nothing is known of her—she was not wanted. But slave trading is well nigh done up in spite of the Spaniards and Cuba, as California has been by the recent floods there. Nearly all drowned according to the Captain of the *Speedwell*, running between San Francisco and the Sandwich Islands. This vessel, which has made the run upwards of a hundred times, on her voyage in April last, was twenty days in performing the trip; just twice the length of time of the previous trip. About 200 miles from the California coast she encountered quantities of drift-wood and logs, which passed in quick succession. Some of the trunks of trees were so large that they were mistaken for boats, and the projecting branches, stirred by the breeze, conveyed the illusion that hapless shipwrecked mariners were appealing for aid. Acting under this deception, the captain hove to the bark several times. The sea for miles was covered with this drifting wood, and Captain Paty, ignorant of course of the immense floods in the interior, couldn't account for it. "What kind of country can it be?" asked a passenger. "Don't think there's any country left," responded the Captain, "all washed away; made the trip last time in ten days; out over that time now, and no land; don't know what it means; all swamped."

Aye, I have heard some curious facts about that part of the world said Rodmond. It is becoming a great country that in spite of the floods. Do you know there are 50,000 Chinese in California, 30,000 engaged in mining, 1,200 in farm labour, 2,000 in trading, and 16,800 in washing, ironing, and in domestic service. There are 100 respectable married Chinese women with families in California. In 1861, the expenditure of the Chinese added three millions to the Californian exchequer. The Chinese miners are only allowed to work on claims abandoned by the Americans. They are decent, well conducted citizens. Out of 2,783 convictions, only 168 were Chinese. One seventh of Californian exports, exclusive of treasure, is to China, and last year three quarters of a million worth of treasure was exported from California to China. 57,000 tons of Californian shipping were engaged last year in the China trade. In some of the mining counties the Chinese form one-tenth of the population, and pay one-fourth of the taxes.

That was cleverly done said the Chairman, in taking his seat at the Club, that affair of the *Emily St. Pierre*.

Admirably done returned the Commodore, no one could have managed it with more cool dexterity and determination than Captain Wilson; all resistance was out of the question.

Haven't seen it in the *Nautical* added the Chairman. Surely, it will be preserved there for the sake of the cloth.

No doubt, replied the Commodore, the *Nautical* looks after those things.

And that brings us to business said the Chairman—commencing with those cupola ships of Captain Coles that are shown in it, I see the Government has recognized his plan, and it is said that he receives five thousand pounds, and a hundred pounds for every cupola for some years for his patent. Plenty of them will be wanted for the reformation of the huge iron navy that we shall require. The great topic of the day, as you are aware continued the Chairman, is the International, this was relieved by the Spithead, forts for a moment, which the Club would be glad to learn were shelved for another year, and most likely for good and all. He was glad to find, and the Club would be also to know, that the command of the Channel in the event of war was to be claimed by this country, as her property by right of inheritance of our forefathers. So he would leave his friend the Commodore to comfort himself with that, in his lament at the exchange of iron cupola batteries for the wooden castles of his day.

The Secretary would here observe, as the Chairman had alluded to the International Exhibition, he had selected a *morceau*, which might be worth preserving, as a memento of it, for it was impossible they could keep any record of half that concerned them there. And this was the fare of Whit Monday, when all Cockneydom and its friends were there. After enumerating various wonders which were of course gazed at with astonishment, such as Mr. Emanuel's treasures, Mr. Elkington's bronzes, the nuggets of Australia, and the shrine of Buddha supposed to contain the sacred tooth, the statement says:—

As an account of Whit Monday at the Exhibition would be incomplete without some allusion to the creature comforts, we obtained from the English refreshment department the following approximate statistics of the food consumed by the visitors, and as M. Veillard was most probably equally patronised, the reader can form from them a tolerably clear estimate of the whole d'y's consumption. We put them down at random, as they were read out to us from the order book:—200 quarts of milk, 4 tons of ice, 36lbs. of fresh strawberries, 250 dozens 2s. pork pies, and 150 dozens at 1s.; 4,500lbs. of fresh meat, 150 hams of 20lbs. each, 100 neat's tongues, 50 rounds of beef, 30 to 50 lbs. each; 6 casks of pickles, 600lbs. of maccaroons, 600 dozens of sponge cakes, 1 ton of seed and Genoa cakes, 160 pigeons, for pies and potting; 250 chickens, 20 salmon, 200 lobsters 20 turbot, 50lbs of eels, 10,000 buns, 100 dozens of sponge cakes, 130 quarts of cream, 4,000lbs. of household bread, 120 sandwich loaves of 6lbs. each, 6,000 dinner rolls, 250 French rolls, 200 dozens of Queen and sponge cakes, &c. We have here no account of the tea or the coffee, of which there must have been an immense consumption, as it was being served out at 6d. a head, and in quantities which completely satisfied the visitors. The commissariat department would, in fact, have gone off in a perfectly satisfactory manner but for a slight difference of opinion which occurred between the commissioners and the public as to what consti-

tuted "light refreshments" Stalls for the sale of light refreshments are permitted outside the galleries, but the commissioners read the words to mean ices, lemonade, and pastry. The holiday audience, however, were of opinion that at least sandwiches and bitter beer ought to have been included, and the absence of these popular "light refreshments" caused a good deal of grumbling amongst hundreds of people who came hungry, exhausted, and half choked with dust, out of the long picture galleries. It is to be hoped that in these holiday times, when the building will every day be filled with people who are accustomed to substantial fare, some relaxation of the "light refreshment" laws may be permitted, so that there shall be no grumbling or discontent to mar the now almost certain success of the Exhibition.

This essay of the Secretary's was received with the welcome of the Club as a curiosity of literature, almost as likely to be questioned as some of Mr. D'Israeli's have been nevertheless.

Come, said the Chairman, we must look abroad or we shall be lost in the mazes of the world's show, and there is something abroad that interests us if we look East or West.

Yes, said Albert, here is an account of our Russian friends in the Japan Seas that proves them to be as wide awake as ever.

By accounts received at St. Petersburg overland via Siberia, it appears that Russia is at present attempting to found a second Sebastopol in the North Pacific Ocean. In the straits of Corea are to be found two little islands, called North and South Tsu-sima, geographically belonging to the Japanese Archipelago, and subject from time immemorial to the empire of Japan. They are separated from each other by a sound, enclosing a capacious bay, with excellent anchorage, and snugly sheltered from every possible wind. Though small, these islands are densely populated, to the amount, it is said, of more than thirty thousand, and the inhabitants are a civilised, peaceable, and industrious race, producing most beautiful manufactures, in which they carry on an extensive and lucrative traffic with Yeddo, where these articles are held in great estimation. The soil is fruitful and well cultivated, the climate deliciously mild and remarkably healthy. This favoured spot is governed by a Japanese Daimio, who resides at the town and port of Fatcha; and, though appointed by the government, and paying allegiance to the Tycoon, he is placed in a very independent position from the great distance to the capital.

Whilst Admiral Sir James Hope was lately taking a cruise in H.M.S. *Ringdove*, having heard favourable accounts of the natural advantages and capabilities of these islands, and their sheltered harbour, he determined to look in there, and he did so; but it was with the greatest wonder and astonishment that, on doubling the cape that shuts out the sea from view, he found there three Russian frigates at anchor, who seemed to have made themselves quite as much at home in the island as if they were at Cronstadt. Bustle and activity prevailed everywhere on shore, boats were drawn up on the beach, and undergoing repairs, stores were being landed and warehoused, sailors

were exercising with small arms, and to crown all, the imperial flag of Russia was floating from the summit of the buildings, which were separated from the native town and surrounded by strong defensive works.

When Sir James inquired into the particulars of this new Russian establishment, he was informed that they had asked permission of the Daimio to repair their boats on shore and build a house for the better accommodation of their sick people, which had been readily granted; but it appears that the repairs of their boats were never finished and their invalids never got well, though looking remarkably healthy; and the one building originally intended for the hospital had gradually increased to several, which were well fortified, and whose occupants—even when the frigates were out cruising—were strong and numerous enough to overawe the native inhabitants and keep them in check. The Russians acknowledged all this, but added that they had orders from their admiral, who was gone to Japan, to remain in that harbour till his return, though they were unable to say when, or if ever, this would happen.

The fact is that Russia views with anxiety and jealousy the daily increasing influence and commerce of England in China and Japan, and as she cannot openly compete with British enterprise, she has recourse to this underhand way of pushing forward her advanced posts. It may here be stated that Tsu-sima is not one of the ports of Japan opened by treaty for foreign trade, and still less for the admission of European ships of war; and by thus occupying the island under such a specious pretext, Russia may not only provoke the animosity of Japan, but exasperate the people of that country against all European nations generally, which in the present excited state of the population and their decided wish to back out of their engagements, and shut themselves up again from the rest of the world, as was the case previous to the conclusion of the treaties, is a thing to be avoided as much as possible, and especially by using the utmost caution not to give that jealous nation of Japan any fresh cause of complaint.

Were such an event to occur, Russia would have little or nothing to lose, her commercial relations with Japan being of a very trifling nature and inconsiderable value; but in case of a war she would be in possession of a very important position, which might easily be rendered impregnable by a little engineering talent and Russian military skill. She would have in this advanced post a formidable strategic advantage, within easy distance of her own ports on the Amoor, from which she could receive her supplies of stores and ammunition, whilst the sheltered security of the bay affords the most desirable facilities for a coal depot, and a convenient point of rendezvous for her ships of war, from which they might with great facility undertake offensive operations in Japan, and as easily retire, in case of need, to refit their vessels and take on board fresh stores of ammunition, coals, provisions, and water.

It is impossible to ascertain whether Russia really entertains any such deep laid plans of ambition and future aggrandisement; but as such a course of proceeding would be quite in harmony with the his-

tory of her traditional policy, it is not beyond the range of possibility of even probability. It can, therefore only be considered in the light of a public benefit to give open warning, and allow other nations to place themselves on their guard, as fore-warned is fore-armed.

A very convenient pair of lovely islands they are, observed Rodmond, from whence to watch the rising progress of Japan. But they will not be allowed to stay there. The Cape deserves a passing word.

Rodmond having understood that a process was discovered of making salt water fresh by means of electricity, requested the Chairman would at once enlighten him as to the process.

The Chairman said he had found it mentioned in the *Mechanic's Magazine*, and considered it as important. The account says:—

In *Macmillan's Magazine* for this month is an interesting paper by Dr. Phipson, entitled "Electricity at Work," in which the author passes in review the useful applications of this wonderful agency. He concludes his paper as follows:—"Reflecting upon the powerful decomposing chemical force with which we are furnished by the electric current, it occurred to me that I might be able to render sea-water potable by decomposing and extracting its salt, by means of a moderately powerful battery. The experiments were made at Ostend a few years ago. My apparatus consisted of three vessels containing sea-water; the centre one contained the water to be operated upon, the two others communicated with the two poles of the battery. The three vessels were connected by two bent T tubes filled with sea-water. As the only battery I could procure in Ostend was rather weak, I passed the current through the water for about fourteen hours, after which one of the outside vessels had become acid and the other alkaline. The sea-water was then filtered through charcoal, and was nearly drinkable. It would have been, I doubt not, quite potable had the battery employed been more powerful, as it was I found it difficult to extract the last particles of salt; and the water after subsequent trials, still presented a slightly brackish taste. I have not had an opportunity of repeating this experiment since, but from the results obtained, I think it probable that sea-water may be rendered potable by means of the electric current."

The importance of the discovery was generally admitted, and fruitful as science was in discoveries of the useful arts, it must be admitted that this was yet in *embryo*.

Alluding to the Cape, observed Albert, it is reported that the Table Bay Breakwater and Dock works are being energetically proceeded with under the direction of Mr. Andrews, C.E., and a great deal of the preliminary labour necessary to the success of the undertaking has been accomplished. To the superficial observer, however, comparatively little seems to have been done. In a work of such magnitude and importance as this, it is a long while before any very striking progress is made.

Close to the side of the Breakwater, but a little nearer to town, the

construction of Messrs. De Pass, Spence, and Co.'s patent Slip is being rapidly completed. This undertaking, although not of so important a character as its more pretentious neighbour, is one which has long been called for, and which will bring in its train many substantial benefits to the port. The work is a private speculation, which, being entered upon by some of our most energetic merchants, needs nothing to prove the probabilities of its being a paying concern. The ways will be 550 feet long, and the depth of water at the extreme end will be 20 feet. The works are far advanced, and two or three months will probably witness their completion. Mr. R. Mair, C.E., who was the engineer of the Simons Town Slip, is the gentleman entrusted with their supervision.

One of the most prominent objects which meet the eye of a passenger, on landing in Cape Town, is the new and handsome Sailors' Home which faces the bay, a little to the right of the Central Causeway. It will be remembered that the foundation-stone of this building was laid by H.R.H. Prince Alfred, when on his visit to this colony some eighteen months since, and it has now been completed, and will be opened shortly, with the half yearly meeting of the society. The house is one of the best, if not the best, building in the city. It is three-storied, and contains ample accommodation for the probable requirements of the port for many years to come. The architects, Messrs. Welchman and Read, have carried out their plans most efficiently, and the result is all that could be wished. Mr. Inglesby was the builder entrusted with the work, and to him, also, too much praise cannot be given.

The Mossel Bay Harbour works are rapidly approaching completion.

At a recent meeting of the Algoa Bay Harbour Board the engineer reported that 580 tons of stone had been deposited in the sea to bar its inroads. The work of driving the piles at the breakwater is being pursued with vigour.

But he regretted to find that the Roman Rock light-house at Simon Bay is cracked to such an extent and about the basement that the colonial engineer has refused to take it over on the part of the government. So convinced is the resident engineer of its weakness that he has put twenty-four iron bands round it to hold it together, and we hear that further steps are about to be taken with the view of strengthening it. The light-vessel, of course, still remains.

The Cape of Storms, observed the Commodore, fluctuates in importance like other places. When the Cape was the half-way house between England and India it had more of the sympathy and affection of the mother country than it can now claim. It is in the position of one of those fine old market towns of England, through which the mails used to gallop twice a day, and the guard's horn sounded, and many travellers took their ease at the inns. Such was the Cape in the good old times, when cadets relieved the monotony of an outward voyage by a scamper through its streets, and middle-aged valetudinarians relieved their bile by wholesome exercise through the country round about. The cheerful sallies of youthful heroes begin-

ning the world and the grumbings of worn-out invalids are rarely heard there now. The Cape has to stand on its own merits; and, considering the great loss it sustained by the diversion of the Indian highway, and the fact of being occupied for the most part by no very energetic people, subject to the influence of an enervating air, it is wonderful that it should have developed so many independent resources so soon, and struggled against so many natural disadvantages to maintain an independent place.

But it so happens that geography will have, as it ever has had, an important influence upon the well-being of every community, and the Cape may soon obtain a new title to interest, not only as a mart for agricultural produce (for in that lies its true wealth), but as the spot in the southern hemisphere on which in some measure empire must depend. Close to its eastern shore is the fair island of Madagascar—not inaptly called the Great Britain of Africa—for which the course of events is preparing a noble future; and scattered throughout the eastern seas are islands more or less advancing in a career of civilization, to which China itself will contribute a share. Within a month, it appears, five steam-vessels have visited Table Bay whose destination is the remote East, and three of which are to trade upon that great river, Yang-tse-Kiang, so recently thrown open to the commerce of the world. It seems, therefore, not unlikely that the extension of European enterprise and commerce in those regions will restore to the Cape the advantages which its connection with India once afforded, and pour into its lap a portion of the treasure to be gained from intercourse with countries so vast and wealthy as China and Japan.

Yes, observed Albert, the opening of Madagascar is likely to be another instance of fluctuating fortune in geography. Much good feeling is manifested by the new King of Madagascar towards the English. The advantages to Mauritius and Bourbon of a friendly and liberal sovereign at Madagascar are enormous, for hitherto the supplies of these islands, which produce scarcely anything but sugar, have been derived from the distant continents of India, South Africa, Australia, and Europe; while little beyond tough beef has been imported from Madagascar. Mr. Ellis has told us that ten turkeys can be purchased in the latter country for one dollar, while I can, from my personal knowledge, vouch for the usual price of a turkey in the Mauritius being £3. Let us hope, then, that the tables of our rich little sugar colony may groan with cheap plenty.

But to the scientific man and the naturalist Madagascar offers a field such as has not been opened since the days of Cook's discoveries. There exist in its forests and inland lakes animals which may create a greater sensation when discovered than even the gorilla, if, indeed, some rival monster ape be not captured to astonish our citizens. We have already in the British Museum the cast of eggs as large, or larger, than the human head, the originals of which, taken from the bank of a Madagascar river, are now in a museum in Paris; indeed, some sanguine naturalists hope to discover in the island the original roc of the *Arabian Nights*. An entire order of animals, the lemure,

are only found in Madagascar, one variety of which, the eye—eye is actually the *Aquadrumatous rodent*, or monkey beaver. The vegetable productions are marvellous in their beauty; among which may be mentioned the magnificent orchid *Angracum sesquipedate* and the *Ouviranda femestralis*, or lace-leaf plant. The dyes, gums, and medicinal plants are of great value and variety, while the unworked mineral treasures are immense.

So that much as we know of the world we have yet much to learn.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 218.)

Name.	Place.	Position.	F. or R.	Ht. in Feet.	Dist. in Mis.	[Remarks, &c. Bearings Magnetic.]
6. Navesink, New Jersey	United States	.....	F.	258	25	Est. 1st May, '62. Two lights in two towers. White lights. In lieu of those standing—to be removed.
7. Caravelle Peninsula	Martinique	14° 46' 2" N., 80° 52' 9" W.	F.	410	24	Est. 1st June, '62.
8. El Cubanal	Valencia	39° 28' 8" N., 0° 20' 1" W.	F.	66	9	Est. 31st March, '62.
Torreveija	Alicante	37° 58' 1" N., 0° 39' 9" W.	F.	33	4	Est. 31st March, '62.
Goleta, on eastern Jetty	Bay of Tunis entrance	.....	F.	..	6	Est. 10th April, '62.
9. Cape Sillero, Vigo	Spain, North coast	42° 6' 1" N., 8° 52' 6" W.	F.	72	17	Est. 31st March, '62.

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

CHINA TO AUSTRALIA.

6, Frederick Place, East Briarton, June 12th, 1862.

Sir,—I was much gratified by reading in your May number of the *Nautical* a short statement from Captain Palack, of the Hamburg barque *Esmeralda*, drawing attention to a passage which he had just made from Fou Chou to Sydney by the Pacific Ocean, in which he beat all the vessels that had made their passages by the ordinary and circuitous route through the China Sea and Indian Ocean about fifty days, or by half the time. His words are—"These vessels all went through the China Sea, and I would have done the same had I not been in possession of your magazine for 1859, and read those pages, 250 to 255, by Captain Hunter." It is, as stated, highly gratifying to find that I have been instrumental in shortening the passage of at least one ship.

Further on in his letter, however, Captain Palack states that he

does not believe the West monsoon in the South Pacific blows so far to the eastward as I have stated, namely to 165° or 170° E. Let us see on what grounds Captain Palack forms this opinion. He arrived at Sydney on the 21st of November; therefore must have crossed the locality alluded to about the end of October or the beginning of November, and he seems to be surprised that he did not experience westerly winds then.

Now, there is certainly nothing contained in my statement that would lead him to expect westerly winds at that time. It is there clearly stated that the westerly monsoon blows from the middle or end of December to the middle or end of March. Calms and light winds from the northward were experienced by him at that time, namely about the beginning of November, from the line to 10° S. It does not seem to have struck Captain Palack that he was then in the region of the S.E. Trade wind; and as that did not blow there is a strong inference that it was blown out for the time, and would, after an interval of light winds, be succeeded by westerly winds. However, I would not lead any one to expect westerly winds in the Pacific before the middle of December. And as the remarks which induced Captain Palack to try this passage were the result of some twelve or fourteen years' cruising in the Pacific, I still decidedly adhere to my statement.

Perhaps Captain Palack, on some future voyage, may pass the locality named during these months, and will then give us his experience, which I should infinitely prefer to the hearsay opinions given in his letter.

In conclusion, I confidently predict that the time is not far distant when it will be thought preposterous that ships from China to Sydney should ever have adopted the very circuitous and rough weather route through the China Sea and Indian Ocean, when the short and direct route by the Pacific could so easily have been accomplished.

I am, &c.,

ROBERT L. HUNTER.

To the Editor of the Nautical Magazine.

REPORTED DANGER ON THE NORTH COAST OF ANGLESEA.

Liverpool, 17th May.

Sir,—I desire to bring under the notice of all concerned that on the afternoon of Wednesday last, at low water, the ship *Ethel*, from Bombay, drawing twenty-three feet water, with Coal Rock Buoy S.E.b.E. and the Skerries Lighthouse W.b.S., struck twice on a sunken rock or wreck. The ship heeled over above streaks each time she struck, grating in the intervals between.

W. HALL.

T. Court, Esq.

The foregoing is stated to be posted at Liverpool. There can be no doubt that a solitary rock, which may be a very formidable danger, is sometimes missed by the most scrupulous nautical surveyor; and it

would be remarkable if this should turn out to be one, and yet not discovered before in this much frequented route. A very short time, however, will serve to show whether it be the remains of a wreck or something entitled to the name of Ethel Rock.

The foregoing, relating to the Ethel Rock, should have appeared, with the rest of our Nautical Notices, in our last, but was reserved for this number from want of space. Since which H.M.S. *Asp*, Commander Alldridge, was sent to examine the locality of this reported danger, and has succeeded in ascertaining the position of a very dangerous rock, the least water on which is nineteen feet. It has now taken its place on the chart under the name of the Ethel Rock; the correct place of which is marked by the Trinity House by a red buoy, which lies with the Coal Rock S.E.b.S. very nearly, distant seven cables' length.

PETERS ROCK,—*Coast of Mexico.*

We find the following in *Mitchell's Maritime Register* :—

Captain Vansittart, of H.M.S. *Ariadne*, reports that a shoal exists off Vera Cruz not marked in the charts. The shoal lies N.E.½ E. twenty one miles from Vera Cruz lighthouse (which stands at the West angle of the castle of San Juan de Ulloa.) has seventeen feet over it, and the sea breaks on it during Northers. To avoid this shoal it is recommended to make the coast of Mexico to the northward of the parallel of 19° 30' N. Bearings magnetic; variation, 8° 20' E.

The position of this shoal, thus reported by Captain Vansittart, we understand, and said to be in Norie's chart, was verified by Captain Saunders, of the U.S. corvette *St. Mary*, as well as by Mr. F. Peters, the Harbour-Master of Vera Cruz. It is properly N. 59° 3¼' E. (true) from the lighthouse at Vera Cruz, and is cautiously avoided by the West India Mail steamers.

THE KOK SHOAL,—*Coast of Cochin China,—Vessel Lost.*

The following is also from *Mitchell's Maritime Register* :—

The *Valparaiso*, Dutch three-masted schooner, Captain Kok, which left Saigon on 31st January last for Macao with a cargo of rice and thirteen Chinese passengers, on the 6th current, about 10h. 10m. a.m., struck on a sunken rock not laid down on the charts, Point Kega bearing N.E.½ N.; Cape Tiwan, W.¾ S.; and Point Baken, N.b.W.¼ W., lat. 10° 20', long. 107° 38' E., and by chronometer 107° 40'. On sounding the pumps it was found that she was making much water, and although all hands were kept at the pumps, by 5h. p.m. she had nine feet of water in the hold. The long-boat was then got out, but there being a heavy swell on, it was thrown against the vessel and knocked to pieces. In trying to get the small boat out, a hole was knocked in its side, but this was stopped by a bundle of clothes. At

6h. 30m. p.m., there being then eleven feet of water in the vessel, the crew got into the boat, which was so crowded that the Chinese were obliged to be left on board the ship.

About 2h. a.m., of the 7th, on rowing round, it was found that the deck of the ship was even with the water and the sea breaking regularly over it. The boat then steered for Cape St. James, and arrived at the guardship *Didon* about 9h. a.m. Captain Kok and his second mate immediately returned in one of the *Didon's* boats to look for the wreck; but although they remained for two days and two nights searching for it, nothing was to be found. They returned to the guardship.

This appears to be a very dangerous rock on a part of the China coast the approaches to which are but little known.

MARRIOT ROCK—in *Entrance of Beithul Cove, Malabar Coast.*

The following is from a Bombay paper—the rock which it reports being just in the way of a vessel rounding the point which forms the harbour.

12th March, 1862.

Notice is hereby given, that a patch of detached sunken rocks, one of which has only seven feet of water over it at low spring tides, has been discovered off the entrance to Beithul Cove, on the Malabar Coast, about one hundred to one hundred and fifty yards off shore, and in the direct line that a vessel might take when rounding into the Cove from West or North-West.

The bearings from it are as follows:—

Fisherman's rock off Carwar head in a line with the Southern Oyster rock to the West, and the centre of Deoghur Island in a line with Loliem point to the North.

W. F. MARRIOTT, *Lieut.-Col., Sec. to Government.*

RED SEA LIGHTS.

The building of the lighthouses in the Red Sea is rapidly proceeding. The *Moniteur de la Flotte* gives the following account of them:—

Zafran lighthouse, of stone, for the approaches to the gulf of Suez, on point Zafarana in lat. $29^{\circ} 9'$, long. $32^{\circ} 43'$, was lighted on the first of January last.

Ushruffee light in the course of construction in the middle of the Strait of Jubal, on the Ushruffee rock which covers with the tide, in lat. $27^{\circ} 44' N.$, and long. $33^{\circ} 47'$, is constructing on an iron support, resting on a base of masonry, and will be lighted in a few months.

The Dedalus light, on the rock of this name, in the middle of the Red Sea, awash at low water, in lat. $24^{\circ} 55'$, and long. $35^{\circ} 57'$, standing on a base similar to the foregoing, will be completed about the end of this year.

These three lights are being constructed at the expense of the Egyptian Government, being entirely Egyptian. The P. and O. Com-

pany have undertaken to send by their vessels the oil for their consumption, and the provisions for the maintenance of the light keepers.

LIGHT AT SURINAM.

The following extract of a letter, signed W. Stine, in the *Shipping Gazette*, is important to commanders of our merchant shipping:—

The light ship at Surinam has been moved about four miles up the channel, and a buoy put in its place. Had I not paid strict attention to the lead, my ship would have grounded on the bank off Brown Point. This caution may be the means of saving some one's property, as no confidence can be placed in her (the lightship's) position.

THE PRESENT CONDITION OF MERCHANT SEAMEN, AND HOW IT MAY BE IMPROVED.

St. John's Lodge, near Aylesbury, May 1862.

Sir,—I feel sure that the above subject will always claim space in your columns: would that I were as sure of being able to treat it in the manner it deserves. But it seems right for some one to call attention to it, as it has too long exemplified the truth of the old adage, "What is everybody's business is nobody's business."

The peculiarities of a sailor arise from the circumstances with which his profession surrounds him, by which some of human nature's weakest points are laid bare, courting the attacks of numerous enemies. Unlike the young landsman he never has to provide for himself, but is in this point treated as a child so long as he goes to sea; which prevents him from acquiring a most important habit, and leaves him a prey to the thousands of parasites who live on the hard earned pay of seamen, and at the same time hang like dead weights upon them, it being their interest to do all in their power to prevent Jack from rising in the scale of society. That they succeed but too well may be seen by any one visiting the resorts of sailors, inhabited as they are by the veriest scum of the earth, a misery to themselves and a nuisance to the whole neighbourhood in which they dwell.

The great question is—How is this to be remedied? Something has been already done in the shape of Sailors' Homes, Savings' Banks, &c.; and to this may be attributed the progress which sailors have made during the last few years. But an immense deal remains to be done, both for them and for those who are tempted by such easy prey to lead the most degraded of lives; for the sailor-parasites are more likely to become useful members of society when the sailor-temptation is lessened by sailors going to the Homes and making a more provident use of their money. We ought also to have Homes for married sailors, where their wives and families could live at moderate terms, with the means of earning a little money; also a Be-

nefit Fund for old and disabled sailors. This, by raising the moral standard of seamen, would proportionably increase their value to their employers.

The second question is—Who ought to get up these Homes and a Benefit Fund? The self-evident answer is—the employers. Government provides for its sailors and soldiers; the squires of villages get up benefit clubs and other societies for the advantage of those who work on their land; factory-owners get up schools and societies for the benefit of their artisans. It therefore stands to reason that merchants and shipowners should do this for sailors.

It is to do their work that sailors are induced to enter that peculiar line of life which quite unfits them for managing for themselves when they step on shore, and the least they can do is to devote a little of their time and ability towards providing for them when they arrive home.

We would not ask the merchants and shipowners for money. We think that as a rule sailors are well paid. What we want is a little of their head and heart work to plan a useful fund to which sailors may subscribe, and thus insure a provision for themselves in old age, or to their widows and orphans. We hear that there are £600,000 of unclaimed sailors' wages now lying idle, and also a surplus of about £200,000 in the hands of the Trinity House of overplus income. Now this last does not really belong to sailors, but to shipowners; still they might request it to be added to the other, and form a nucleus for a grand provident fund to which all sailors should be induced to subscribe, and to which all dead seamen's wages and effects, when unclaimed, should be paid. The £800,000 to start with would be a good argument to induce sailors to subscribe.

But, independent of these sums, we think that sailors might be persuaded to subscribe freely to a fund well guaranteed by Government or by our first merchants and shipowners, especially if the method of subscribing to this fund were adapted to the way in which they receive their pay,—I mean in lump sums.

Let it be soundly calculated how much pension could be given to a sailor when fifty-five or sixty years of age, or when disabled, or to his widow or orphan children, after he had subscribed £20, or £30, or £40, or £50, and so on. Then let him pay it in in lump sums at the end of his voyage, not yearly. An old shipmate or comfortable ship might be going to sail directly on his arrival home, then Jack, wishing to go, would perhaps pay a lump sum to the fund, instead of wasting his money in ruining himself and others.

Something of this kind must be done before sailors can steadily improve, and the sooner some Christian friends commence it the better. A good fund, more Sailors' Homes, Homes for married sailors, would be a grand step. Then all commanders and officers understanding the benefits could, whilst at sea, reason with and persuade their men to support these useful methods devised to help them. There would be no reason why commanders and officers should not subscribe to a similar or the same fund,—it would be a great boon.

It is useless to say that sailors are so ungrateful it is no use helping them. Sailors are human beings, made reckless by the peculiarities of their profession, and what they need is that those wise and provident heads into whose service they have thrown themselves should work with their whole hearts to remedy the great difficulty, which is chiefly the result of their circumstances.

Yours faithfully,

HENRY TOYNBEE.

To the Editor of the Nautical Magazine.

St. John's Lodge, near Aylesbury, June 18th, 1862.

Dear Sir,—In my last letter on this important subject I said too little on the great want of Homes for married sailors, where they could live with their wives and families when at home, and leave them when they go to sea under the care of a manager, who would do all in his power to supply the place of the head of the family, whose protection they must necessarily lose for months or even years.

We have already started on a good path, but the friends of sailors must not stop after providing Homes for men. These are excellent. The Rev. R. H. Baynes kindly showed me over the one in Well Street on Thursday, June 12th, and I attended his church in connection with it in the evening. There were, I suppose, forty sailors present, most attentive and serious, showing that they have a craving for the knowledge of that religion which is the only power that can lift man from the state in which he was born to a fitness to serve God here and hereafter. Certainly, a youth availing himself of such a home has had much help; but when he becomes a young man, and by a law of Nature looks around him for a companion on whom to set his affections, he finds difficulties almost insurmountable in the way of his getting a good wife. And, what is worse, if he be a man of feeling he shrinks from the thought of marrying when he knows that in most cases sailors must leave their wives in the very worst parts of London, exposed to scenes and temptations which are quite heartrending to behold.

Many people are now affected by the touching incident in Frith's picture of the Railway Station of a sailor parting from his wife. Let them remember that this is no got up subject. Every day respectable and affectionate women are parting from their sailor-husbands, and how is the painful part of the picture heightened when one thinks of the awful place in which that defenceless woman, with her family, must spend the long absence of their natural protector. If some do get hardened to such a state of things it is the sad but not unnatural result of circumstances.

The fact is that sailors when advancing from youth to manhood lose that great help to respectability, the prospect of a happy marriage; thereby being almost compelled by circumstances to yield to a temptation which is the very bane of Christian progress—a temptation which receives far too much encouragement from their stepping

on shore with a fair sum of money in their pockets and nothing to do.

The argument that many sailors' wives are so low and degraded that they would not appreciate the Homes has been so often overturned when used against any scheme for the benefit of the poor that we need hardly mention it. The Homes would certainly, I think, reclaim many wives from bad habits and prevent many more from acquiring them; so that on less money than they are now wasting in filth and wretchedness they might bring up a respectable family, to become sailors and modest useful wives for sailors.

The style of Home must be a subject for careful consideration. There might be a series of model lodging-houses built in the neighbourhood of the present resorts of sailors, having a manager and his wife, who would devote their energies to the well-ordering and advising of the little community, and rules to which all must agree on pain of expulsion. There should also be baths, wash-houses, and schools for the use of the inmates, and perhaps training-ships for young sailors. The manager might take in work, washing, &c., for the employment of the women, so that they should be able to earn a little towards the support of themselves and their families.

So sure am I that something of this kind must be done before sailors can rise to the full appreciation of the blessings which Christianity alone can work out for man, that I am prepared to support it with all my power, and doubt not that many others would do the same. If a well-formed committee of merchants and shipowners decide on forming a company to get up something of the kind as self-supporting, I shall be most happy to take shares to the amount of £500; but if, on maturer judgment, they find that it *must* be a charity (which experience does not prove to be the best plan) I would give £100 towards it.

In this letter I have said more on Homes for married sailors than on the other subjects mentioned in my last, because it seems to strike at the root of sailors' difficulties. Still I hope that those who work at the one will also endeavour to get up a Benefit Fund to which sailors may subscribe for the support of themselves and families in case of sickness, old age, and death. We may bear in mind that every pound subscribed to this by sailors is taken from money which would otherwise be spreading moral devastation in the East End of London. Let not those who have already done so much for sailors be discouraged. They are not worse than formerly,—on the contrary, they improve; but the above-named difficulties are checking their further progress.

Going to sea on the 1st of July will prevent my working as constantly as I could wish at this important subject. Still, knowing how many there are who are willing to help sailors in any feasible way, I hope it will gradually progress to maturity.

Yours faithfully,

HENRY TOYNBEE,

To the Editor of the Nautical Magazine.

P.S.—In my last letter I said that there are £300,000 of unclaimed seamen's wages now lying idle. This was a mistake—the sum is a little over £30,000. The amount, however, does not affect the argument, which was to show that the money which sailors are now wasting in the ruin of themselves and others is sufficient to provide comfortably for themselves and their families if they could be brought to subscribe to a well planned Benefit Fund.

We have prefixed to Captain Toynbee's second letter the first, which appeared in our June number, on the same subject,—one that deeply concerns the maritime interests of this country,—interests that belong to her prosperity and her greatness; and we did so that our readers might have before them the proposal of that gentleman in its entire condition. We wish, with Captain Wilson, as he said at Liverpool, that “the British public would always receive British sailors into their hearts, and cherish them as some of the most valuable subjects of the throne,” for on *them* England will always depend for safety from her foes. And Captain Toynbee's proposal is to establish model lodging-houses for their wives and children, whom they leave at home, and who form a part of the British sailor, while he is voyaging abroad.

Surely there will be found among our great capitalists, who owe their success in business to these same seamen,—surely, we say, there will be found some one who will take up and carry out this proposal—one which has for its object the formation of a model lodging-house under proper management, in which the sailor can leave his family properly cared for, himself provide for their comfortable maintenance in his absence, and return to them in decency and respectability.

Our present number contains a proposal for schools to receive the children of sailors—important, it is true. Yet shelter, food, and proper habiliment,—in fact, a proper dwelling and proper early habits instilled, are the necessary preludes to those, which become, therefore, secondary to the HOMES.

We therefore entreat our readers to induce some one of the class of gentlemen to which we have alluded—one who will emulate *Mr. Peabody's* noble example—to take up Captain Toynbee's proposal,—to make even a small beginning,—to lay the foundation of it in one model lodging-house during the absence of Captain Toynbee, satisfied, as we are, that another will follow and that like other establishments of its class in this benevolent country of ours, it is only necessary to make such beginning to insure success. Then all the benefits which Captain Toynbee has pointed out will follow, and all the evils to which he has alluded will be avoided, and a great benefit not only to the seaman but to the country at large will have been achieved as it should be.

It is scarcely necessary to add that they shall have all the support in their humane and noble purpose that the pages of this journal can supply.—ED.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

AUGUST, 1862.

STEAM IN THE PACIFIC AND THE SANDWICH ISLANDS.

The great progress which the world's intercourse with itself has made of late years is undoubtedly due to the enormous powers of steam. Afloat or on shore, rapidity marks its steps,—it flies with iron wings over the land and skims the ocean's surface as fast as the yielding fluid can make way for it. To imitate the feathered tribe and perform a voyage of aerial navigation is indeed beyond its power, or even those of man who wields it. We have long seen the wonderful powers of steam among ourselves and its progress on our European seas, but there is yet in store for it another vast ocean whereon those powers will be developed with still greater effect. The golden regions of Australia and British America are well calculated to bring the two ends of the world together, to produce intercourse between people each dwelling at the antipodes of the other; but it was wisely ordained that the discovery should be preceded by the use of steam, that the auriferous current which would flow from them might hasten that intercourse with the aid of the giant power.

But it is to the future of the Pacific Ocean that we would now claim attention, both as to the trade of which it will be the scene and the line of navigation along which commerce will take its road. It is said in one of the last China papers that on the Yang-tse-kiang there were twenty-four steamers, of which nineteen were English and five American. We have also heard that six are building in England specially for that trade, and that some disposition exists on the

part of the English government to avail of the call for steamers in the Chinese market to dispose of some old gunboats.

We do not pretend to vouch for the accuracy of this statement: probably the better disposal of such vessels would be in suppressing piracy. It is however added that there are also steamers building in England for a line between Shanghai and the ports of Japan, and four or more in New York for the China river trade. The following will show in a measure the extent of country now open to our trade, and the improbability that by any effort which can be made in the coming year such a trade can be overdone. It is computed that during the rebellion epidemic now prevailing in China one million of junks and boats have been destroyed, most of which were on the rivers and canals of that part of the country referred to before these rivers were opened to commerce:—

The great territory of Central China, the flowery land and home of agriculture in that country, embraces near 2,000,000 of square miles, one-third of which is classed with the best tillage lands of the world. The network of rivers between the Hoanghi and Yang-tse-kiang, connected by the grand canal, affords easy transport to all agricultural products, when the government of the country is sufficiently strong to prevent the outrages of robbers and the exactions of mandarins. There can be no question on means of transport under a settled government, whenever European factories are established at the cities on the great rivers, which we understand is admissible under the present treaties. These rivers drain a basin equal to 1,500,000 square miles. The Yang-tse-kiang is navigable for boats 1,700 miles, while large vessels can reach 200 miles from its mouth. This country is bare of forests, except on the steepest mountains. Along ridges, where other plants will not grow, pines are carefully planted, to lessen the greatest evil in all Chinese economics, the scarcity of wood.

The Chinese are alive to the benefits of river steamers, and to the advantages which shipments on European vessels give in safety and certainty of insurance. Before the pirates made the voyages of the junks almost impossible, the Chinese merchant calculated to lose one venture in three. He now avoids the risk by freighting in foreign bottoms. The opening of the rivers will call for the construction of a fleet of light-draught steamers which California expects to provide. In fact, she says—"We have faith the trade may be ours if the effort be made to secure it, and that as our mills increase, and labour decreases in value, we may make steady shipments of lumber to China's great valley, and, if we will, that the return vessels may be loaded with a product which will give employment to California looms and spindles. Our northern forests will resound with cheerful industry, and our shipyards give forth the productions of ingenious labour. Youthful California and Oregon will spare to aged China the surplus of their forests for the products of her plains, made bare of wood by the wants of centuries of a dense population." Let our friends in N.W. America, as well as at home, look to this.

There can be no doubt that the great Taeping revolutionists have

spread desolation in their track, that Nankin is totally destroyed, as is also Chinkiang, the first of the open ports: both are a mass of ruins. The rebels at Nankin proved civil, but appeared a degraded set. All trade is stopped and the people quite enslaved, being forced to work without pay, getting only a little food. In moving about the place nothing was seen but misery and desolation, and the country as far as this presented the same features of destruction. Above this the appearance of the country improved, but the towns along the route had all suffered in former attacks by the rebels, and with the exception of Hangkow only small portions have been rebuilt. Kinkiang, one of the new ports, is about twenty miles above the entrance of the Poyang Lake, and will be an important place, being near the tea districts. From Kinkiang to Hangkow the distance is 135 miles, making the total distance from Woosung to the latter place 600 miles.

Hangkow comprises three cities,—Hangkow proper, on the left bank of the river; Wuchang, opposite to it on the right; and Hanyang, on the same side as Hangkow, but divided from it by the Han River. It is an enormous place, although not half the size it was, as seen by the ruins. Life and activity prevailed, and, if not interfered with by revolutions, its already immense trade is likely to increase. Communications by water lead from it in all directions. The principal difficulty in the navigation up the river was at Fooshan, but with suitable steamers and a little more experience of the river this will in a great measure be obviated.

“But, says California again,” “a number of steamboats have been sent from San Francisco to Shanghai, and, so far as heard from, with extremely profitable results. A number more are now being fitted out for the same adventure, and very many could follow them with abundant profit to their owners. The extent of country drained by the Chinese rivers thrown open to trade, as well as the disposition of the Chinese to hand over their transport trade to foreigners, opens out an amount of employment for steamers which in the future will be only second to that afforded this class of vessels in the Mississippi valley.” So that the trade which will be carried on thus between the opposite shores of the Pacific is not to be set aside by the Taeping rebellion.* We will now look to the transit between the two shores, and show how it is proposed that trade shall flow.

Turning to Shanghai as the hitherto successful seat of a considerable trade, and freed from the piracy that infests the approaches to

* The harbour of Hongkong is full of gunboats and other men-of-war, which are constantly cruising about and running up to Canton or Whampoa; yet scarcely a mail has come home without accounts of piratical exploits effected within sight of that harbour, and the last mail told us of an almost successful attack which was made in broad daylight upon a British steamer running over to Macao, a distance of only forty miles. There are very few Englishmen who will venture to go in native boats, or in sailing boats of any kind, out of the harbour of Hongkong, and the Chinese of that place really govern themselves, the police system being a notorious failure.

Hongkong, notwithstanding the presence of our ships,* we are nevertheless informed by the *Commercial Advertiser*, a remarkably well-informed paper at the Sandwich Islands, that the choice of Chusan as the China terminus of a steam line, would be the means of securing to the freight list the business of all the other ports of China, and, year in and out, could be reached, without the risk of loss to the steamer, in a day and a half less passage time each way than could be made from Shanghai.

Then, in regard to Japan, a short time will elapse before the best available port for steamer stoppage will be manifest there; for the present we speak of Nagasaki as the best known. Port Lloyd, at the Bonin Islands, is a safe harbour, of easy access, and frequently used as a port of refit for whale-ships. These islands are claimed by the British government. The Fox Group, far to the northward, has been spoken of as a coal depot, but which would only be of service in case of accident to spars, for so long as a propeller has her sails the steam is only auxiliary.

The Trade winds usually extend as far North as lat. 28°, varying with the seasons and other causes. Between the Trades and the West winds there is a belt of variable winds, generally light, with pleasant weather. This belt could be easily reached by the eastern-bound steamers if troubled, as is sometimes the case, by a succession of heavy easterly gales. A variation of a few degrees of latitude each way giving easterly Trade winds, moderate variable winds, or strong westerly winds, it is possible for the commander to choose without much deviation from a direct route. The Trade winds blow freshest generally between the latitudes of 17° and 22°. In steaming eastward, the great circle route can be followed to advantage, shortening the distance some three hundred miles.

It is not desirable that the steamer bound eastward should stop at the Sandwich Islands; they are too far out of the way, and would consume too much time and coal. Nor is it desirable that the steamer bound westward should stop at Nagasaki or Kanagawa, as it would make delay without adequate compensation.

The steamer leaving San Francisco for Chusan should stop at the Sandwich Islands, lat. 20°; she could there add to her coal if necessary. Leaving the Sandwich Islands she should not go North of 22°,

* A letter from Shanghai of the 22nd May, says the *Patrie*, informs us that Rear-Admiral Protet, who commanded the French squadron in the Chinese seas, has been killed before Ningpo in a battle between the Allies and the rebels. Admiral Protet was at the head of the French soldiers and marines when he received his death wound. He had on his right Admiral Hope, the commander of the English forces, and with whom he had always been on the most friendly terms. Admiral Protet was a brave and distinguished officer, and his heroic death has produced an immense sensation at Shanghai. It is remarkable that the English Admiral was wounded in the Peiho attack on the Chinese, and the French Admiral killed by the rebels against the Chinese, the notorious Taepings.

so as to hold the strength of the Trade winds and save coal, until near the Bonin Islands, lat. 27°; she would then head direct for Chusan, lat. 30°.

Leaving Chusan for San Francisco, she would touch at Nagasaki or Kanagawa, and fill all the spare room with coal. Thence up the Japan Sea, through the Straits of Matsmai, into the Pacific Ocean, without further stop, to San Francisco.

Ten days of full fair wind may be counted on each passage, and five on each passage that will require but little help from steam. A favourable current could be had through the Japan Sea and part of the passage across; the same in the Trade winds. The swell of the sea is in favour of the vessel both ways.

If crippled by typhoons Hongkong, Manila, or Guam could be reached for repairs. But there are few occasions when such disasters need happen, for modern science points out the method to avoid such calamity.

Chusan harbour has several entrances: the one which would probably be used by steamers is easy found and safe.

The Amoor trade would probably be reached by a steamer running between the Russian settlements and Nagasaki.

The Manila trade could be received by the steamers which connect with the China coast steamers at Hongkong.

We have been thus explicit for the benefit of our steamboat men, who seem to forget that a boat can sail as well as paddle, and that the route we advocate is unlike any other in the world,—having a fair wind each way.

Steam navigation direct from San Francisco to Shanghai or Hongkong, by large propellers, would almost pay at once without government aid. With it it is a certain investment. The English Peninsular and Oriental line has now an entire monopoly of the passage and steam freight traffic—of all the business of the eastern hemisphere. The five ports of China, Manila, Batavia, Singapore, and all the Indian ports, monthly contribute their quota of freight and passengers to swell the dividends of this immense monopoly. So crowded are the steamers, freight and passage are alike uncertain, and the tariff of charges from China to London reaches from 500 to 1,000 dollars on a forty-five days' passage, and perhaps after waiting over several steamers to secure tickets.

An appropriation, say the Americans, made now by our Government of 300,000 or 400,000 dollars per annum, for three or five years, will secure such a line of steamers, and the business for all time, to our people. It will create for our nation a steam navy in the Pacific, sufficient in peace for all necessary aid to our commerce, and in war immediately effective for our protection. There is no other way by which our Government can create so cheaply a Pacific navy, and there can be no expenditure that will so soon give a return in added business, cheapened products, and enlarged commerce to the nation.

By the above we are instructed first as to the choice of port and then as to the selection of route by which the Pacific trade may be

best carried on. We trust that these important particulars, along with the remark touching the nursery it will afford for seamen in the event of war, may not be thrown away upon us. We will now see our friends' views of the kind of steamers best adapted for the work of the North Pacific.

The improvements made during the last five years in merchant propellers are bringing this class of vessels into more general use, both for freight and passengers. We believe a line of propellers similar in the construction of their machinery to those used on our northern lakes, but deeper in draught, would be very near what is wanted in the commencement of a line across the North Pacific, unless a line of steamers is aided by government with a liberal subsidy, so as to warrant the putting on of large boats at the outset. We believe steamers of about 1,000 tons will be large enough. Such steamers would afford room for 600 or 700 tons of freight, in addition to their passenger accommodations, and for a while would supply all the demands of the business. They should be built flat-floored, and with no greater draught of water than necessary to secure safety, as when replaced by larger boats their services would be immediately available in our own and the Chinese coast and river trade. They should be *barque-rigged, low-masted, and square-yarded*, with *ample studding-sail gear*, which would do great service, saving tons of coal on the larger half of every passage each way. Accommodation should be provided for 100 first, 50 second, and 150 third class passengers; and the power should be sufficient to average ten knots. Such vessels could be placed in the harbour at Honolulu at a cost of 60,000 or 75,000 dollars each, and they might run at an expense of from 12,000 to 15,000 dollars per month, varying with the price of coal, need of repairs, and increase of passengers.

It is unnecessary for us to bring forward any lengthy statistics to show the necessity of steam, or the profit that must accrue to a line of steamers. The trade of California with China and Japan is increasing very rapidly, and the introduction of steamers will double the commerce and travel across the Pacific within a very short time, for it must have the same result here that it has had everywhere. Experience will develop one important thing, viz., that Honolulu must be resorted to *both on the outward and return passages*. The distance from Hakodadi to San Francisco by the shortest line is about 4,100 miles, and from Kanagawa to San Francisco about 4,500, at one of which ports (probably the latter) it is proposed that the steamers touch on their return from China.

Now it is questionable whether any class of propellers or steamships can be provided at the outset, which can *always* make the above return trip without stopping, unless they depend principally on their sails. Commodore Tatnall, who conveyed the Japanese Embassy to San Francisco in 1860, left Kanagawa for that port direct, supposing he could make the passage readily in twenty-four days, for which he had ample coal. The vessel met the head winds which are often experienced on the northern route, and was forced to run for Honolulu.

The Commodore expressed his conviction that though the passage might often with favourable winds be best made direct, yet frequently steamers would be forced into that port, and he believed that *Honolulu should be relied on for coaling on both passages*. 4,500 miles, with head winds or stormy weather, is a long stretch, and a few trips will demonstrate that Honolulu must become a depot on both passages. Touching at Honolulu on the return trip from Hongkong, *viâ* Kanagawa, will lengthen the passage only about three or four days. The *Powhattan* was twenty days from Kanagawa to Honolulu in 1860, but might have come in eighteen days, or even less, had she run direct. From this port to San Francisco she was ten days. This deviation will be found a necessity, unless a very large class of steamers is provided, capable of carrying an abundance of coal for so long a voyage as will be required if the passage is made direct.

The vessels best adapted for this trade are propellers of 1,200 to 1,500 tons burthen, full-rigged, with steam only as an auxiliary. Such vessels, of a superior build, with all necessary equipments, could be laid on at an expence of not over 100,000 dollars each. If this class be selected, they cannot carry more than ten or twelve days' supply of coal on their return trips, when it is presumable that they will be well filled with both cargo and passengers. On the passages to China there would be more space for carrying coal, as the competition of China-bound clippers will draw largely from the steamers.

Whatever may be the details of this Pacific steamship enterprise, which is destined to exert a great influence on the commerce of this ocean, and on the trade between America and China, of one thing we may rest assured—that it will very soon be commenced. It cannot be delayed many months—twelve or fifteen at the farthest,—for capitalists are waiting, eager to embark in a scheme which promises them such golden returns. The introduction of steamers across the Pacific will open to us a new era if we but arouse ourselves to take advantage of the benefits which may be derived from it. Again, say the Americans,—

Providence has placed the Sandwich Islands in the highway of commerce to become an important point and centre of trade, and destined them to become the store-house and granary for the floating wealth and traffic of the Pacific. If we are wise, we shall shape our legislation to make them what they ought to become, and thus reap the golden harvests held out to us. It is only by such a policy that we can become a great, powerful, and wealthy people, whom the proudest nations of the earth will be glad to respect and call their ally. If, on the other hand, we are unwise, and like the foolish virgins of old, let our lamps lie untrimmed, stubbornly refusing to follow the teachings of the wisest statesmen, and adhere with religious sanctity to the "penny wise and pound foolish" dogmas of theorists, our group will remain for the next two centuries what it has been for the past two,—a poor weather-racked tavern, where accommodations are resorted to only from absolute necessity.

Wisdom, experience, self-interest, all combine to urge us to action—

immediate action. No time should be lost in vacillating,—whatever is to be done should be done now. A line of policy bold and liberal, encouraging commerce, should be devised. Every effort should be made to attract hither, not only any new steam lines that may be planned, but every class of vessel cruising on this great ocean. Vessels, however, will not come here without something to come for, and it is necessary for us to change our policy so as to make our ports attractive to commerce,—make them as free as possible, reduce our tariff to five or six per cent. immediately, with a further prospective reduction whenever the interests of the country call for it.

But we have no hope of the introduction of a new and liberal policy without the appointment of a new and liberal cabinet. The present ministry is but the embodiment of the policy which the pioneer Spanish adventurers initiated, which has prevailed here for ages, and has kept the kingdom from developing into that powerful and wealthy state which the Almighty designed us to occupy. Let us rouse ourselves now while every interest calls, and initiate a free and liberal commercial system which the whole world will praise, and which will make Hawaii of equal commercial importance to this century as Venice was to the sixteenth.

There is much for consideration and prompt attention in the foregoing. No doubt the Pacific will soon become a frequented highway of the watery world, in which we shall not be slow to take our part, although we have somewhat further to go to it than our American friends, even if we avail ourselves, as we shall do, of the route by the isthmus of Panama.

JOURNAL OF CAPTAIN CRACROFT, OF H.M.S. "NIGER."—*New Zealand, Auckland, Nelson.*

(Continued from p. 131.)

On Monday, Nov. 14th, landed the ship's company with a twelve pounder howitzer and rocket tube, and marched to the domain, where we were joined by the 65th regiment and a body of 250 volunteer riflemen, which the war panic a twelvemonth ago called into existence. After trooping the colours and marching past the governor, Colonel Gore Browne, C.B., the usual evolutions of a field day were gone through, forming squares, skirmishing, &c. We expended several thousand rounds of ammunition, (it blew too hard to risk firing a rocket,) and at one o'clock piled arms and piped to dinner on the field.

It was an amusing scene, the place was like a fair, with booths and grog shops, for thousands had assembled from far and near to see the review, a rare sight in New Zealand. Our men brought their grub in their havresacks, the soldiers had their camp kettles, the crowds of civilians pic-nicked in various directions, and much mirth and merri-

ment ensued as a natural consequence. In one place the band of the 65th discoursed most eloquent music; in another the *Niger's* drums and fifes seemed scarcely less attractive. Jack was in his glory: hornpipes and Highland flings brought their performers into active competition with Irish jigs, while foot ball for the million was carried on with untiring vigour. The sports were prolonged until four o'clock, when the assembly sounded, the line was formed, and the whole brigade marched home through Parnell, and considering the temptations thrown in their way, I was thankful to see all my men on board again as sober as when they landed.

The next day the following compliment was paid us in Brigade orders:—

“ *Auckland, Nov. 15th.*

“ The Officer commanding the troops in New Zealand records with pleasure the great satisfaction afforded him at the field day yesterday, and he thanks the officer commanding the navy (Captain Cracroft) for his kind co-operation. The active and skilful manœuvres of that branch of H. M.'s service were gone through with the greatest precision, and the firing of the Royal Marine Artillery was regular and rapid.”

So much for our soldiering! Should this ship's company's services be required for something far more serious than a review, I have no doubt they will be equally well appreciated.

On the 17th received a requisition from his Excellency the Governor to convey him on his annual tour round the colony, with a further request that as he was a bad sailor and wished to make Nelson his first place of call, that I would take him on board in Manukau harbour, on the West coast, which is only six miles distant from Auckland by land, but upwards of four hundred miles have to be traversed to reach it by sea. Accordingly notwithstanding the bad reputation that the bar of this harbour has established, I determined to accede to his request, and should it prove, which I suspect to be the case, that there really are no difficulties to be surmounted in navigating the channels at the entrance, a very knotty point will have been settled, although not quite to the satisfaction of those who look upon this magnificent sheet of water with a jealous eye.

On Saturday, Nov. 19th at 10 a.m., we left Aukland with a fine fair wind which carried us as far as Cape Brett; it was my intention to anchor in the Bay of Islands, but the prospect of being becalmed, and having to steam out again frustrated it. There is a perforation in the small island (Piercy) off Cape Brett, which makes it an excellent land mark. During the next five days tried in vain to get round the North Cape, it was hopeless with our rotten old sails, which were continually splitting, on Friday however the weather moderated, and the next day we passed between Cape Maria Van Diemen and the Three Kings with a light North West wind, which however backed again to South West the following day, but we made a good lay down the coast, and on Monday at 6 p.m. arrived off the entrance of Manukau harbour. It was blowing very fresh, we were under double reefed

topsails and courses, and there was a heavy sea which appeared to break right across the bar, and so notwithstanding the signal was flying at the Pilot Station on Paratutai that there was no danger, tacked off for the night.

Tuesday, Nov. 29th, at daylight, got the steam up and stood in for the bar; there was a thick haze over the land, and it was some time before the signal to "come in" was distinguished. The wind had fallen during the night to nearly a calm, and the swell had subsided, but there were heavy rollers in the passage. The leading marks are readily distinguished, but the course to be steered is directed also from the Pilot Station by arms attached to the flag staff, which are raised on either side, and dropped directly the ship is in the right channel. The smoothest water if not the deepest, appears to be when the Nine-pin rock just shews clear of Paratutai with Poponga entirely shut in: it was first quarter flood when we crossed the bar, and the shoalest cast was four and three quarters.

As soon as we were fairly inside, the pilot (Capt. Wing) came off, and took us up to the anchorage about five miles above Poponga. I much wished for the Governor's convenience to have got up to Onehunga, but the channel between the mud flats narrows so much that it was doubtful whether there would be room for the ship to swing even at high water; there would have been nothing otherwise to prevent it, as the course is marked by beacons the whole way.

The general features of the country on this side of the island presents a striking contrast to that of the East coast; here there is all the luxuriance of tropical scenery, and after rounding Paratutai nothing can be more strikingly picturesque. The North side of the harbour is bold high land, almost steep to the shore, and densely wooded to the water's edge, the Kauri tree growing to perfection, this is its southern limit. The opposite shore is equally lofty, and terminates in a very remarkable sandy cliff, perfectly denuded of vegetation. Geologists have been puzzled to account for this extraordinary freak of nature, but whatever the cause, whether earthquake or other convulsion, fire or water, the effect is most striking. After passing this cliff the narrow gorge expands gradually into a splendid sheet of water, the southern limit of it far too distant to be visible, and the horizon in that direction bounded by a range of mountains. The north shore which we kept close on board, rounding Poponga within half a cable's length, preserves the same features as at the entrance, except that it is not quite so lofty and steep, more undulating, and a few, very few settler's cottages are scattered about; their chief occupation is wood cutting.

At 11 a.m. the anchor was dropped in six fathoms, about a mile and a half below a very indifferent landing place, called the Wahau, where there is not at present a single hut, but which will probably some day become a thriving place, being a very eligible spot for the terminus of a railway between this coast and Auckland, only seven miles distant.

We had hardly anchored before the engineer reported the condenser in the hold, upon which our supply of fresh water chiefly depends,

leaky, and as there was only two days' water on board, the pinnacle was hoisted out, and sent to obtain a supply from the springs, which our pilot represented as being very numerous in this locality, and he accompanied me ashore to point them out, but unfortunately the long drought had reduced them so much that the pools were soon pumped dry, and although the boat was sent away again with the night tide, (she could only get in near enough at high water,) we only succeeded in obtaining about three tons and that of very indifferent quality. * * * * In the evening a seining party went away, and was very successful, hauling from the mud flats which uncover at half tide.

Nov. 30th, at noon, the Governor accompanied by his Secretary, Captain Steward, and Colonel Mould, R.E., embarked from the Wahau, and we started immediately with the last of the flood tide. We crossed the bar at the top of high water, and as it was a dead calm there was not a ripple on it, the edges of the formidable shoals on either hand being marked by a white line only,—a greater contrast to their appearance yesterday can scarcely be imagined. Shaped a course to pass well outside Cape Egmont, and a light air springing up from the northward which promised to hold, at 7h. p.m. the propeller was lifted and we proceeded under sail only.

December 1st.—Our breeze soon freshened to a gale, with thick weather and a falling barometer, and although it was a fair wind for Nelson, not wishing to be on a lee shore in Blind Bay under such circumstances, I rounded to under close reefed topsails and laid by for the night. At 2h. a.m. bore up, and steered for d'Urville Island, which was in sight at daylight, but the wind now failed us, and at 9h. shifted to E.S.E., and commenced blowing furiously. Thus at nine o'clock we were under *all* plain sail, before eleven the ship was under reefed foresail and close reefed trysails, with topgallant masts housed, the maintopsail and mainsail split to ribbons. There was also a very heavy cross sea: under these circumstances, to prevent our being driven out into the straits, I got the steam up and went at it with all four boilers. This was an opportunity for displaying the advantage of great power in proportion to tonnage, and nothing but this power (1:2·69) could have enabled the ship to make any way at all against the hurricane blowing, which would certainly have driven her out, and perhaps through Cook Straits. The barometer, that true index of the weather, went down to 29·12, the lowest point I ever recollect to have registered, and with the help of the trysails and fore staysail (the foresail being furled) we crawled into Blind Bay, keeping close to the weather shore, which loomed very indistinct through the mist and blinding spray.

The city of Nelson and capital of the province of the same name, stands nearly at the head of Blind Bay, almost surrounded by lofty hills; its situation commands many advantages, being sheltered from the cold southerly winds by these mountains. Nothing intercepts the full rays of the sun, and as the North-West gales rarely, if ever blow home, it enjoys a delicious climate, and has already earned the title of the Madeira of this hemisphere.

I was assured that such weather as we experienced to-day had never been known here before, in the eighteen years experience of the oldest inhabitant! We had some difficulty in making out the city in the increasing gloom of the evening, but the pilot, Mr. Cross, an old man-of-war's man, (he was in the *Scout* in the North Sea 1832-3,) came out to us at some risk, and by 7h. p.m. we were anchored safe in the outer roads, the wildest looking place I ever saw for an anchorage.

December 5th.—The weather moderated yesterday, and His Excellency landed under the customary salute. The swell subsided also, and as there was a ship in the roads just arrived from Newcastle (N.S.W.) with coals for the Inter-Colonial Company, I hauled her alongside with the agent's permission, and completed fuel; the price was forty-five shillings a ton. The next day at 5h. p.m., about an hour before high water, Cross came out, and piloted us most skilfully into Nelson Harbour, where we moored close off the Custom House jetty.

This harbour is one of the most singular I know, it is formed by the detritus, the scourings, chiefly pebbles from the neighbouring cliffs or headlands, which the action of the tide, and counter-action of a small river which flows into the sea at Nelson, have deposited in the shape of a huge boulder bank, extending full six miles, almost parallel with the coast. The entrance is narrow and intricate but well buoyed, and with beacons to mark the channel, but no stranger ought to attempt it without a pilot. We carried eighteen feet over the shallowest place, and had not the slightest difficulty in picking up our berth, thanks to the pilot's thorough knowledge of the tides: these run with great rapidity, full eight knots at springs, and the turn after passing the Arrow Rock is quite six points, while in proof of the narrowness of the channel it is recorded, that when the *Inflexible* (Commander Hoseason) went in, the leadsmen on the paddle-boxes gave much less water than the ship drew.

Wednesday, December 7th.—I dressed ship with mast head flags to-day, in honour of the Governor's laying the foundation stone of the Nelson College, an institution which promises to supply a most important want in this province, and indeed in New Zealand generally. The design to establish this college dates back to the establishment of the settlement itself, and was put prominently forward as one of the great objects which its founders proposed to establish. It was not however till the transfer of the affairs of the New Zealand Company to the British Government, that they had any hope of carrying out the original plan. Shortly after the transfer, about five years ago, a portion of the sum the settlers claimed was paid, and the remainder towards the close of 1856, when the trustees were enabled to act with effect, and they forthwith proceeded to place the college on a permanent footing. The Council of Governors was appointed, the deed which prescribed their duties and laid down the principles of the college drawn up: these principles were curtly expressed in the motto adopted on their common seal, "*Pietas, probitas, et sapientia*," which may thus be rendered:—*Pietas*, man's duty to God; *probitas*, his relations towards his fellow-man; and *sapientia*, the cultivation and

development of his intellectual faculties. With such views and objects it is impossible to help breathing a fervent prayer that this college may one day take a distinguished place among kindred institutions, and prove a lasting benefit to the province.

It was a beautiful day, and people had flocked in from all parts to witness the ceremony. The architect (Mr. Beatson) produced the plans and drawings of the building, which with the exception of the chimneys will be constructed of wood, in the Elizabethan style, or rather in conformity with the mixed style used about the end of the sixteenth and beginning of the seventeenth centuries, of which Wollaston Hall, Notts., and Longleat are such splendid specimens. The principal front, 142 feet long, will face the North-East, commanding a magnificent view, and overlooking the city; altogether the building will accommodate thirty-four students, but provision is made for extension when necessary. After performing the ceremony His Excellency the Governor delivered an admirable address, in which he alluded to the progress of the colony, and the rapid development of its material prosperity. During the last four years His Excellency stated, the European population had increased by more than two-thirds, wild land had been brought into cultivation, flocks and herds had multiplied and increased at a rate greatly accelerated by the geniality of the climate; minerals had been discovered, and worked with success; ships, recently but rare visitors, now poured upon these shores hundreds of stalwart producers of material wealth, almost every week of the year, while twelve steamboats ply continually up and down the coasts, or between the colony and Australia. This was glowing language, but certainly no exaggeration, humanly speaking there is a glorious future in store for this magnificent country.

The city of Nelson is well laid out; the cathedral with a low spire which reminds one of a Kent or Sussex village church, stands in a commanding position, some government buildings hard by, not yet half finished, will be handsome, but everything from dread of earthquakes is of wood; the streets are all called after some familiar naval name, Nile, Victory, Collingwood, Trafalgar, Hardy, &c.

A lofty windmill near the river is a prominent object, but it stands idle, I was told, owing to the drunkenness of the man in charge, who allowed the machinery to run to pieces. This love of liquor is the curse of the country: nothing is done as a man very expressively stated to me, without a "nobbler." The ale brewed here is famous all over the colony, and they grow their own hops. A good road leads into the interior over an extensive plain, through the valley of the Waimea, which has to be forded at present. At the first stage, about eight miles, a nice village, an embryo town, called Richmond has sprung up, with a capital hotel called the "Star and Garter." Immense quantities of cattle and horses are to be seen everywhere, the latter have already obtained great celebrity, carrying off the chief stakes at the race meetings in Australia as well as here. Within a short distance of Nelson is situated the "Dun Mountain" copper mine, which although very productive at first has ceased for some time to give a

satisfactory returns for the capital invested in it ; the company seems however determined to persevere, and a railway is projected to convey the produce to the water's side for shipment.

Dr. Hochstetter, the professor of geology on board the Austrian frigate *Novara*, whose interesting lectures on the geology of the provinces of Auckland and Nelson have been published, was of opinion that in one of the periodical convulsions from which this region suffers, the vein had been rent and the two parts separated. This theory, if correct, would lead to the impression that success in mining operations in this part of the country is rather precarious: there can be no question however as to its richness in minerals, especially chrome.

Coal has been worked also not far from Nelson, but the price of both labour and transport is still too great to admit of successful competition with Australia. A smart little steamer called the *Tasmanian Maid* runs weekly from here to the Waitapa in Massacre Bay, not far from the gold "diggings," which were very attractive when first discovered, but few diggers now earn more than will pay current expenses. It should be mentioned *en passant*, that in a geological point of view, the formation of this gold field is quite different from those of Victoria. The gold here is derived from quartz reefs intersecting old crystalline mica and clay slates (primitive formation), Quartz reefs have not yet been "proved," all the gold hitherto obtained having been got from tertiary and sedimentary deposits, but Dr. Hochstetter seems to think that it is not at all impossible, particularly where gold in quartz has been found, as at the Rocky River, and the Para-para, that payable quartz reefs may be discovered, and at the Para-para crushing even the quartz gravel might produce advantageous results. There are no serious difficulties to contend with, as in Victoria, where the gold yielding tertiary deposits are overlaid by thick beds of basalt, and expensive works are necessary to penetrate this basaltic crust, (which is sometimes as much as a hundred and two hundred feet in depth,) before the gold can be won. Here all is lying on the surface, and everywhere there is abundance of water both for mill power and washing purposes. There is a large coal field also near Massacre Bay*

December 11th. I left Nelson with much regret, unmoored early this morning, and steamed out of the haven about an hour before high water, and as it was a dead calm stood on past Pepin Island, as far as the entrance of Croiselles Harbour. The French Pass a very narrow but safe passage was in sight, and I was in hopes of steaming through it which would have saved us many miles, but a breeze sprung up from the northward, and being anxious to save coal I made sail on the starboard tack, intending to work out of Blind Bay under sail only. It was a beautiful afternoon, the snowy tops of the mountain range to the southward very distinct, but towards dark the wind freshened, and

* "This is I believe the same that Captain Tasman anchored in, on the 18th of Dec. 1642, and by him called Murderer's Bay, by reason of some of his men being killed by the natives."—*Captain Cook's Voyage, May 18, 1773.*

as there was every indication of bad weather, I anchored under the lee of Adele Island for the night.

December 12th.—At daylight this morning started again under steam and sail, and rounded Steven Island at noon, by which time it was blowing nearly a gale from the North-West, and a very heavy breaking sea, like overfalls, owing I suppose to the irregular rocky bottom.

At 2 p.m. we entered Queen Charlotte Sound, passing through a strong tide rip off Cape Jackson, which nearly slewed the ship round in spite of the propeller and the speed, full ten knots, at which she was running. We were now on what I consider classic ground to a sailor; passed Ship Cove, so long the head quarters of our great circumnavigator, Captain Cooke, probably as unchanged as when he last visited it, at least there were no signs of inhabitants nor any cultivation visible, and stood up the sound, which is truly a magnificent sheet of water, the scenery in its general features not unlike that on the borders of the Lochs on the West coast of Scotland. We carried a fair wind in, but had to shorten sail and furl every thing except the trysails, the squalls came so fiercely down the gullies. Thanks to Captain Drury's admirable chart we had no difficulty in finding our way up, and at 5h. 30m. p.m. anchored in nine fathoms, in Waitohi Inlet, at the head of which is the site of Picton, the intended capital of the new province of Marlborough. This province which has only just sprung into separate existence, is a slice taken from the eastern seaboard of Nelson, it is very mountainous, but possesses much excellent land, and many fine and valuable harbours, of these Port Underwood is the only one that has yet been used by vessels of any size. The wool produced in the valley of the Wairau is now taken there in small vessels for shipment, but when the road which is in course of construction between Picton and Beaverton, the capital of the Wairau district, is finished, the harbour of Waitohi will become available, and with the help of a steam tug, which in my opinion will be absolutely necessary, ships of the largest size will be able to load alongside its jetties, which need not be long, the water being very deep close to.

December 13th.—At daylight the *Tasmanian Maid* arrived from Nelson on her way to the Wairau for a cargo of wool: besides her trip to Massacre Bay, this little craft (she is only 30 H.P.,) makes one to Beaverton weekly, and that she is enabled to perform this passage with the greatest ease and regularity, although exposed to the fury of the storms that sweep the adjoining Cook Straits, shows what shelter there must be in the numerous creeks and inlets she has to pass by, and if necessary thread her way through. In this mountainous region all communication must be made by water, and it would not require any great stretch of imagination to figure a fleet of small steamers like this one, plying through all these little intricate channels, and the adjoining labyrinth of Pelorus Sound, whenever the country is settled. Up to this period however very few settlers have established themselves in this quarter, and "Picton" itself cannot boast of more than a dozen wooden houses great and small. At noon to-day the Governor

made his appearance with a large cavalcade of gentlemen, having ridden over the mountains to Wairau from Nelson, and in the afternoon, before returning on board, His Excellency laid the foundation stone of the first public building in this embryo city, a Literary Institute! Every thing must have a beginning, and doubtless from equally small beginnings some of our proudest institutions in England have sprung.

(To be continued.)

MICRONESIA—of the Pacific Ocean.

(Continued from page 363.)

The Gilbert Islands.

The history of discovery in this archipelago is briefly, and sufficiently for our present purpose, given in a paragraph by Findlay in his Directory of the Pacific Ocean: "The first island discovered was the easternmost, Byron Island, so named from the commander, who saw it June 3, 1765. The next were the northern groups discovered by the ships *Scarborough* and *Charlotte*, commanded by Captains Marshall and Gilbert. There is a loose account of this discovery given in Governor Philip's voyage in 1788. The next authority in order is a chart contained in Dalrymple's Collection, drawn by Roger Simpson and George Bass, officers of the *Nautilus*, under Captain Bishop, (in 1799.) In the Table of Positions, by John Purdy, is an account of some of the islands seen by the brig *Elizabeth*, about 1809. In 1824 Captain Duperrey visited and explored many of them: but by far the most complete account of them is given in the account of the United States Exploring Expedition (1841)."

It was Krusenstern who gave the name of Gilbert to this large group, and who subdivided it into the three groups of Scarborough, Simpson and Kingsmill, the last name including Drummond Island and all to the South of it, then very uncertainly known. In Commodore Wilkes' Narrative the name Kingsmill was improperly extended to the whole group, and since then this has been its usual designation by Americans and American authorities.

This group consists of fifteen, or perhaps more properly sixteen, low coral islands, only two of which are destitute of a lagoon. It was the ten most northern islands that were explored both by Duperrey, and Captain Hudson, of the United States Exploring Expedition; yet the remaining islands to the South are now scarcely less known, even geographically, from their waters having been the resort of sperm whales, and consequently extensively visited during the last twenty years by the captors of the whale; and our knowledge of the whole group has greatly increased. Since the visit of the United States Exploring Expedition those islands have grown into some importance to

the civilized world from their production of cocoanut oil. Very many sailors have at different times resided on shore—not an island of the group but has thus been thoroughly explored—and there are several who seem to have made their home there, particularly one respectable trader of rapidly increasing wealth, named Randall.

On the 6th of January, 1844, the *Columbia*, Captain Kelley, New London, was wrecked on Nonoun, (Sydenham Island). The ship's company were roughly treated, but all were taken off in safety twenty-three days after. January 8th, 1848, the *Triton*, Captain Thomas Spencer, of New London, was very nearly taken by the natives of this same island, under the leadership of a Portuguese. The Captain and a boat's crew were detained on shore under very aggravating circumstances, but the Portuguese having been killed in the attempt to take the vessel, their lives were spared, and they effected their escape, with the consent of the natives, on the 19th of the same month, and a very full and interesting account of which was published in the *Friend* of September and October, 1848. In 1850, the *Flying Fox*, Captain Brown, was wrecked on the same obnoxious island. One of the mates, named Walker, with the cooper and eight white men of the ship's company, and a Rotuma native, made the passage to Simpson Island. They were engaged in trade for cocoanut oil, but ere many months the cupidity and ire of the natives were aroused, and every one of the foreigners was killed, since which no white man has been allowed to reside among them.

The whaleship *Ontario*, Captain Slocum, of New Bedford, was wrecked on Pitt's Island in January, 1852, but through the influence of Captain Randall, resident there, no lives were lost, and much even of the oil was saved. In August of the same year, the same island was visited by the protestant missionary company, then on their way westward to establish themselves on Kusaie and Ponapi.

In November, 1857, a mission station was taken on Apaiang, or Charlotte Island, by Rev. H. Bingham, Jr., and a Hawaiian associate. In September, 1860, a second station was taken by two Hawaiians on the neighbouring island of Tarawa. The language has been reduced to writing, and a number of children are fluent readers. But the desire for knowledge has yet to be awakened in the minds of the masses, and the missionary's heart longs for more definite evidence of an evangelical acceptance of a Saviour by any one of that numerous people.

Nothing is more remarkable at the Gilbert Islands to one who has visited other parts of Micronesia, than the great number of the people. Elsewhere the sparseness of the population is painful; but here the overflowing swarms are continually surprising one. The smallest of the atolls, Peru, whose diameter is not more than about two miles, has a population of from 1,500 to 2,000, and Aranuka has 1,000, while Tapiteuwea has from 7,000 to 8,000. In almost every other part of Micronesia the houses are scattered, and if there are what may be termed villages, they are but small collections of houses and in no very close proximity to each other; while here the habit is to congregate in towns, where the houses are in nearly as close relation to each other

as possible. These villages are—as is almost invariably the case on the low, annular islands—on the inner or lagoon shore; and as one lays at anchor within the collections of low, white-roofed houses stretching along under the cocoanut groves, may be seen every few miles, the canoe sheds first, in a row along the beach, and then the dwellings, which are nothing more than roofs, standing promiscuously just behind, usually with a large council-house in the midst.

On landing, the swarms of children, guiltless of clothing, are perfectly surprising to one who has mourned over the desolations on Ponapi and Kusaie. The numbers of old men and women also are among the most pleasant objects seen, even though we know that the old women are the drudges. So prolific are they as yet on the greater number of the islands—so uncontaminated with foreign disease—that their population is deliberately limited by practising abortion to prevent too great a number of mouths—a reason denied by Mr. Hale. Their numbers are also shown by the sanguinary nature of their battles. The accounts given by Wilkes, on the authority of his informants, are doubtless correct. Since the establishment of our mission on Apaiang a party of more than a thousand came over from Tarawa. Many were slain on the flats while attempting to land; others were taken alive and held as slaves; while hundreds fled in their proas and were never more heard of—their houses stand to this day empty along the northern shores of Tarawa.

By far the greater half of the population of Micronesia is congregated on this group. There may be twenty or twenty-five thousand on the whole of the Ladrone and Caroline Islands, which added to the ten thousand of the Marshall Islands makes perhaps thirty-five thousand; while on the Gilbert Islands there are forty-five or fifty thousand. I give the numbers as I received them but a few weeks since from Captain Randall, whose acquaintance with the group exceeds that of any one else.

Makin and Butaritari, (Pitt Island)	2,000
Marakei, (Mathew Island)	2,000
Apaiang, (Charlotte Island)	3,000
Tarawa, (Knox, properly Kuoy Island)	3,500
Majana, (Hall Island)	4,000
Kuria, (Woodle Island)	1,500
Arunaka, (Henderville Island)	1,000
Apamama, (Simpson Island)	5,000
Nonouti, (Sydenham Island)	6,000 to 7,000
Taputeuwea, (Drummond Island)	7,000 to 8,000
Peru, (Francis Island)	1,500 to 2,000
Nukunau, (Byron Island)	5,000 to 6,000
Onoaton, (Clerk Island)	4,000
Tamana, (Rotcher Island)	3,000
Arorai (Hope Island)	2,000 to 2,500

50,500 to 54,000

In physical appearance this people are darker and coarser as a whole than the more western inhabitants of Micronesia. They are also a larger race, some of the chiefish ones being very corpulent, equalling in

size the ancient chiefs of Hawaii. This is also the more remarkable from these islands being the most barren of the atolls of Micronesia. The cocoanut and pandanus, and a few laboriously cultivated taro, are the only vegetable productions, while the greater number of the low islands of the Marshall and Caroline archipelagoes produce taro, bread-fruit and jackfruit in considerable abundance. It is probable, however that these remarks apply rather to the inhabitants of the islands to the north of the Equator, which is the portion that has fallen under my personal observation. Mr. Hale, of the United States' exploring expedition, speaks of the natives of Taputeuwea as of "middle size, well made and slender. * * * The usual height is about five feet eight or nine inches, but we saw many who were considerably below this standard. There are none of those burly persons among them which are so common in the Sandwich and Society Islands, and we did not see one instance of obesity."

Nothing that I have seen would widely separate the Gilbert islanders from the other Micronesian races. There is the same slightly aquiline nose and prominent cheek bones and chin, and the same well developed cerebrum, particularly in the frontal and coronal regions. The hair has the same fine glossiness, and often curls. Yet it must be acknowledged that the Micronesian delicacy and perfection declines as we proceed southward in the group; and their language, both in its vocabulary and grammar, as was to be expected, has a greater affinity with those of Polynesia than any other Micronesian tongue.

In manners and customs the people exhibit something of the same coarseness betrayed in their physical developments. The males go naked, save when they hold or rudely tie a small mat about them with a piece of rope or rope yarn stolen or begged from some ship. The matured females wear a cocoanut leaf fringe about six inches wide. They are pre-eminently indelicate and indecent, possessing very little, if any, of that refined gentility found on Ponapi. Many of their customs regarding the dead are abominably filthy and disgusting, such as preserving them for days and weeks and carefully daubing over themselves the froth or ooze from the mouth of the deceased. A wife will frequently for weeks after the death of her husband continue to sleep beside the corpse under the same coverlid; and a mother will sometimes carry the body of her infant about with her till it falls to pieces, and then she will cleanse the bones and carry them. Indeed, it is common to preserve the bones, particularly the skull, of the dead, and carry them about, at times carefully anointing them with oil, and even sharing food with them.

Heathenism is here seen in some of its lowest and most disgusting forms; though it may be said in alleviation that there is little of that deliberate cruelty and none of that religious sacrifice of life found in many of the groups of the Pacific. Their religious rites differ in no material respects from those already described in connection with other groups. Stones, the incarnations of deities, are found every where, some of which are so noted as to be the recipients of gifts of food and to receive the prayers of certain priestly ones.

On the greater number of the islands, particularly on those south of the equator, what government there is is of a very democratic nature. A man is of importance in proportion to the amount of land he possesses and the number of slaves he owns. Each head man is the representative of a family of brothers, sons, &c., who are more or less dependent upon him, and who are always ready to sustain him. The state is thus divided into large families, each jealous of the other and ready to thwart the ambitious pretensions of any one of their number. On some of the islands, however, a particular family has by a series of fortunate events, either in peace or war, or in both, so extended its relations as to be paramount; and its patriarchal head is consequently the nominal king of the island. Yet there may be other families so powerful on these same islands as to prevent the establishment of a monarchy. The nearest like kingship is exercised on Apamama, including the two dependant islands of Kuria and Aranuka. On Apaiang a similar power is rapidly rising. On Maiana, Tarawa, Marakai and Butaritari there are nominal kings, but their power is far from absolute.

The explorers of the United States Exploring Expedition judged the inhabitants of the islands south of the equator to be less amiable and kindly disposed than those to the North; while Captain Randall quite reverses the statement, and thinks the southern islanders much the cleverest and best natured. It is probable that the difference in the degree of government has something to do with the different judgments, and that the tendency to monarchism is greater in the more productive, and consequently more luxurious, islands of the northern portion.

The capacities of this race are developed in three principal directions; in the securing and preparation of food, the erection of houses, particularly of their noble council houses, and in the construction of their proas and the navigation of them.

So limited are their resources that a very considerable degree of ingenuity is called forth in securing their food from land and sea, as on the Marshall Islands by far the most important article of diet is the pandanus fruit. This is eaten raw when ripe, and even when green; it is also cooked and eaten fresh; and is also prepared with great labour for long preservation. The cocoanut furnishes them with the meat and water of the nut at all stages of its growth. From the meat of the nut thousands of barrels of oil are yearly manufactured by their own hands and sold to traders, who take the most of it to Sydney. The meat of each nut is scraped by hand and exposed to the sun for two or three days, when it is pressed under a long rude lever acting on a transverse log. Agents for the traders are found on each island, who pay the natives principally in tobacco and firearms. The cocoanut tree also furnishes them from its flower stem with a delicious sap that forms a most nutritious and healthy drink, especially for the children, who frequently get little else of aliment for days together. This sap ferments and intoxicates, often producing untold mischief and misery. And from it also, by boiling, they prepare a delicious syrup,

which they keep in cocoanut shells hung up, frequently by hundreds, in their houses, and which they mix with water when their appetites or hospitality demands something especially delicate. But the cultivation of the taro makes the largest demand on their time, strength and ingenuity. First, trenches or patches are dug down through the sands and stones to the underlying reef-rock. The fresh water oozes into these ponds in sufficient quantities to nourish their coarse, large-leaved varieties of taro. But the next step is to secure soil for it to grow in. For this purpose it is brought in baskets from wherever found, sometimes from miles distant. Frequently the soil is first sifted to separate the worthless particles of stone. Even leaves of certain trees are carefully gathered and picked to pieces and then placed about the taro roots to assist in forming a little soil. An almost incalculable amount of labour is thus spent on each root, and yet it is only raised in sufficient quantities to be considered a luxury. Much of it is very coarse and unpalatable, but there are most admirable varieties, and some grow in the course of years nearly to the size of a barrel.

In catching fish they are, as might be expected, remarkably expert, much of their sustenance coming from the sea. Probably that which I have seen on Ebon would be nothing strange of this people, by necessity so ichthyophagous. A flying-fish was one day seen darting about over the flats near our house, where the water was not more than a foot in depth. Two youths darted out like arrows and commenced throwing stones, that fell beyond the fish, and so frightened it still nearer the shore. After having for a time in this way worried and partially fatigued the fish, the chase commenced. The fish's constant effort was to regain the deep water, which his two pursuers as persistently defeated; for, strange to say, the poor fish seems not to be able to use its wing-like fins save in the fathomless main. In less than ten minutes the fish lay passive in the hands of these expert fisher boys. I have seen a school of two or three hundred bonetas driven on shore and speared with such consummate skill that scarce an individual fish escaped.

Their council and dance houses loom up in the distance, the most prominent of all other objects on shore. Many of them are over an hundred feet long, nearly fifty feet wide and thirty to forty feet high. They are nothing more than immense roofs, reaching to within three feet of the ground, their eaves resting on large coral slabs. It is here they congregate on every public occasion, in tumultuous rabbles of delight or anger. Here every public measure is carefully discussed, and here they dance and revel sometimes for many continuous days and nights.

Their proas are as admirable as those of the Marshall islanders, the only important difference being that the keel is curved up fore-and-aft so as to form the segment of a circle. A canoe without its outrigger when looked at from one side is consequently the shape of a gibbous moon. At certain seasons they devote days to sailing miniature canoes, the bodies of which are only about eighteen inches long, and the sails nearly two fathoms in length, and whose speed is at the rate of fifteen or twenty miles an hour.

It may be gathered from such facts that they are an active, intelligent race, and that nothing in their intellectual parts need deter us from attempting their civilization. Their language, though of course destitute of innumerable terms for material objects they have never seen, is not found more deficient as a vehicle for moral truths than the mass of uncultivated dialects, and is probably more full in the necessary terms than many. In coming from the other portions of Micronesia here we detect a greater difference lingually than between any of the other dialects with which we are acquainted. In the first place there is a far less variety of vowel sounds; and the palatal consonants *ch*, *j* and *sh*, with the dental *th* and *s* so frequent in the North and western groups are unknown here. It is this fact which admits of Hawaiians acquiring this dialect so much more readily than any other of Micronesia. An article is found here elsewhere in Micronesia unknown. Yet in the use of suffixed or inseparable pronouns, which is the great peculiarity of the Micronesian dialects, this dialect is Micronesian.

The Origin and Characteristics of the Micronesians.

It seems by common consent to be admitted that the origin of this people was in Protonesia or Malaysia. The physical appearance of the people, no less than geographical relationship, points quite directly to the Philippine Islands. Le Gobien long since remarked of the colour, features, language, customs and government of the Caroline Islands that they resembled in many particulars those of the Tagalans of the Philippines. A careful comparison of the dialects now acquired by the different members of the Micronesian Mission with the Tagala, as given by Humboldt in his "Kawi-Sprache," would doubtless establish Le Gobien's remark beyond a doubt.

M. Lesson's supposition of a Mongolian origin need not be more than mentioned, for it has been satisfactorily met by the naturalists connected with the expedition under Lutke. There are doubtless occasional individuals with a Mongolian cast of countenance, but isolated cases can never establish the theory.

So also both D'Urville's and Lesson's supposition of a Negrito infusion from the islands to the south does not seem to me any more called for here than in the purest portions of Polynesia.

Some may feel the difficulty of supposing a migration eastward in the teeth of the North-East Trade winds. This is stated by Latham himself, who still traces the Micronesians to some part of Malaysia, and who also, with probability, derives the Polynesians from the great Malay area through Micronesia. These imagined obstructions are entirely removed on ascertaining that it is only during the summer months, when the sun is in southern declination, that the North-East Trades oscillate sufficiently southward to reach the Caroline Islands. During the remainder of the year, the southern limits of the northern trades are found to the north of this, and along the parallels of the Caroline Islands variables and westerly winds prevail. Again, in the trade wind zone a current usually sets with the wind, and just to the South of it a reverse current sets to the East, assisting the voyager to make his passage in that direction.

These facts, never before, that I am aware of, noticed, satisfactorily account for the long involuntary voyages made by Micronesians both East and West through their extensive ranges. In the winter time they drift to the West when cast from their native islands; in the summer they drift to the East.

Kotzebue reports finding natives of Wolea (Ulíe, Swede Island,) which is in the Caroline range to the south of Guam, on the Marshall Islands. And so also in 1857 the Rev. Messrs. Pierson and Doane found on the Marshall Islands another company of natives from the same island, who had thus made the involuntary voyage of 1,500 miles, while attempting the voyage from Wolea to Seypan, to the North of Guam. Every few years the Ralik islanders drifted westward, and come ashore all along the Caroline range. Marshall islanders are drifted to the Gilbert Islands. The mother of one of the highest of the Ralik Islands chiefs is now supposed to be on Maiana of the Gilbert archipelago. And several times within a few years have Gilbert islanders drifted northward to the Marshall Islands, and also westward to the Caroline Islands.

No further effort need be made to prove the western origin of the Micronesians possible, so far as the "land and sea conditions" of Latham are concerned.

And it is perfectly legitimate to remark upon the entangled series of voluntary and involuntary migrations that have during ages been taking place throughout Micronesia, that they in a considerable measure prevent the possibility of accurately tracing the sources of the inhabitants of the various islands; that is, of pointing out the course of primary migration from group to group of the Micronesian Islands, as Hale has accomplished it for Polynesia, and as he suggests it may be done in our territory.

I would also call attention to the thought that there is no need of denying an occasional arrival directly from some of the Mongolian areas, bringing more or less Mongolian civilization. So late as 1836 there was at the weather, or Metalanim, harbor of Ponipi, the figure head of a vessel, which an intelligent Frenchman saw, who told me it seemed to him like the figure-head of a junk. It had belonged to a vessel that came ashore many years before, with a number of white men, the names of whom were given him by the natives.

Commodore Wilkes gives a Gilbert Island tradition of a part of their ancestors having come from Banabe, which may have been Ponapi, and a part from Amoa, which was probably Samoa, or the Navigator Islands. Captain Randall has also given me the tradition of the chiefish family on Apamama, that fourteen generations ago their ancestors came from Tamoá. These show there has been something the same passing and repassing between Micronesia and Polynesia, that there has been between the different groups of these areas.

But this need not disturb Dr. Latham's extremely probable supposition that Polynesia was first peopled from Protonesia or Malaysia through Micronesia. There is nothing in the difference of races to prevent the theory, but much to confirm it, as will presently be more

fully alluded to. Then the facts just given, showing the physical possibility, and complete certainty, of Micronesia itself having been peopled from the West, demonstrate with almost equal certainty that the Micronesian ranges must have been at least one of the avenues through which Polynesia, and primarily, Samoa (according to Hale) was peopled. And when we look upon the improbability of the Polynesians having passed eastward through New Guinea, the Solomon and New Hebrides Islands, (or the Melanesian Islands), because they have left no traces of their passage through those magnificent archipelagoes, we are shut up to Micronesia as the channel through which the eastern Pacific received its ancestors. This last view is so ably maintained by Latham it needs no further support. Should any however still persist in tracing the Polynesians through Melanesia, they cannot think of denying Micronesia to have been one of the lines of travel.

Concerning the points that distinguish the Micronesian from the Polynesian, much has been written at random, and of but little relevance.

We accept the division as a very convenient geographical expedient, for rendering the almost innumerable islands of the Pacific more manageable on our charts and in our treatises. It is also useful as an ethnological definition, as a subdivision of the extensive Malayo-Polynesian race. There are points of difference between the mass of the Micronesians and the Polynesians, but too much has been made of them; and to allow the use of the term to form in our minds the idea of a separate people, with few Polynesian affinities, is to be seriously deprecated. It is but one race that has drifted across the Pacific from Palao (Pelew) to Waiho (Easter Island.)

The complexion of the Micronesians is a few shades lighter than that of the mass of the Polynesians: the nose is more straight and aquiline and less flattened, the countenance has greater vivacity, and their frames are more agile and delicate.

Of the character of the Micronesian it may in general be said, that he is less impressible, more mild and less savage and voluptuous, than the Polynesian; but what has been said of the Gilbert islanders, shows this statement requires large limitation.

The arts of weaving and dyeing and navigation are somewhat peculiar to the Micronesian, particularly the first; and it is a sagacious remark of Mr. Hale, founded on the observations of Mr. Lesson, that the civilization of the Micronesians seem to have descended from a higher grade which had been attained in some more favourable situation, while Polynesian civilization seems to have risen from a lower condition to their present state.

The system of clanship found in the Marshall and Caroline Islands, with all its attendant social and political complications, is something peculiar to Micronesia, and peculiar even to a portion of it; and this gives opportunity for the remark that the Gilbert islanders are certainly quite as much Polynesian as Micronesian, ethnologically. They are destitute of this system of clans; they have no knowledge of

weaving; and they have much of that coarse indelicacy which is Polynesian.

M. D'Urville, makes quite too much of the difference of languages between Polynesia and Micronesia. There is much of similarity in the grammatical structure of the languages. The principal characteristics of the Malayo-Polynesian languages, as given by Wm. Humboldt and found in Pritchard's Researches, even to the dissyllabic radicals, are true of the Micronesian dialects. True, as we proceed westward there is a less close adherence to the law requiring each syllable to close with a vowel, and several un-Polynesian palatal sounds are heard; but these peculiarities are certainly not enough to require the hypothesis of a different race, especially when there is an evident tendency, even in the harshest dialects, to a vowel at the end of syllables.

I do not appreciate the statements of almost every voyager, that the taboo system is unknown in Micronesia, and have been much puzzled to know what was meant. There may not be the same outrageous and idolatrous exercises of the tabooing power; but taboos innumerable exist. They relate to every imaginable relationship of life—to birth and death, to eating and sleeping, to talking and fighting, &c., &c. Much of this might by some be spoken of as mere national habit and custom; but there are taboos at certain times imposed, and again removed, at the will of the priestly and chiefish ones, who hold communication with the spiritual world; and the power of tabooing certain localities, certain houses and trees, is as much exercised in Micronesia. The idea of taboo, is it seems to me, as complete in the Micronesian's mind as in that of any other of the Pacific islanders.

It has also been given as one of the peculiarities of the Micronesians that they navigate by the stars, while Polynesians did not—a statement certainly requiring such large limitations as to lose its accuracy and force.

And again, it has been almost invariably given as a distinguishing characteristic of this people, that they eschew the use of *ava*. Duperrey reported that although they had the plant on Kusaie, they only used the leaves; while in truth no islanders ever made more use of the *ava* root than the inhabitants of Kusaie, Ponapi, and I think also Zuk (or Hogoleu.)

Mr. Hale suggests that the little discs or shell that are used on almost all the islands, and that on some are strung together in such enormous quantities, are a kind of circulating medium, the idea of which is peculiar to Micronesia. I have lived many years among these islands and seen natives from every quarter, but never could see though I knew of Mr. Hale's suggestion, that the idea of money was attached. They are highly valued as ornaments, and, like everything else, are used in barter.

DESTRUCTION OF SOOLOO PIRATES, *by Rajah Brooke, off Borneo.*

[We have already in former volumes of this work frequently recorded the successful attacks on the piratical proas of the Sooloo archipelago, which it appears still continue their murderous work to the detriment of civilization in those seas. The following letter addressed to the *Times* finds an appropriate place in our pages, and we trust that the remark it contains on the bloodthirsty nature and habits of these people, will not be thrown away. The slave trade is bad enough, but the proceedings of these plunderers make their acts ten times worse: but which we hope a united effort of the civilized powers will speedily terminate.]

On the 15th of this month I accompanied my dear friend, Mr. J. Brooke Brooke, now the Rajah Mudah, of Sarawak, on an expedition to Bintulu, a river and country halfway between this and Labuan, which has by a late treaty with the Sultan of Brunai been handed over to the Sarawak Government. It is a rich and fertile district, inhabited by Milanows, Kayans, and Becatans, who, owing to the unjust and cruel mismanagement of their former Malay rulers on shore, and the continual dread of pirates on the coast, have been kept from doing anything for the development of their beautiful and capable country. Brooke's object was to establish a Resident there, to build a fort, and leave a small garrison at the mouth of the river to give confidence to the people, and to bring them down from the interior to live near the coast, and carry on a trade in the valuable articles with which their country abounds, such as the tree-camphor, so valued by the Chinese, gutta percha, the best rattans on this side Borneo, vegetable tallow, sago, &c., and there is also coal reported to be cropping out in several places.

After arranging about building and placing the fort we went up on Tuesday and examined one seam of coal, which was about twenty miles up the river; it proved a good bright, quick, burning coal, but it was three feet in thickness in one place, and only one foot six inches in another. After viewing the coal we returned in the steamer to the mouth of the river on Wednesday evening.

About four o'clock on Thursday morning I was awoken by a man hailing the ship and the sentry warning him off, I recognized the voice of one of the Sarawak Nakodas, Hadjee Mataim, and I called the Datu Bandar, our chief Malay magistrate, (who had come with us to inaugurate the Sarawak Government at Bintulu,) to pass him up on deck and see what he wanted; he immediately came below with a letter to the Rajah Mudah from Mr. Helms, the Borneo Company's manager, whom on our way up to Bintulu we left at Muka (sixty miles to the S.W.); it is the river which furnishes the Sarawak and Singapore factories with raw sago, and produces enough to supply the world. Mr. Helms wrote word that there was a force of six Illanun vessels anchored off Muka, threatening the town at the mouth of the river, while their armed boats were plundering and picking up the people along the coast.

This news effectually roused us all. The Rajah Mudah ordered steam to be got up, and hailed the little *Jolly Bachelor* (the gunboat anchored astern of us) to throw off her housing and prepare for fighting. We landed the Chinese carpenters and coolies brought from Sarawak to build the fort, and as soon as daylight and tide had made we steamed out over the bar, took the *Jolly* and Brooke's gig in tow, and steered down the coast towards Muka. Meanwhile we made ready for action, as we felt that when we fell in with the pirates they would fight resolutely, and that our force was very small to cope with them. Their vessels are well armed, very fast, and carry at least one hundred men each.

The *Rainbow* is a small strongly-built iron screw boat, of eighty tons register, thirty-five horse power engine, carrying two nine pounders mounted on poop and forecastle. We had also a twelve and four pounder on board, with their ammunition (the twelve pounder was disabled after a few rounds), which we had brought up for the new fort, together with eighteen of the Sarawak fort men, ten of whom we kept to strengthen our own crew, the other eight we turned over to the gunboat to reinforce her. She carried two brass sixes, and two small swivels on her taffrail. The steamer's crew had only six available muskets, and no other arms but their knives and handspikes; they were stationed at the forecastle and poop guns. The fort men worked their own guns amidships, and were armed with Wilkinson's excellent rifle carbines and swords. There were eight Europeans in all, including Captain Hewat, Mr. Moore, engineer; Mr. Jackson, mate; the Rajah Mudah. Mr. Hay, Mr. Stewart Johnson, Mr. Walters, a Borneo Company engineer, and myself, and with us we had the Datu Bandar, of Sarawak, Pangeran Matusin of Muka, and Hadjee Mataim, good and true men. We all had our own rifles and smooth bores, and were to do our best to silence the enemy's guns and prevent them boarding. Mr. Walters was to give his aid to the engineer's crew in handling the hot water hose.

As there was no bulwark, Brooke had some planks hung over the iron poop rail, and lined them with the cabin mattresses to save our legs from shot and shears. The same was done on the bridge for the captain's protection, and turned out to be a very wise precaution, which saved many of us on the poop from ugly hits. We had not steamed on long before we saw some boats pulling along in shore of us,—one had a tripod mast, and these we took to be the sampans of the pirate squadron prowling along by the mouths of the rivers.

We made chase, and Brooke gave them a few shots ahead and astern with his long-ranged Whitworth to bring them to, upon which they beached their boat and bolted into the jungle. Then several of the Bintula boats, called "barongs" pulled in shore and found, to their surprise, that we had been chasing their own friends, with whom they had a good laugh, and warned them against the use of tripod masts in future. After this we steamed about all day and saw nothing more, and anchored off the Bintulu river about sunset.

On Friday morning, before daylight, we started again in search of

the Illanuns, in the same order as the day before, but with no Bintulu boats in company. After a while we saw in the dim light of early dawn what looked like three spongs or palm drifts to seaward of Tangong Kidoeing, the point to the North-East of the Bintulu. We steered towards them, and soon made them out to be three large prahu, with their masts struck, bristling with men, who were rowing like the Maltese standing, and pushing for shore with all their might, one by one casting off the sampans, which they were towing behind, in order to make better way. There was no mistake that they were the veritable pirates. Hadjee Mataim, who was chased by their sampans, and fired at when he slipped out of the Muka river to give us the intelligence, recognized the boat that chased him. Brooke asked the Datu Bandar and Pangeran Matusin, if they were perfectly certain that these were Illanun pirates. "Perfectly so, there is not a shadow of doubt," all said. So we took our stations, loaded our guns, and prepared for action. The leading boat had already gained on the other two, and was going nearly as fast as the steamer herself. I never saw fellows pull so.

We put on all steam, cast off the *Jolly*, and tried to get between her and the point, but she beat us, and passed inside of us into shallow water, where we could not follow. Then she opened her fire upon us, which we returned with interest. She, like the others, had no heavy guns, but they all carried three long brass swivels, called lelahs and plenty of rifles and muskets. One of the captives told me afterwards that the long lelahs in the boat he was in took seven men to lift, and that she had forty muskets and rifles, and that none of the others had less, some more. Our plan of action was to silence the brass guns with our rifles, to shake them at their oars with grape and round shot, until we could run into them without their being strong enough to board us. The steamer was kept dodging about within range until the time came to run in; then we got into a good position to put on all steam and give them the stem, which was always admirably and coolly done by Captain Hewat, whenever the order was given by the Rajah Mudah.

The first boat having for the present escaped into shallow water, our attention was turned to the second, from which her consort had evidently tried to divert us. She was now fast nearing the shore, and the chase was most exciting. When the prahu was 200 yards from us she fired her lelahs, and then made a dash for the shore; we opened all the guns we got to bear, and kept on at full power until we ran into her, struck her midships, our stem running right over her, and then backed off again. We called out to the slaves, and all who were not pirates, or who wished to surrender, to hold on by the wreck until we could take them off, and then steamed away after the remaining vessel. When we came up with her she was also fast slipping into shore, and we ran into less than two fathoms of water with a rocky bottom under us, before we could strike her, which we did too far forward to sink her, but she was disabled by the collision, and sheered round alongside of us, but did not fight at all. The unwounded pirates

jumped overboard, leaving their own wounded, and slaves, and captives, whom we told to remain in the vessel until the boats came to take them off. The first vessel which had escaped, seeing the fate of the others, ran ashore among the rocks, just inside Tanjong Ridorong, and the crew and captives all ran into the jungle. The *Jolly Bachelor*, with Messrs. Paul and Lucas on board, was ordered to stay and look after them, while we saved all we could of the former boats.

Several of our crew recognized friends and acquaintances among those we saved, and the joyous, thankful look of the captives, when they came aboard and found themselves among friends, was, indeed, a compensation for the awful work we had been engaged in. Many were wounded, some with our fire, others with the fearful cuts of the heavy Illanun swords and Sooloo knives of the pirates, who, when they found they could not get away, commenced murdering their captives, and only our running them down put a stop to their dire work of spite and despair. Very few of the pirates who were not wounded surrendered. They are marvellous swimmers; they took their arms into the water with them, and fought with our men in the boats when they were trying to pick up the captives.

My hands and those of Mr. Walters, who was a very kind and able assistant, were soon full of work with the wounded, friends and foes alike, arresting hemorrhage, extracting balls, and closing frightful sword or chopper wounds, such, perhaps, as are hardly ever seen in civilized warfare. One man was brought up with the top of his skull as cleanly lifted up by the blow of a Sooloo knife as if it had been done *secundum artem* by an adept at *post mortems*, who wished to have a peep at the *dura mater in situ*; it was like the lid of a box partly open, and required considerable force to shut it, and to get it into its right place again. He had also two heavy cuts on his back. This man is still alive, and seems likely to recover. Another poor fellow could not be got up the ladder, because a long-handled, three-pronged, barbed Illanun spear was sticking in his back, which I had to cut out to liberate him. We soon learnt from the captives, among whom were two women and four Sarawak Chinese traders, that the other three pirate vessels had gone out to sea, and were to wait there until those we had just secured rejoined them; so when we had saved all the people we could, we steamed out to sea in search of them. After an hour or so the look-out at the mast head reported three vessels in sight, right ahead. At this time it was quite a calm, and when we came near enough to see them from the deck, we saw them sweep up to the central vessel and lay themselves side by side, with their bows at us, as if they meant to engage us in that position. However, as we went on towards them, the sea breeze sprung up, so they changed their tactics, hoisted sail, and opened out into line with their broadsides towards us to rake us as we came up. Our plan was, as before, to shake them first and run them down in detail. Brooke did not give the order to fire until we came within 250 yards of them, and they opened their lelahs upon us some time before we commenced firing.

This was a different affair from the last, for in that the pirates went

all their energies to escape into shallow water in-shore of us, and therefore made a bad flight of it. Here there was no chance of escape; and they coolly did their best to fight us, and to take us too, which they even seem to have thought possible. Indeed, they told the captives they would soon take so small and low a craft as we were, for they would board us and "amok"—i.e., kill—everybody. They fired briskly, and did not attempt to get away, even when we got all our guns to bear upon them; but as we steamed round to get our stem fairly at the sternmost vessel, they seemed to think we were retreating, and pelted us with their shots more sharply than ever, directing their chief attention to us on the poop, where we had one man killed and two severely wounded in no time, and we should have suffered more if the temporary bulwark of planks, &c., had not stopped their balls.

After the first prahu was run down, I had to go below to attend to our own wounded as they came in, but I plainly felt the concussion as we went into the others. One of the vessels was cut right in two; the steamer went straight on without backing, and she sank the other, one half on either side of us. She was the largest, and had a very valuable cargo, and much gold and bags of Dutch rupees. The pirates fought to the last, and then would not surrender, but jumped into the sea with their arms; and the poor captives, who were all made fast below as we came up to engage them, were doubtless glad when our stem opened the sides of their ships, and thus let them out of prison. Few, comparatively, were drowned, being mostly all good swimmers. All those who were not lashed to the vessels, or killed by the Illanuns, escaped.

Our decks were soon covered with those we picked up, men of every race and nation in the Archipelago, who had been captured by the pirates in their cruise, which had already lasted seven months. One poor Chinese came swimming alongside, waving his tail over his head, and the other captives held up the cords round their necks to show that they were slaves, lest they should be mistaken for Illanuns, and shot or left to their fate. We soon picked up the poor fellows, and the Chinaman came under my hands, being shot through the arm. Many of the pirates we took were badly wounded, some mortally; the greater part were killed or disabled by our fire before we closed. As I was dressing one man, with a shot in the wrist, he addressed me in English, and, having expressed his gratitude for his wonderful deliverance from the pirates, he told me he was a Singapore policeman, and was going to see his friends in Java when he was captured. There were also several other Singaporeans—a mother and daughter, who had a child with her, and two men, British-born subjects, Bencoolen Malays, who were taken in their own boat, trading to Tringannu. The husband of the younger woman and owner of the boat was killed by the pirates, and she, like every woman who falls into their hands, had suffered every outrage, insult, and injury that could befall a woman. One poor creature, who was still suckling a child of two years old, as Malays do, was almost a living skeleton; she was shot through the thigh, and after I had dressed her my kind assistant quaintly said of her, "Poor, poor thing! She has not meat enough on her bones to bait a rat trap."

It is a marvel how these poor captives live at all under the terrible tortures and ill-treatment they endure, sometimes for months, before they reach their destination, and settle down as slaves to the worst of masters, very demons, not men. I asked many of those I was dressing if their wounds hurt them much, and they said, "Yes, they hurt, but nothing hurts us so much as the salt water the Illanuns have made us drink; they never gave us fresh, but mixed three parts of fresh water with four of salt, and all they gave us to eat was a handful of rice or sago twice a day."

The captives state that when the pirates take a vessel they kill every one who makes any resistance, plunder and sink their boats or ships; and, when those they spare are first taken aboard their own prahus, they put a rattan, or black rope halter, round their necks, beat them with a flat piece of bamboo on the elbows and knees, and the muscles of the arms and legs, so that they cannot use them to swim or run away. After a while, when sufficiently tamed, they are put to the sweeps and made to row in gangs, with one of their fellow-captives as a mandoor, or foreman, over them, who is furnished with a rattan to keep them at their work; and if he does not do this effectually, he is "kriessed" and thrown overboard, and another man put in his place. If any of the rowers jump overboard, the pirates have a supply of three pronged and barbed spears, with long bamboo handles, ready to throw at them. When hit by one of these they can neither swim nor run, and are easily recaptured. They are made to row in relays night and day, and to keep them awake they put cayenne pepper in their eyes, or cut them with their knives and put pepper on their wounds. Their prahus are essentially rowing craft, long, low, and very sharp, like the old Maltese galleys, with a high fighting deck; their masts and sails are small and insufficient, so as not to be seen at a distance. Those we encountered were seen at Cape Datu on Monday night, and on Friday morning we met them off Bintulu, a distance of 240 miles, having delayed a whole day about Muka on their way, and picked up more than thirty of our people on the coast.

We had the happiness of recapturing and landing most of these people on our return to Muka. We found, on reckoning up, that we had picked up 165 people, and that, perhaps, 150 to 200 had got to land from the vessels we sank near shore. The captives who swam to shore would all be saved by the Rajah's people at Bintulu, who received orders to go after them, while the Milanows themselves would surely kill all the Illanuns—their most dreaded and hated foes. In every pirate vessel there are from forty to fifty Illanuns—fighting men, all well armed, each having a rifle or musket besides his native weapons, and from sixty to seventy captives, many of whom were killed by the pirates when they found themselves beaten; among them, two women. We saved, in all, nine women, with six children. Seven of the women and four of the children were our own Muka people; and it was indeed most touching to witness the joy and gratitude of them and their relations when we returned them to their friends. Of the Illanuns we captured thirty-two, ten of them boys. Some have died since of their

wounds, the remainder are in irons in the fort here. The boys have been given out by Brooke for five years to respectable people, to train and bring up. I have taken one now into the hospital with three shots in him, whom we hope to cure; he is a fine lad about fourteen, the brother of a Sooloo Datu, or chief. I shall try to educate and make a Christian of him. Very few of the pirates live to tell the tale; some captives assured us that in the boat they were in there were only two out of the forty fighting men who had not been killed or wounded by our fire, when we gave them the stem and cut her down.

We have all great cause to be most thankful to the Rajah Mudah for the very gallant, and yet wise and cautious, way in which he planned and carried out the attack, and also to Captain Hewat and his officers for the cool and steady manner in which the ship was handled, and everything done in the right time and place. Our Malay crew and Sarawak fortmen showed the influence of their good training, and the example set them by their European leaders. Not a man flinched from his work, and, although never in action before, they showed the coolness and steadiness of veterans. We could not have had more than thirty-five rifles and muskets and smooth-bore guns among us—less, perhaps, than each of the pirate boats carried; notwithstanding which, our fire was so steady and galling that we very much kept down the fire of their *lelahs*, and so thinned their men as to put the idea of boarding us out of their heads. In short, our weapons, though few, were good and well served, and, in justice to the maker, I must mention that my double-barrelled Terry's breech-loader, made by Reilly, New Oxford street, proved itself a most deadly weapon from its true shooting, and certainty and rapidity of fire. It never missed fire once in eighty rounds, and was then so little fouled that I believe it would have fired eighty more with like effect without wanting to be cleaned.

When we ran down the last pirate all our ammunition for the nine pounders was expended, and our own caps and cartridges for the small arms had nearly come to an end, so that if we had had more *prahus* to deal with we should have been in a sorry plight, and had to trust to our stem and hot water hose to do the work. But the whole affair was most providentially ordered in our not meeting the six boats together, when their fire might have been too much for us; and then in their departing from their usual plan of rushing *en masse* to board, and by their separating and giving us the opportunity of running them down one after the other. We are, indeed, all most thankful to our Heavenly Father who thus ordered things for us, and made us His instruments to punish these blood-thirsty foes of the human race.

It appears that it is seven months since these vessels left Tawi Tawi, an island on the South-West of Sooloo, under the Sultan of Sooloo, who is in league with the pirates and receives part of the captives and plunder. In the only boat we boarded we found the Sultan's flag which is given to people of high rank. There was also the usual Illanun flag, and we got also six Dutch and one Spanish flag, which doubtless, had belonged to boats and larger vessels they had captured. We have had the details of the capture of two large vessels, one a

Singapore prahu trading to Tringganu, the other a Dutch tope of 150 tons, on the coast of Borneo to the mouth of Pontianak. This latter was taken in conjunction with five other Illanun pirate vessels, which had come down from the northward (they themselves were coming up from the southward). The new comers informed them there was a large merchant vessel in sight, and proposed to them to join in the attack, which they did. She had a valuable cargo, worth 10,000 dollars, which they plundered. They killed everybody on board, except one Chinaman, whom we re-captured. After plundering the tope, the whole eleven pirate prahus were seen and chased by a Dutch war steamer, near Pulo-Bawang, South of Pontianak. They pulled away from her into a bay, ran their vessels on shore, hauled them up as far as they could, and then screened them with branches of trees and bushes. The steamer was anchored close outside of them for a whole day without seeing them, and when night came they slipped away and went off to Corimata, where they committed great ravages.

I see by the last Singapore paper that we have here, there is some account of the doings of these same prahus. It is stated "that in one place they carried off a native prince and his followers, besides 200 other natives." The Boyan captives tell us that in one morning their armed sampans laid in ambush near their fishing stakes, and surprised and carried off seventy-five of their people, among them two of their Hadjees, whom we recaptured. Living here, one is constantly hearing of their daring and atrocious deeds, and there is hardly a respectable Malay in Sarawak who in years passed has not suffered from them, either in his own family or in that of his near relatives. As the fleet passed our bay they held a council as to whether they should come in and attack us; but they decided not, fearing a steamer or war vessel might be about, and they were not aware that Muka and Bentulu are now under Sarawak, or they would not have been so bold as they were when they threatened Muka, and sent in to challenge the Muka men to come out and fight them. The three we caught out at sea, twenty-four miles North-East of Ridorong, were right in the track to Labuan, which place they constantly visit and buy their gunpowder, balls, and European goods there. They always go round Labuan, either going on or coming home from their cruises. They seem to care nothing about our British cruisers; they trust to their not being recognized, or to being able, if they are, to get out of the way. In fact, under our present system at Labuan, and the difficulties thrown in the way of our men-of-war against attacking these wretches when they are known to be in the neighbourhood, England, with all her power and philanthropy, is doing absolutely nothing towards putting an end to this abominable and most extensive system of rapine, murder and slavery.

It is impossible to estimate the destruction and the havoc, the murder and the amount of slave-dealing carried on by these wretches in their yearly cruises. The prahus we met were but one of the many squadrons that leave the Sooloo Seas every year. Seven months had these wretches been devastating the villages on the coasts, capturing

slaves, taking and sinking trading vessels. Their course was along the coasts of Celebes, down the Macassar Straits to Madura, then along the northern coast of Java, and south of Borneo, up the Caramata passage to the very mouth of the Singapore Straits, thence back to Borneo, to go home by Sarawak and Labuan. The other five pirate vessels parted company from them to go over to Billiton and Banca Strait, and doubtless they, too, will carry their depredations right up into the Straits of Singapore, and pick up English subjects and injure English trade, as those we met have done. But, apart from all our local feelings about, and dangers from, these people, it makes an Englishman out here ashamed to feel that his own dear country, which he would fain regard as the liberator of the slave and the avenger of the wronged, is, in truth, doing nothing against the system, fraught with incalculable misery to so large a section of the human race. For it must be remembered that the slavery these people suffer is far more crushing to them than the African, who is taken as a savage to serve civilized, and, at least nominally, Christian masters. But these are generally well-to-do men of civilized nations, who are made the slaves of utter fiends, who work and torture them to death one year only, to replace them by fresh victims whom they capture the next. It is, indeed, *ex victimis* with them, and I think it is the duty of every Christian man, and every Christian nation, to do all that can be done to rid the earth of such horrible and dangerous monsters, and to punish the Sultan of Sooloo, and all who abet and aid them.

The Dutch and Spaniards are always doing something, but not enough, and during the last four or five years these pirate fleets have been gradually getting more numerous and daring on these coasts, and now it is for England to rouse herself and complete the work of putting them down. Labuan is near their haunts, and it might be done from thence. A few thousands spent out here yearly for the purpose would, I believe in my heart, soon effect much more real and lasting good than the millions which are being spent on the coast of Africa. All honour is due to Sir James Brooke and his nephew, the Rajah Mudah, and the other officers of the Sarawak Government, who, in spite of misrepresentation and factious opposition, through evil report and good report, have persevered for years in constant, steady, and systematic efforts to put down piracy on this coast, and chastise these villanous marauders whenever they come into Sarawak waters.

If the English Government will now act with and assist us, we shall soon clear the Sarawak and Labuan waters of these pests. Assisted by the experience and knowledge of our natives, the work would be done surely and effectually: but, single-handed, the Sarawak Government, notwithstanding all it has done cannot carry it out. We want means; if England or Englishmen will give us that, we shall gladly do the work, and feel that we are delivering our fellow-men, and doing our duty to God, who has commanded us to free the captive and deliver the oppressed. While at the same time we shall be averting a danger which is ever threatening us at our own doors, and has so long crippled the energies and resources of this country.

Sarawak, May 27.

F. T. LABUAN.

VOYAGE OF H.M.S. "CYCLOPS" FROM THE CAPE TO ADEN.—
Captain W. J. S. Pullen.

(Continued from page 316.)

On the morning of the 5th February we got a light air from S.S.W., and the chief-engineer stated that he wished to examine into the state of the starboard paddle-shaft, imagining that it had drooped. As it would be necessary to stop, I determined on getting a cast for temperature, as well as swing for deviation.

The latter was performed first, taking observations both on S.S.W. and North points: the latter being the one on which we got no deviation when in Simon Bay, the former in England.

Fathoms.	Times.	Intervals.	Diff.	Remarks.
0	<i>h. m. s.</i> 6 46 40	<i>m. s.</i> Let go.	<i>s.</i>	Whale line with partially detaching weight of 40lbs.
100	6 48 10	1 30		
200	6 50 10	2 0	30	
300	6 52 28	2 18	18	Surface temp. by therm. 66·8°.
400	6 54 45	2 17	1	
	6 56 35	Let go.		Therm. 6 attached, surf. temp. 66°, to the 400 fms.
500	6 59 12	2 37		
600	7 1 55	2 43	6	
700	7 4 45	2 50	7	
800	7 7 50	3 5	15	Wind light from S.S.W.
900	7 11 10	3 20	15	
1000	7 14 20	3 10	10	1,000 fathoms. No bottom.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
359	Surface.			1026 at 66·5	
6	600 fms.	66·8	46·8	1027 at 67	
10	1000 „	66·8	40·8	1026 at 67	

From the difficulty in keeping the ship in proper position with such a light air, I did not like venturing another thermometer; and from not being able to keep the ship well over the weight the disadvantage of the paddle-wheel for deep sea soundings was fully shown, particularly when with light airs and the sails do not act. The vessel not answering her helm before she gets good way is a long way ahead of the position where the lead was let go before she begins to turn up. With a moderate breeze it is not so bad, for then the sail has the power. I feel most anxious for the fate of the line under these circumstances, and plainly see the advantage a screw would have.

On examining into the state of the outer starboard bearing it was found that the shaft had drooped, and the only remedy that could be

applied was to ease the crank pin, which I accordingly directed Mr. Crichton, the chief-engineer, to do.

In the evening a very light air came up from the southward, but at midnight it was again calm; steaming and under sail occasionally.

About ten o'clock on the evening of the 6th the breeze, which had sprung up from S.W., had veered round and apparently settled at S.S.E. Thinking it would stand, the fires were banked and sail made; and the next morning, continuing from same quarter, looked as if it was the commencement of the S.E. Trade,—fires were therefore drawn. For the next three days the weather continued so fine that the ship was painted inside. Very little change in either wind or weather, the former generally keeping between East and South, invariably veering easterly as night drew on and backing again in the day, thus E.S.E. and S.S.E., but it was not more than a moderate breeze, seldom exceeding four in strength, with a clear sky and smooth water; the barometer fluctuating a little, but standing high.

At midnight of the 10th the swell came up from S.E., and early the next morning there were occasional flashes of lightning from the N.E., and throughout the day the weather was warm and sultry, with a moderate E.b.S. wind. Towards night the weather became dark and threatening, scud coming fast from N.E., occasionally lightning; squally at midnight, with rain.

The morning of the 12th set in with rain and squally weather, and a fresh easterly breeze, with much lightning from N.E. until four o'clock. Towards noon the wind increased. Squally, with heavy rain throughout the greatest part of the day, the wind veering between East and E.S.E. In the afternoon got a glimpse of the sun, enabling us to get sights for time and variation. Two large ships were seen to the southward, steering under a very heavy press of canvas to westward. Swell up from S.E. and lightning in the evening.

Very early on the morning of the 13th the wind was moderate from the East, and weather so fine that I was in hopes we should be able to swing for deviation. The two foremost boilers were therefore prepared for steam. Soon after, however, the breeze began freshening up, and heavy rain commenced, continuing almost without ceasing throughout the day, and the squalls, sometimes eight in strength, veering between East and E.S.E.; the swell, too, rather on the increase, but still from S.E. At noon the wind was less, and between five and eight o'clock there was a constant succession of wind, lightning, with heavy peals of thunder, sometimes so close that its sound was like the sharp and ringing report of brass ordnance. To leeward occasionally the sky would show clear in patches, but to windward and ahead thick yellow-tinged murky clouds, reaching almost to the zenith. In fact, the best description I can give is that it was more like those dense smoky fogs we have in London, casting gloom and darkness on everything around, except the small bright patches to leeward. Towards midnight the wind fell almost to a calm.

On Sunday morning, the 14th, a light air from the northward,

veering during the day to N.W., and all the forenoon a succession of heavy rain squalls, short but very wetting. The swell had gone down much, but our progress was very slow.

For the last two or three days the barometer has been fluctuating, but gradually falling from the great height it has so long stood at. And drawing near to Rodriguez and Mauritius, together with these being the hurricane months, the wind, too, often so much increased, that I sometimes began to think that a heavy gale, perhaps a cyclone, was coming on. The barometer was most carefully watched, and every other circumstance that could bear on such an event.

On the morning of the 15th the wind was light from North, occasionally heavy, rain lasting all day, and the ship making such slow progress that I got steam in all boilers and made sail. Several beautiful white gulls (boatswains) were seen to day. In the evening the wind freshened, still northerly, with occasional squalls and lightning from S.E.

A dark and threatening-looking sky at daylight of the 16th, and at five o'clock the peals of thunder were so heavy and so close that on the first commencement it seemed as if something had happened to the funnel, all the gearing gone, and it sounded as if it was running down. The lightning was very vivid and had commenced some time before; no rain. The wind freshening from N.N.E. At ten stopped and got sounding for temperature, but weather such that we could not get observations for deviation.

The intervals shown in the table of sounding are quite as good as can be expected where the line is so often stopped; but I do not imagine we can ever successfully combine the two experiments so as to arrive at a correct conclusion as to the time when the weight reaches the bottom. The observations must be separate; that is, when sounding for bottom there must be no check on the line, as

Fathoms	Times.	Intervals.	Diff.	Remarks.
0	h. m. s.	m. s.	s.	
100	6 47 16	Let go.		The temperature whale-line, with cup weight of 40lbs.
200	6 50 18	1 16	30	Therm. A 10, showing surf. temp. 80°, agreeing with deck therm.
300	6 52 13	1 55	9	
400	6 54 18	2 5	10	Stopped and secured therm. A 6 : surf. temp. 80°.
	6 55 20	Let go.		
500	6 57 25	2 15		
600	7 0 5	2 30	15	
700	7 2 36	2 31	1	
800	7 5 15	2 39	8	Stopped and secured therm. A 4 : surf. temp. 81.5° and 81°. Deck therm. 80°.
	7 7 20	Let go.		
900	7 9 52	2 32		
1000	7 12 37	2 45	13	1250 fms. line out.
1100	7 15 25	2 48	3	125 „ correction.
1200	7 18 13	2 48	0	
1250	7 20 20			1375 „ true depth.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 359	Surface.	80		1024 at 80	
A 4	495 fms.	81·5	60·5	1025 at 78	
A 6	935 „	80	40	1025 at 78·5	
A 10	1375 „	76	40·5	1025 at 78·5	

there must necessarily be when getting temperature with more than one thermometer, for although the weight of thermometers adds greatly to the descent of the weight, the check on the impetus is likely to break the line, as well going down as coming in, from the additional resistance.

In this table of results for temperature is shown how A 10 differs in the maximum reading on returning from what it was on starting. All were adjusted to the surface temperature, as shown in first table; and on looking over all the preceding experiments hardly one thermometer has shown the same in the maximum column on returning. Now I know from experience that a shake will cause the tell-tales to move, but as it is the minimum temperature we have particularly to do with, its tell-tale may not have shifted, for it must have fallen from a lower reading, unless the instrument had been capsized. At all events, it throws a doubt on all the readings, and it is a subject for the maker to remedy.

The fires were again drawn in after boilers, keeping the foremost ones banked for swinging ship in afternoon, which was fortunately accomplished; all fires then drawn and sail made on ship.

Between three and four in the morning of the 17th the wind seemed settled to N.E., with heavy rain, thunder and lightning from the southward. At six the weather cleared, wind veered to E.b.N. and continued pretty steady between it and E.N.E., and from two to four in strength. In the afternoon the wind freshened up; barometer rising.

On hauling in the patent log this evening found the machine gone, and on examining the line it looked as if bitten through, perhaps by a shark. At midnight, wind moderate from eastward.

Early on the morning of the 18th the wind was easterly, but throughout the day veering between it and S.E.b.E., from three to four in strength, with occasional showers of rain. At noon the ship was eighty miles from the most southern part of the Cargados Garayos, bearing N. $\frac{3}{4}$ W., true course. The wind shortly after coming to the eastward, and having nothing to say in favour of the old *Cyclops* as a weatherly craft, I decided on passing to the westward of these shoals and islands and be guided by the winds I afterwards met in the passage to the northward in passing near or over the sites of George Island, Bridgewater Shoal, Rose Galley Rocks, and Swift Bank. It would certainly be of great advantage in making passages from many parts of India could these doubtful dangers be expunged

from the charts, or even correctly positioned. But with us there is to be considered in this case the necessary expenditure of coals, which we can hardly spare, and that it takes us out of our way in a great measure, no mean consideration with a ship neither whose steaming nor sailing qualities are to be boasted of. Therefore to lessen our distance as much as possible is one great object and one consideration in taking this route, recommended by Horsburgh.

Towards night the breeze freshened up, and passing the southerly point of the Cargados early on the morning of the 19th, distant about twenty miles, of course they were not seen. Just after daylight bottom could not be got with ninety fathoms of line. Neither could we get observations during the day, for the variable winds from easterly quarters brought heavy rain and squalls, reducing the topsail by a double reef occasionally.

All the forenoon the sea was particularly smooth, from being, I suppose, under the shelter of the shoals; but on its getting up again, concluded that we had got to the northward, and from under their lee. And it was also a source of congratulation being to leeward rather than to windward, for in the latter case the Cargados would have been a lee shore.

Late in the afternoon the weather appearing more settled, and wind very light, a boat was lowered down to sound and try current, for from appearance there was evidently one at work about us.

Fathoms.	Times.	Intervals.	Diff.	Remarks.
0	h. m. s.	m. s.	s.	
100	1 40 0	Let go.		In boat, with mackerel line and a weight of 60lbs.
200	1 42 8	0 50	28	
300	1 43 42	1 18	16	
400	1 45 31	1 34	15	
500	1 47 33	1 49	13	
600	1 49 47	2 2	12	
700	1 49 47	2 14	14	
800	1 52 15	2 28	16	
900	1 54 59	2 44	4	
1000	1 57 47	2 58	10	
1100	2 0 48	3 10	12	
1200	2 3 55	3 23	9	
1300	2 7 18	3 33	1	
1400	2 10 59	5 2	89	
1500	2 14 23			

Down at 1,400 fathoms, but before the current could be ascertained the line parted and boat returned to the ship.

This was a much greater depth than I expected to find at so short a distance from the Cargados, the nearest of the group being true East distant only forty-six miles.

During the night the wind was moderate and tolerably steady from E.b.S., with lightning occasionally from S.E.

Early on the morning of the 20th the rain came on again, and so continued throughout the day, and the wind in the heavy squalls veering between E.S.E. and E.N.E. until eight o'clock, then came on us from all quarters of the compass.

Being about the parallel of 15° S., steam was got in two boilers, with the intention of swinging for deviation should the weather clear; but it did not, and it is now the second day we have had no observations for latitude. Considering, too, that it would be better to get quickly through these variables, where so much rain might seriously affect the health of the men. I had all boilers in use, but steaming close-throttled. Thus having steam, a cast of the lead was got with 1,570 fathoms of line, but no bottom.

This was also deeper water than I expected in the vicinity of such shoals, fully showing that the supposition that Madagascar and all the chain of shoals up to Cape Comorin are united is fallacious.

Early in the afternoon the wind came up light from S.E.; and on its increasing sail was made on the ship and fires drawn. This wind brought on heavy showers of rain at intervals; but on its hauling more to the eastward it cleared off. Lightning from N.E. in the night.

Light and variable winds now appeared to prevail; in fact, up to lat. 2° 29' S. was a continued succession of them, with occasional calms. The wind veering from East to W.N.W., and occasional squalls, accompanied with rain, thunder, and lightning. In consequence steam had frequently to be got to make any progress towards our destination.

Occasionally the ship was passing through strong tide-rips, looking like breakers or rather a rush of water over uneven ground. In one of these tide-rips a cast of the deep sea lead was got, and also temperatures at certain depths,—the first in lat. 10° 54' S. and long. 58° 44' E. In fact, it was one of the first overfalls that we had met

Fathoms.	Times.	Intervals.	Dist.	Remarks.
0	h. m. s.	m. s.	a.	
0	2 31 0	Let go.		Short whale-line, with 50lbs. cup lead. Therm. A 10 attached: surf. temp. by it, 83.5°. Wind light from N.N.W., with a long easterly swell.
100	2 32 13	1 13		
200	2 33 52	1 39	26	
300	2 35 45	1 52	18	
400	2 37 50	2 5	13	
	2 39 25	Let go.		Therm. A 6: surf. temp. 83°.
500	2 41 17	1 52		
600	2 43 30	2 13	21	
700	2 45 40	2 10	3	
800	2 47 52	2 12	2	
	2 50 10	Let go.		Therm. A 4: surf. temp. 85°.
900	2 52 18	2 8		
1000	2 54 40	2 22	14	
1100	2 57 16	2 36	14	
	2 59 53	2 37	1	No indication of bottom.

No. of Therm	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 359	Surface.	83		1028 at 83	These depths have been corrected for the stretching of line.
A 4	440 fms.	85	51·5	1024 at 79	
A 6	880 „	83	41·5	1024 at 79	
A 10	1320 „	77·5	51·5	1025 at 78·5	

with. On first view it appeared as if numbers of fish at a distance were swimming about just under the surface, or the albicore in chase of the flying-fish. The barometer, I found, during these times kept high, but fluctuating.

Here No. 10 therm. again shows a shifting of the maximum tell-tale by at least 6°, and the minimum temperature is also greater than at the lesser depth. I am inclined to think that either of the minimums shown by 6 and 10 is wrong. The current was tried by boat and found to be three-quarters of a mile an hour on a N.N.E. course (magnetic). This does not agree with the current reduced from reckoning, which showed thirteen miles in the twenty-four hours of a S. 35° W. true course.

Passing to the northward of the Saya de Malha Bank, there is a place on the chart where 185 fathoms are shown; near about we could not get bottom with 200 fathoms' line. The position is in about 9° S.

(To be continued.)

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*The Chairman's Observations on the Contrast afforded by the Tranquillity of England and the Wars East and West of her; or Occupation at Home and Abroad—English Sympathy with American Slaveholders—Capture of Arabian Slave Dhows by H.M.S. Gorgon, Captain Wilson, on the African Eastern Coast—Dr. Livingstone's African Discoveries: Death of Bishop Mackenzie—The War in China: Refinements of Chinese Cruelty—The Viceroy of Egypt's Fete at Woolwich.*

Events thicken upon us, said the Chairman. If we have already found this in our former "Evenings at Home," they seem to come in tenfold number now. There would be ample material for their discussion this evening were it only the late Free Trade Banquet to the French minister, M. Rouker; that splendid festival (on an occasion heretofore unheard of in this country), fraught with the blessings of peace, and another pledge of international friendship between us and the great empire of France. But he would just glance over the events to which he had alluded, and first he would call to their notice the happy contrast between the principal countries of Europe, where

all was peace, and those lying East and West of it. Here, in this part of the world, the only contests known were really those of peace, as the daily display of the International Exhibition so amply proves. But, alas, abroad, in China and America, the furies of war are busier than ever, carrying mortal hatred to extremes of torture and death in every possible form to augment human suffering. The contrast indeed is strong nor is it likely that the cause of it will soon pass away. The Chinese rebellion and the American civil war are neither of them likely to terminate speedily.

While, however, these things are going on abroad, at home we are engaged, continued the Chairman, exchanging convivial enjoyments everywhere; the Viceroy of Egypt, besides the French Minister of Commerce, has been our guest, and as a kind of pastime we are not only cultivating our volunteer troops, but awarding the prizes of rifle contest between no less personages than the crack shots of our Houses of Lords and Commons! This may be carrying the weapons of war into high places, but it is a kind of preparation for the worst extreme, and is gone into with a spirit of cordiality that is desirable,—in fact, while we are playing the game of war at home, abroad it is going on in earnest; and he trusted that such would always be the happy condition of this country whatever might take place elsewhere. In the midst of our tranquillity, however, continued the Chairman, and however much our feelings would be shocked by the dreadful treatment of prisoners in China, it was painfully marvellous to see so much sympathy everywhere in England expressed in favour of the seceding party, rebels as they are called in America. Happily the unwise attempt to involve this country in a war of interference had failed, ungracefully grounded as it had been on our own interests! But that the sympathies of the majority of their countrymen should have been misled (and he thought *that* the most proper term to apply) in favour of *slaveholders*, was most unaccountable,—more especially when the blood and treasure we had expended for many years was considered to put down that vile traffic and all its horrors. For his part, and he was happy to find it was the general feeling of the Club, he cordially agreed on this subject with the sentiments expressed by our *National Review*, which was truly English, however those might be of many of our countrymen who are so grievously misled. He quite participated in the sentiment that—

The sympathy expressed so loudly in England on behalf of the Southern Confederacy has its origin in loose and inaccurate notions of what the Southern Confederacy has been, of what it is, and of what it would be, were it permitted to develop itself unmolested in obedience to its instincts and unavoidable tendencies. The bare fact that it is a slave power—that is, a power with slavery for its “corner stone”—and the other fact, that this slavery is of a kind entirely new in the history of the world, ought to have made the public writers and public speakers of England turn with dismay from the mere thought of lending their support to such a power, and pouring out their sympathies on its behalf.

It is difficult to account for this strange perversion of wholesome British opinion. It is difficult to understand how, with the history of the past accessible, the facts of the present patent to all eyes, the prospects of the future unclouded and unveiled, any one could be content with the shallow explanation that the present contest is for empire on one side, and for independence on the other. No doubt some have been led away by a blind hatred of democracy; others have been irritated by the reckless violence of northern newspaper writers, and the mad speeches of hack politicians; others, again, have desired success to the South because they think it better for the world that there should be more nations than one within the enormous territory, stretching from ocean to ocean, owned by the United States; and there are not wanting those who have Southern sympathies because they have accepted Southern hospitality.

It would be useless to deny the force of these influences; they are around us in full operation, and their fruits are visible every day. But it is strange that such influences should have been adequate to blind thoughtful men to the true character of the contest, and the immense issues it involves. It is strange that our public teachers should contemplate with something more than indifference, in many cases with absolute approval, the rise in the heart of America of an overshadowing slave power, and should visit on the heads of those who are attempting to break and bind that power their unmitigated censure, and comment on the progress of the attempt with continuous and envenomed hostility. The fact is the more remarkable because we have rid ourselves of slavery; although it was not with us, as it is and has been with the United States, the canker at the core of their political and social institutions. We can only account for the fact by the supposition that our Southern sympathisers have been blinded by the superficial influences we have mentioned to the teaching of history. And were it not that opinion, in a country where publicity prevails, rectifies itself rapidly and effectually, we should look with considerable apprehension for the future of England upon the recent manifestations of English opinion on the side of a slave power.

Such were his sentiments, concluded the Chairman, and whichever way the war might terminate England would hereafter become ashamed of her sympathy, and well she might be, as the first land of liberty that the world can produce. The Secretary would now read the account of another glorious uprooting of the evil of slavery on the Eastern African coast by the officers of *H.M.S. Gorgon*. The Secretary then read—

It is truly said in reference to the capture of the Arab slave dhows by the boats of the *Gorgon*, that the account will be read with considerable interest. The adventures are in many cases sufficiently exciting; but we refer to them more to show the perseverance, the energy, the heroism, and the endurance with which John Bull clings to and carries out an idea, than for any other reason. The nation of shopkeepers has a most extraordinary knack of losing sight of its own interests in the interests of humanity: and, for a practical people, we

indulge in romance and sentiment to a degree altogether unprecedented. The way in which England gained some of her colonies and her Indian empire is not easily defensible; but the charge of deliberate inhumanity can never with truth be brought against the British nation. Englishmen have done more to alleviate the sufferings of their kind than the men of any other country under heaven, and they have used their supremacy on the ocean to good purpose,—in thousands of cases striking off the chains from the limbs of captives, and restoring to life and hope men and women condemned to the most bitter slavery. It may be questioned whether Great Britain has used its power wisely so far as its own material interests are concerned; but that it has done its best to rescue myriads of the human race from suffering and oppression, will not for a moment be denied. The energy and humanity with which, in the instance under review, Commander Wilson, his officers, and men performed a very arduous and often very disagreeable and dangerous duty, will be apparent to every one who may peruse the incidents of the cruize of the *Gorgon*.

The first of the dhows on the list was seen by the *Gorgon* on the morning of the 19th of August last, on shore on the reef to the northward of Querimbo Island. Captain Wilson thereupon boarded her, and found that she had a crew of twenty-five Arabs, and was regularly fitted for the slave trade, but had neither colours nor papers. The master of the dhow stated that on the previous evening, having then one hundred slaves on board, shipped at Conducia, he had been chased by one of the British cruisers (supposed to be the *Penguin*), and had run on shore in the dark. During the chase the water tanks were thrown overboard, and after the stranding of the vessel the slaves were landed on the island. The crew were engaged in getting the dhow off, in order that she might continue her original voyage to Comoro, when the *Gorgon* hove in sight. The hold of the vessel had been recently occupied by slaves, and the cooking and feeding utensils quite as recently used. The crew of the dhow (which was much injured by the reef) were landed on the island, and the dhow, which measured 172 tons, was burnt.

The second of these vessels, captured on the 3rd of August, while at anchor off Lindey River, was a Persian Gulf dhow, of the burden of 156 tons. She had on board a crew of twenty Northern or Joasme Arabs, was regularly fitted for the slave trade, and carried a quantity of slave food. She was unseaworthy, and after the crew had been landed, was destroyed.

The third and fourth dhows were captured on the 9th of August last. On that day two of the ship's boats were cruising off Kiswara Harbour, and seeing the dhows they gave chase. After an hour's run, two of the dhows, finding the boats gaining on them, lowered sail, and were boarded. They were all fitted for the slave trade. The crew of the first dhow, fifteen in number, were Arabs and well armed, and the vessel had neither papers nor colours. The second dhow had a crew of twelve Arabs. The first of these dhows was destroyed by the captors, and the second abandoned in a sinking state.

The capture of the next dhow (No. 5) took place on the 24th of August, not far from Zanzibar, and was attended with circumstances of unusual interest. On the day in question Mr. G. Harris, second master of the *Gorgon*, being at Zanzibar in charge of a slave dhow, received information from the British consul, Lieutenant-Colonel Rigby, that a Sooree pirate, named Mohammed bin Alie, intended to run a cargo of slaves from a point about seven miles North of Zanzibar. Mr. Harris thereupon proceeded after dark with an armed boat to lay in wait for the vessel, being accompanied by one of the colonel's boats to identify her, if necessary. About midnight they saw a dhow running to seaward in a north-westerly direction, and Mr. Harris hailed her to heave to, stating that he was in command of a British man-of-war's boat. No attention was paid to this summons, and an attempt was made to board the dhow. As the crew, however, resisted with drawn swords, a fire of musketry was opened upon her, and three or four of the crew killed. The dhow was then boarded, and the rest of the crew driven overboard. On searching her seventeen slaves were found stowed away in various parts of the vessel, and they stated that it was intended to take one hundred and fifty slaves on board, and that the boats conveying them were in communication with the dhow. The captured vessel was anchored for the night at the place where she had been taken, and on proceeding thither the next morning, Mr. Harris found that she had been removed into a small bight inshore, but was totally deserted. She was fitted for the slave trade, and had on board a large quantity of water and slave food. She had no colours, but evidently belonged to the Joasmes of the Persian Gulf, who are noted slavers and pirates. Being unfit for a voyage to this port she was destroyed. Her burden was 169 tons.

Dhow No. 6 was captured by Lieutenant Harvey, in charge of one of the ship's boats, on the 8th of September, at Port Wangekee in the North of Pecuba Island. She was fitted for the slave trade, had on board a crew of twenty Sevoodi Arabs, and a quantity of slave food, but no papers or colours. The dhow, which was of the burden of 200 tons, was destroyed soon after her capture.

Dhow No. 7 was taken off Mombazu on the 14th of September. She was fitted for the slave trade, had a quantity of slave food on board, and was of the burden of 66 tons. Being unfit for a voyage to the port of adjudication, she was destroyed.

Dhows Nos. 8, 9, 10, and 11 were all seized on the 16th of September. The circumstances attending their capture are exciting. On the day in question the *Gorgon's* pinnace, under the command of Lieutenant Ross, and the whaleboat, under the command of Acting-Sub-Lieutenant Price, were cruising off Melinda in pursuance of Commander Wilson's orders. About three p.m. they stood into Melinda anchorage for water, when they saw three dhows at anchor in the roadstead, and a small dhow shoving off from the shore, with forty or fifty men, Northern Arabs, armed with muskets, and apparently standing for the dhows at anchor. The two boats proceeded to intercept the dhow with the armed men, whereupon the crews of the other

dhow jumped overboard and swam on shore. As the boats stood towards the smaller dhow, the Arabs in her commenced to fire upon them, and the fire was immediately returned with musketry and the howitzer of the pinnace loaded with canister and grape. The combat lasted for some little time, but after several of the Arabs had been killed and wounded, the remainder jumped overboard and escaped to the shore. All four dhows were then searched under a heavy fire from shore, and they were found to be fitted for the slave trade and to have neither papers nor colours. In the smallest dhow a Negro was found, who stated that three larger dhows had landed one hundred and eighty slaves who were to have remained on shore while the vessels were cleaned and watered; and after reshipping the slaves and completing their complement, the dhows were to have proceeded on their voyage to the Persian Gulf. The vessels were all destroyed; the Negro found on board the smaller dhow was, at his own earnest request, permitted to return to the shore, the officers in command concluding from his statement that he was a resident of the place.

The capture of the dhows Nos. 12 and 13 was effected on the 29th of August. The story is an interesting one. On that day the pinnace and whaleboat, under the command of Lieutenants Ross and Price, were cruising between Port Pangane and Mahatto Island, when three dhows were observed standing for the land. The boats stood in to intercept them, the whaleboat leading, and firing several blank cartridges to bring the vessels to, but without effect; and as they still continued to make for the land shots were fired across their bows, which shots the dhows returned. The boats then gave chase, and in about an hour's time cut them off and forced them to bring to. The dhows on being boarded were all found with Arab colours, but no papers; on board one of them was an Arab who styled himself King of Angoxa, and claimed the three dhows; but who could neither find passports nor papers nor account for being without them. The dhows were all detained on the charge of being engaged in the slave trade, and as the weather appeared threatening, at about five p.m. the *Gorgan's* boats and the captured vessels were anchored two miles to the South of Mahatto Island, with the intention of holding out till morning. Towards night, however, the wind increasing, they became surrounded with breakers and a heavy sea, and at six p.m. Lieutenant Ross, finding the dhows had dragged their anchors nearly two miles, and were in danger of being driven on the reef to leeward, where all on board would most probably have perished, removed the slaves and crews from two of the vessels into the third, and then allowed the last dhow to make her way to the shore through a passage in the reef with which her crew were well acquainted, as the only chance of saving the lives of the wretched people. The two dhows left in the hands of the captors were then burned, and it was subsequently ascertained that the other vessel had made her way through the passage in the reef in the course of the night, and had reached the shore in safety. On board the vessel where the person styling himself King of Angoxa was found, the captors discovered two revolvers marked with the broad

arrow and the letters B.O., and respectively numbered 18 and 24. It is believed that these revolvers formed part of the accoutrements of the men of a boat belonging to the *Lyra*, who, about two years before the capture of these dhows were murdered in Angoxa River, it was suspected at the instigation or with the connivance of the Sultan or King of Angoxa. The King on being asked whether he had a Portuguese Muscat, or any other pass on board, produced a blank envelope addressed to Queen Victoria, which was the only document he possessed. It was reported at Zanzibar, and appears to be the fact, that that the King having been expelled from Angoxa—a most notorious slave market and a regular haunt for slavers and pirates—he was endeavouring, when intercepted by the *Gorgon's* boats, to escape with as many Negroes as he could lay hands on.

Dhow No. 14 was captured on the 6th of September, near Quilloa. She was fitted up as a slaver, had plenty of slave food, and an Arab crew of thirteen men on board, but neither papers nor colours. The crew admitted that they were bound for Quilloa to get a cargo of slaves. They were landed, and the vessel, which was of the burden of 109 tons, was burned. This place is called Keelwa in our charts.

Two dhows, numbered 15 and 16, were captured on the 11th of September, off Wasseen Reefs. The first was discovered about two p.m., and after having been chased for six miles, her crew ran her ashore in the mangrove bush, and were seen to drive the slaves, about sixty in number, inland. She was regularly fitted for the slave trade. Dhow No. 16 was discovered and chased at 6 p.m., her decks being crowded with negroes, apparently slaves. The crew in this instance also ran the dhow on shore into the mangrove bush, and, before the *Gorgon's* boat could get up, carried off the slaves into the interior. She was fully equipped for the slave trade. Both vessels were destroyed.

Dhow No. 17, a matapé, or large open shore boat, of the burden of seventy-five tons, was captured on the 13th of September by the *Gorgon's* pinnace, under the command of Mr. Hanson, the boatswain. She did not obey the usual summons to heave-to, and fired musketry and jingal balls at the pursuers, upon which the pinnace fired at her with shot. After a twenty minutes' chase she ran on shore into the mangrove bush. Neither papers nor colours were found on board, and both the crew and the slaves, of whom there appeared to be a considerable number, had left her, the slaves having, no doubt, been driven into the interior. She was destroyed.

The last of these dhows was captured on the 3rd of October last. On that day, two of the Ship's boats were cruising off Shella Point, when at eight p.m. they saw a dhow running towards the land. They endeavoured to intercept her, whereupon the dhow ran on shore, and the Arab crew on board were seen with drawn swords driving a crowd of slaves overboard. The boats boarded the dhow with as much expedition as possible, and the Arabs made their escape to the shore, leaving forty-four slaves on board, thirty-two males, and twelve females. The dhow was got off and brought alongside the *Gorgon* in

Kuryhoo Roads. The slaves were removed to the *Gorgon*, and the dhow anchored at the *Gorgon's* stern; but being leaky, she sank at her anchorage.

It is satisfactory to learn that the prompt and zealous action of Commander Wilson has given a serious blow to the traffic in slaves. The *Lyra* has gone North towards the Persian Gulf, in the hope of intercepting many of the vessels engaged in this abominable trade, and she will, no doubt, do a great deal to make the slave dealers' ventures unprofitable. The unfortunate negroes found on board some of the dhows captured by the *Gorgon* were landed at Seychelles.

That will do for English sympathisers with American slaveholders, said Rodmond, but the account of Dr. Livingstone's progress will be interesting to the Club. It runs thus:—

The Oxford, Cambridge, Durham, and Dublin mission to Central Africa has, since the commencement of its history, excited deep and wide-spread interest. The éclat with which it was originated, on the recommendation of Dr. Livingstone; the high zeal and energy with which its promoters started it; the attractiveness of the new and mysterious field it was to occupy, and the distinguished character and position of its leader, Bishop Mackenzie—the first Missionary Bishop ever consecrated by the English Church—all these circumstances combined to direct to it an amount of attention and of sympathy which seldom is attained by any enterprise whatever. And just proportionate to that must be now the sorrow, when we have to report the death of the two foremost and bravest members of the devoted corps. Bishop Mackenzie died on the 31st of January, and the Rev. Mr. Burrup on the 22nd of February following. When the news first reached the Cape, it was feared that the whole mission had been involved in one common and fatal disaster.

This has happily not been the case. As the correspondence elsewhere will show in detail, the party, as a body, have been eminently successful. Under the direction of Dr. Livingstone, they settled down in an admirable station high up the river, where the country is an elevated plateau, where the climate is tolerably salubrious, and where a dense population are immediately available for evangelising work. A church was speedily erected there, schools were established, the mission was organised in a business-like fashion, which still secures its prosperity and success; and it was only after all this had been accomplished, and the first fruits were already beginning to appear, that the Bishop and his right hand man were both stricken down with fever and removed to their reward. Expecting the arrival of a sister and a wife, the Bishop and Burrup set out on their journey down the Shire, intending to reach the Zambesi mouth.

While drifting along the river in a native canoe, their frail craft was caught in an eddy, they themselves were upset into the stream, and, worst of all, their medicines—an indispensable requisite to travel there—went to the bottom. Drenched as they were, they passed the first

night as best they could on the bank; fever seized them without any means being available to check its progress: they still continued their journey onwards, and in about twenty days more the Bishop was dead. His companion, Mr. Burrup, enfeebled himself, was barely able to direct the burial; and his faithful Makololo, bearing him on their shoulders in a litter made of branches of trees, retraced their course to the mission station, arriving there only in time to let the exhausted prostrate missionary breathe his last in the affectionate society of brethren and friends. Miss Mackenzie and Mrs. Burrup soon afterwards arrived at their destination, in company with Captain Wilson, the gallant commander of the *Gorgon*, who, at great risk to himself and the men who followed him, determined to see them at their long and perilous journey's end. Their anguish at the news awaiting them may perhaps be imagined, it certainly cannot be described.

This intelligence is mournful, but it is not such as should cast any discouragement whatever upon the mission. The death of these two brave and godly men was, as far as we may apply the term at all to such events as these, purely accidental. The surviving missionaries are still at their post, working with spirit and devotion and success; and by the present mail Dr. Gray, the Metropolitan Bishop of Cape Town, proceeds to England to aid with his counsel and practical experience in the immediate selection of a suitable successor to the departed and lamented leader of the enterprise.

And the Church of England will not be the only body who will enter the field thus laid open to Christian zeal and energy. The Rev. Mr. Stewart is now exploring the country in behalf of the Free Church of Scotland, with the intention of selecting the most fitting spot for a Scottish Mission. Other communities we are confident will soon follow; and assuredly there is ample room and verge enough for all of them. In sight of the dark heathenism which envelopes all South-Eastern Africa as with a pall, men forget the petty bigotries of denominational creeds, and seek only to propagate the sacred truths of our common Christianity. And as Mr. Stewart in his letter elsewhere writes, "if the Gospel be for all men, then, with time and labour, its peaceable fruits will as certainly appear in the lives of those who dwell now in African kraals as of those who live in European cities."

Dr. Livingstone seems to bear a charmed life, and defies the worst contingencies of travel with a perfectly fever-proof constitution. The intelligence received from him and from his expedition this month, is gratifying in the extreme. From his own letters it will be seen that his spirits are as buoyant, his energy as great, his style as graphic, and his success as distinguished as ever. When the *Gorgon* left in April, Mrs. Livingstone had joined him a month or two before, and he and his assistants, with the *Pioneer*, were well up the Shire, bringing along with them the new steamer *Lady Nyassa*, intended to navigate the Nyassa Lake. Since we had previously heard from him he had been eminently successful in his explorations of that lake, and of the country all around it.

The sheet of water thus added to the geography of Africa is some
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200 miles in length, with a varying breadth of from twenty-five to fifty miles, and forms one of the related chain of lakes of which the Tanganezika and Nyanza of Burton and Speke are the two northernmost—connecting the whole of this plateau with the watershed that supplies the fountains of ancient Nile. We have no space here to enter upon any detailed description, of which quite sufficient is given in the admirable letters of the Doctor himself; and can only briefly refer to another important gain which has been derived from the Zambezi expedition,—namely, the knowledge that the systematic slave-trade of the whole East African coast centres in the country round Nyassa.

The presence of Livingstone himself as the Consul of Her Britannic Majesty, has already done something to check the nefarious traffic there, and more will yet be accomplished by the operations of the mission in the neighbourhood. But it is a question well worth consideration, whether some more tangible support and protection should not be given to them. If the Nyassa be really the important centre of slave-trading operations that it is represented to be, surely it is worth our while to lay a firm hand upon it. If the Portuguese authorities are really so zealous as they profess to be in the suppression of the slave-trade, and at the same time are rendered almost powerless by the smallness of the force at their command and the great extent of coast that requires to be watched,—then it is high time that the British and Portuguese Governments came to an understanding which might enable them to co-operate together effectually for the extinction of this detestable system. And, lastly, if the Portuguese Government be unable, as would seem to be the case, to occupy efficiently the wide extent of territory to which it is understood to lay claim, then for the furtherance of commerce, for the development of this continent, and for the interests of humanity, it is highly desirable that such an understanding shall be speedily arrived at, with regard to territorial limits, as shall admit of the vast resources of English wealth and enterprise being rendered available for these most important objects.

Things have now come to such a pitch that to maintain a fleet of cruisers in the Mozambique Channel, to intercept and capture batches of unlucky dhows, such as in the batch condemned per the *Gorgon* by the Admiralty Court, is but an absurd waste of gallant energy and imperial money, unless something is done to cut off the supplies of slavery at its very source. This the Portuguese authorities have it now in their power to do, and the Foreign Office in Downing-street should without delay press and urge them at once to do it. The Chevalier du Prat, who has for many years so ably and so honourably represented the Portuguese Government at the Cape, and who has on innumerable occasions shown his zealous anxiety for the extension of civilization over the whole of Africa, proceeds to England by the present mail; and we are sure that his services, both in London and in Lisbon, might be made available and effective in accomplishing the great reform for which we now plead so urgently.

Let us now look at matters in China said Albert, and here is a letter which at once opens out the subject, dated 18th of May, from Shanghai:—

“Since the last mail left, continued operations against the rebels have caused some excitement in this place. The thirty miles round Shanghai, which the Admiral stated it was his intention to clear of rebels, must, I think, be now almost completed. We have yet to hear whether the English Government approve of Admiral Hope’s proceedings. In China, opinions are much divided on the subject, some maintaining that we ought to have remained perfectly neutral, and I believe that this would have been the case had our Government seen that there was any prospect of the rebels forming a Government of their own, but there was really none whatever.

Of course, all accounts from China go to prove what a wretched state the Imperialists are in, and how utterly unable they are to fight their own battles. Of the rebels, all that can be said is that they are a wretched and cowardly lot of thieves, vagabonds, and murderers, who burn, or otherwise destroy, every place in their route, and slay as many people as they possibly can. Our forces, in conjunction with the French, have driven them out of their three largest strongholds in this province, viz., Ning-poo, Sing-poo, and Kading—the latter place having been taken three weeks ago, and the two former within the last few days.

Accompanied by half-a-dozen friends, on Sunday last I went to Kading to have a look at it. We started at five o’clock in the morning, mounted on horses and ponies. On our road we found unmistakeable evidences of rebels’ presence. Every village we passed through was a mass of ruins, and entirely deserted. We accomplished the twenty miles in three hours; and, after having breakfasted, devoted some hours in looking over Kading—saw the breach in the wall through which our troops effected their entrance to the town; also some very awful sights, such as I fervently hope it may never be my fate to witness again. Traversing the main street, we observed in one house, which had an open front, six wounded rebels—in other places many more; and according to information I received from Major Taylor, of the 5th Bombay Native Infantry, there were altogether about 200 who had been more or less cared for. What would have been the fate of our men had they fallen into the hands of these miscreants? At half-past three o’clock we started on our return to Shanghai, which we reached in safety but much fatigued. . . . News has been received that the French Admiral has been killed by, it is said, a French soldier, who had deserted to the rebels.”

He could hardly believe the last assertion in this letter—but he had yet to read another letter which had appeared in the *Daily News*, that drew a sad picture of Chinese barbarity, in fact, showed them to be neither more nor less than fiends in human shape; monsters of creation. The truth of the letter had been doubted, as well it might be, for it related deeds of the devil. But here it is, and we have no doubt that the same Powers of the Evil Spirit which stalks about the

earth in the shape of that arch-monster MAN in the feasts of Dahomey, or the slaughter yard of Canton, under its late renowned Governor, the notorious *Yeh*, will be found to have been as busy with the unhappy prisoners the Taepings. The letter says:—

I went with the crowd to see the execution of the Taeping prisoners that had been given up for execution into the hands of the mandarins by the English and French authorities; or, what is the same thing, they took no measures to prevent the ruthless butchery of those they lent their aid to capture; when, horror of horrors! how am I to describe the dreadful scene, or will it ever leave my memory? Among those wretches were young and old, of both sexes, and of all ages and sizes, from the infant recently born to the man of eighty, tottering on his staff; from the *enceinte* woman to the young maiden from ten to eighteen. The latter were pushed out by the guards among the crowd of ruffians assembled, and were taken into sheds and by-places and debauched, and again dragged back by the hair of the head to the Chinese guards, to await their turn for execution. Some of them had fainted, and were pulled along the ground to the executioners, who threw them on their backs, tore off their clothes, and ripped them from the lower part of the abdomen to the breasts, which were cut off, and dashed with a curse in their faces. The bowels, as a matter of course, gushed out; but the cut was made in such a way, and so skilfully and with such expertness, that the intestine was seldom injured. After a little time in this state of excessive torture, the executioner thrust his hand into the chest and tore out the reeking heart, his victim looking him in the face all the while. A young female, apparently about eight month pregnant, who never uttered a groan or sigh at all the previous cruelties she had endured from the surrounding mob, had her infant cut out of her womb, and held up in her sight by one of its little hands, bleeding and quivering; when at the sight she gave one heart-rending piercing screech which would have awakened pity in a tiger, and after it had been in that state dashed on her breast, she, with a last superhuman effort, released her arms from those holding her down, and clasped her infant to her bleeding heart, and died holding it there with such force that they could not be separated, and were thus thrown together on the pile of other carcasses. Another young woman among the prisoners awaiting her turn to be disembowelled, with a fine boy of ten months old crowing and jumping in her arms, had him snatched suddenly away from her, and flung to the executioner, who plunged the ruthless knife into his tender breast before his mother's eyes. Infants but recently born were torn from their mothers' breasts, and disembowelled before their faces. Young strong men were disembowelled, mutilated, and the parts cut off thrust into their own mouths, or flung among the admiring and laughing crowd of Chinamen. But no more, I can write no more of these scenes; I can now only regret for ever that ever I looked on the dreadful sight. I am no longer fit to be a soldier. I have been in many battles during the last twenty years, and in the thickest of the fight in most of them, where a rage and thirst for carnage is dreadful to reflect on afterwards, but nothing

heretofore that I have seen or heard of, or even read of, could be compared to the dreadful cruelty of the disembowelling execution. Poor F——, who came with me to see the execution, fell down in a fainting fit, and was in that state carried away, and is now a raving maniac from the effects the dreadful sight had on him. May God forgive England for the part she is taking in this war, and may the sin of the enormities she has assisted in perpetrating on the defenceless woman and innocent and helpless child be removed from her door.

Come, come, said the Chairman, let us leave these things,

“To low ambition and the pride of kings,”

or mandarins with blue buttons, or what you will: let us stick to our tacks and sheets. Here is a list of ships lately sold, being the property of the late Mr. Duncan Dunbar. The first offered was the ship *Copenhagen*, 876 tons, built at Moulmein in 1855, classed A 1 thirteen years, Messrs. Ritherdon and Thompson being the auctioneers. The bidding commenced at £8,000 and after a spirited competition it was knocked down at £10,700. Messrs. Allan and Co., of Leadenhall street, were the purchasers. Afterwards, Messrs. Lachlan, M'Leod, and Co., the auctioneers, proceeded with the sale of the *Waterloo*, 898 tons, built at Sunderland in 1848, and classed A 1 for thirteen years. The biddings commenced at £3,000 and after a somewhat protracted competition, she was knocked down at £4,555, Messrs. Montgomery and Fox, of Liverpool, being the buyers. The sale of the *Minden* was next proceeded with, by Messrs. Bayley and Ridley. The *Minden* is 916 tons, built in the same year, and similarly classed. She was ultimately knocked down to Mr. W. O. Young, of Cornhill, for £3,500.

And here added the Commodore, is an account of the fete on board the beautiful yacht of the Vice Roy of Egypt, at Woolwich, and at which was present the Duchess and Princess Mary of Cambridge, the Duke of Cambridge, the Grand Duchess of Mecklenburg-Strelitz, the Grand Duke of Saxe-Weimar and Prince William of Denmark, the Turkish Ambassador and Madame Musurus Moustapha Pacha, Earl Granville, the Duke and Duchess of Somerset, the Duke and Duchess of Hamilton, the Duchess of Wellington, the Duke and Duchess of Sutherland, the Marquis and Marchioness of Aylesbury, the Earl and Countess Russell, Viscount and Viscountess Palmerston, Viscount and Viscountess Sydney, Lord and Lady Ashburton, Lady M. Alford, the Speaker of the House of Commons, and Lady C. Denison, the Hon. Charles A. Murray, the Right Hon. W. E. and Mrs. Gladstone, the Lord Mayor and Lady Mayoress, and a number of other distinguished persons. Covered by an awning, and enclosed at the sides, the whole of the space abaft the funnel of the beautiful yacht was changed into a conservatory. The whole of the afterdeck was shut in with plants in full bloom; a resplendent mass of colours, afforded by the groupings of pelargoniums, fuschias, lillies, roses, and cinerarias, surrounded the mizen-mast. Here was placed a golden candelabrum; there a crystal

tank with gold and silver fish flashing through its clear waters, and with a cool and pleasant fountain plashing and murmuring with a grateful sound, stood in the midst of a circle of rich silken ottomans. Vines, laden with drooping with immense clusters of grapes, trailed over the framework of the awning, as if their growth on that support had been one of many years.

Round the deck, at close intervals, were placed handsome circular seats, covered with scarlet morocco. The broad flight of stairs, leading down with a sweep right and left to the grand saloon, were enclosed in balustrades of crystal, and were carpeted with a three-pile tapestry. Below, the reception of the guests was yet more lavishly magnificent. The banqueting table was tastefully arranged, and covers were laid for fifty persons. Beyond some exquisitely chased and sculptured stands containing bonbons, and the rare fruits clustered in bouquets, this table was different from anything to be seen at home. In elaborately-worked silver stands, working on a pivot, were placed seven descriptions of wines. Next to the wines came a corresponding stand for raspberries, currants, and the most approved fruits of the season. Some of the dishes of Sèvres china cost one hundred guineas each. The Vice Roy drank only water, that from the Nile, during the banquet.

This is an event continued the Commodore which will long be remembered and celebrated, even at Alexandria, with the fete given to Egypt's Vice Roy, in the Egyptian Hall of London.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 384.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
10. Cape Trafalgar	Spain	36° 10' 5" N., 6° 1' 3" W.	R.	169	19	Est. 15th July, '62.
Monte Louro	Spain, North coast	42° 44' 2" N., 9° 4' 0" W.	F.	80	10	Est. 15th July, '62.
11. Ferrol, Palma Castle	Spain, N.W. coast	43° 27' 7" N., 8° 16' 1" W.	F.	88	9	Est. 15th July, '62. S.W. of town.
Cedeira, Point of Robaleira Promontory	Spain N.W. coast	43° 39' N., 8° 5' 4" W.	F.	88	9	Est. 15th July, '62.
12. Allpey	Malabar cst.	9° 38' N., 76° 20' E.	R.	100	15	Est. 28th March, '62.
13. Port Stephens	New South Wales	32° 44' 6" S., 152° 18' E.	R.	126	17	Est. 1st May, '62. (a.)
14. Hirtshals Point	Jutland	57° 35' 1" N., 9° 56' 6" E.	Ff.	182	21	Est. (intended) '62. A flash every fourth minute. (b.)

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

(a.) 13.—The tower is circular, coloured white, and sixty feet high, from base to the centre of the lantern. It stands on a knoll sixty-six feet above the sea, with Morna Point bearing S.W. $\frac{1}{2}$ W.; eastern extremity of Broughton Isles, N.E. $\frac{1}{2}$ N.; little islet, N.N.E. $\frac{1}{2}$ E.; South head peak or Toomerece, N.N.W. $\frac{1}{2}$ W.

When rounding the light it should not be approached within the distance of one mile.

(b.) 14.—*Amrum Island*.—Information has been received at the Admiralty that the revolving light supposed to have been exhibited from a lighthouse erected at the South end of Amrum Island, on the coast of Jutland, has not been established, nor is it now intended that any light should be shown on that island.

Hanois Light, Guernsey.—The Corporation of the Trinity House, London, has given notice that on or about the 1st day of November, 1862, a quick revolving red light will be exhibited from a lighthouse recently erected on the Hanois Rocks, off the West end of the Island of Guernsey, further particulars of which will be given.

DANGERS ON THE JAPAN COAST.

We find the following notices of dangers on the Japan coast in a recent number of that valuable daily paper the *Shipping and Mercantile Gazette*. The hydrography of Japan is in a condition that renders such notices most desirable, inasmuch as should they not be entirely trustworthy they serve as warnings of dangers that will place the navigator on his guard, but in most instances they serve to improve the charts. The position of the rock here mentioned has been corrected in our chart, agreeing thus with others in its vicinity, although not so with that part of the Japan coast off which it is found. But we caution our readers that although our chart of that ill known coast may be kept corrected, there must be many more such dangers as these quite unknown.

Captain Ranlett, of the ship *Golden State*, at Kanagawa, Japan, March 9th, from San Francisco, writes as follows:—

In lat. 29° 27' N., long. 140° 20' E., saw the high rock called in Findlay's *Pacific Directions* Lot's Wife. It was correctly described by Meares in 1788. It is not on Imray's or Blunt's charts. On Norie and Wilson's chart it is called Ormsby Rock. The lat. and long. are right in Horsburgh.

I saw some dangerous rocks above water when Fusi-yama bore North, as I judged about seventy miles, not on my chart. I suppose them to be Redfield Rocks. I anchored off Maya Town, and while there sounded on a shelf or rock not on any chart I have seen. It is not on Perry's chart. This rock I sounded over above 300 feet in thirteen feet water, at one-third flood tide. It bears about East from Gambrell Point; E.S.E. from the northern bluff of Maya Harbour; N. $\frac{1}{2}$ E. from Plymouth Rocks; and S.b.W. from the low point of Cape Kamisaki. The latitude and longitude of Ormsby Rock, Lot's

Wife, or Black Rock are correctly stated above, as the observations by my chronometers agree exactly with all the longitudes of points and known places on Perry's chart.

P.S.—At low water the kelp can be seen on the rock or Maya; a very dark black weed, spreading over a space of thirty or forty feet.

JAMAICA.—*Kingston, 7th June.*—We have to call attention to a reduction which will take place from the 1st proximo in the charge of dues for the Plumb Point lighthouse, off this port. Sailing vessels will pay 3d. per ton instead of 6d., as heretofore, for each voyage, while steamers will pay 1d. instead of 2d., and this only quarterly, instead of on every voyage.

CAPTAIN PETER'S SHOAL,—*Gulf of Mexico.*—H.M.S. "*Barracouta.*"

H.M.S. *Barracouta* on the 30th April made an unsuccessful search for Captain Peter's shoal, reported N. 59° E. twenty-one miles from San Juan d'Ulloa. No bottom was found by her anywhere with ten fathoms. Reported in a recent number of the *Nautical*.

NEW BUOYS,—*Reported by Mr. James Brown, Oban.*

Northern Lighthouse Office, Edinburgh, June 27th, 1862.

Bearings and marks for a fifteen feet Nun buoy, with mast and ball painted red:—Coast-guard watchhouse on Ratsay Head in line with highest notch on Mernon hill, N.N.W. $\frac{1}{4}$ N.; Kinnaird light-house just open of Whitelink house, N.W.b.N. $\frac{1}{4}$ N.; Buchanness lighthouse, S.S.W. The buoy lies in nine fathoms.

The Little Horse Shoe buoy was replaced at its station on 24th June.

A black buoy has been moored off Kirkaldy Spit, North of Leafield Vows.

The North buoy of the Rock Head is changed from black to red.

Sound of Kerrera.—A six feet buoy (*black*) is to be moored in three fathoms, outside the Little Horse Shoe Rock in Kerrera Sound, leading from southward towards Oban, Argyll. The following are bearings from the buoy:—Middle Bank buoy, E.N.E. $\frac{1}{4}$ N.; Puddingstone Point, S.E. $\frac{1}{4}$ E.; middle of rock, N. $\frac{1}{8}$ E.

A. CUNNINGHAM, *Secretary.*

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

SEPTEMBER, 1862.

THE WRECK OF THE BRITISH BARQUE "VALLEYFIELD," on the
Reef off Green Point, Table Bay, Cape of Good Hope.

The narrative of a wreck, besides the account of the unfortunate disaster itself, generally suggests a moral which should serve as a caution to those entrusted with the charge of life and property. And in this view of the unfortunate loss of the *Valleyfield* we preserve the following from the *South African Advertiser and Mail*, along with remarks on it by that paper. We do not join in those remarks, since an inquiry into it seems likely to be made, although a want of due precaution is naturally suggested by the circumstances related. We preserve, however, the remarks to which we have alluded. The wreck, by an extraordinary coincidence, happened on the 15th of June, the anniversary of the loss of the *Bernicia* on Robben Island.

"There can be no doubt that it was to a great extent the result of the imprudent daring of the unfortunate commander, who was the first to pay for it by the forfeit of his life. But we of the colony dare not, in justice, entirely exonerate ourselves from blame. The Robben Island light, though ordered out from England about twelve-months ago, has not yet arrived; the Green Point light, though good and steady of its kind, is by no means of the class it should be, considering the dangerous character of our coast and the long extending reef against which it is meant to guard; and at the spot where the wreck occurred, and where a similar catastrophe may happen during any of our winters, we had none of the appliances which should

always be available for the saving of life. A commission of inquiry will of course be appointed; strong censure pronounced where censure is due; and in addition to this we fervently trust that means will be adopted for promptly remedying all the defects which have on this occasion been so lamentably apparent. The whole system of our Table Bay lights must be remodelled and rearranged; and provision must be made at every exposed point for rendering immediate assistance wherever any disaster may occur."

Loss of the British Barque "Valleyfield."

The barque *Valleyfield*, William Burton, commander, bound from Liverpool to Table Bay with a general cargo, was wrecked on Sunday night, the 15th June, on the reef of rocks in front of the Green Point lighthouse. The vessel was seen off the port on Saturday, but in consequence of the threatening weather, she stood out to sea until Sunday, when the captain felt confident of being able to enter the bay and come to the anchorage. The weather was very thick and hazy, with a heavy sea running in shore. About half past five in the afternoon they sighted land, and between six and seven o'clock they saw dimly a light on their starboard hand, which was that of the Green Point lighthouse, but they thought it to be a good distance off. The vessel was standing E.S.E. with all sail set, and there were two men on the look-out. The first indication of their proximity to land was the sound of the breakers, which the look-out at once informed the captain of. The helm was then put hard up and the yards backed, but the vessel at the same moment struck, and in less than ten minutes she broke up and was a total wreck.

The residents in the neighbourhood, and even the lighthouse keeper, were quite ignorant of the unhappy fate of the vessel and her crew until some minutes afterwards. Mr. Bainbridge was one of the first to hear the cries of distress, and on going outside he at once gave the alarm of a vessel on shore. But there was no boat nor any apparatus at the lighthouse to render assistance to the unknown, nor was there a gun to give the signal to the port authorities in town. Mr. Bainbridge, however, fired a couple of shots from his carbine, as an assurance to those on the wreck that there was succour at hand; and in a few minutes he had his horse saddled and rode into Cape Town with the news, and to obtain assistance.

Captain Wilson, the Port-Captain, had his crew mustered, and, provided with lines and other gear, he hastened to the lighthouse very quickly—only to find the wreck strewed on the beach in a thousand pieces. One or two of the crew had ventured to swim and crawl ashore and four others had got in by the long-boat; but there were still some clinging to portions of the wreck whose cries could be heard. The darkness prevented their exact position being known; but fires were kindled as close to the beach as possible, so as to throw a light upon them. By means of a mortar and line it was endeavoured to attach a line to them, but, after repeated attempts to hit the exact spot, this failed.

The attention of the bystanders—a large number of the residents at Green Point and from Cape Town having now assembled—was directed to other means for rescuing the poor fellows on the wreck from their perilous position. Captain Spence, with Messrs. Bensusan, De Pass, Abrahams, and Captain Shiel, went off to Three Anchor Bay for a small dingy belonging to Mr. Joubert, which they soon carried to the spot; while Mr. Coleman, of Phillips and King's, provided a set of oars. The little boat was at length launched over the rock. There were volunteers enough to take charge of her, but Captain Wilson, who superintended the proceedings, entrusted the duty to Mr. John Roe, master-boatman, Captain Sheppard, formerly of the *Hebe Augusta*, and one of the port-boat's crew, named Hansen. A rope was attached from the land to the stern of the boat, so as to secure it; and with this they pushed off to the place where the seamen were, and rescued three of them, John Hodges, John Smith, and James Hunter. They reported that the captain and chief-officer were drowned, and no more souls remained upon the wreck.

The others who were saved had managed to get on shore by their own exertions. Four of them came in the long-boat a portion of the way, and then finding shallow water walked over the rocks. Among them was a little boy named O'Donnell, who was discovered by the lighthouse keeper crouching in the water, in great terror of what he supposed to be a South African lion, but which proved to be the keeper's faithful dog.

One of the seamen who got on shore in the long-boat states that the mainmast gave way immediately after the vessel struck, and he was washed over on the starboard side, receiving severe injuries on the back and loins. He managed, however, to get up again, and, with several others, he got into the starboard chains. The captain was with them at that time, but when the mizenmast gave way they were all washed off again, and the captain was not seen afterwards. This man again scrambled over the bulwarks and got hold of a rope, which happened to be the main-brace. He then saw the long-boat, and shouted to some others of the men to assist him, and in a few minutes they managed to get it out and pushed toward the shore. Passing along, they picked up the little boy O'Donnell, who was swimming about with a rope; and they also saw the cook, who told them that he felt the ground, and that they might walk on shore, which they all did. The steward, who also came in this boat, was the last who spoke to Captain Burton, just before he was washed away with the mizen-mast. He said to the steward, "If you get on shore take care of John"—his son, who has been saved. After the captain was in the water the steward tried to pull him out, but the old man's strength was gone, and he went down. He was upwards of fifty years of age.

The second-officer (Hodges) states,—“As soon as the vessel struck she leaned over on her beams and the mainmast gave way with a crash. I saw one man, John Williams, get jammed; he had his leg broke, he said, and I carried him into the cabin. I did not see him

after, for I had only time myself to scramble up through the skylight. The captain was carried away with the mizenmast. Another man had his arm broken. I stuck on to the fore part of the wreck for a little time, but I was washed away and I can't tell how I got on again. I picked myself up somehow and clung there until the small boat came and we were picked up."

For an hour or two after the crew had been got on shore crowds of people remained on the rocks. The scene was indescribably wild and exciting. The huge fires which had been kindled below the lighthouse shortly after the ship struck were kept replenished with the timbers which had been washed up from the wreck, and lit up the rocks and roaring breakers and small fragments of wreck which remained with a lurid glare. We could hardly imagine a more sudden and complete destruction. The fore part of the ship lay jammed up high among the rocks; a portion of the stern was just visible a little further out. It is barely possible to conceive that the waves could have such destroying power. In fact, blocks of timber, heavy casks and cases, lay thrown high and dry upon the ragged rocks; and when it was seen how these were hurled about and dashed to atoms, it seemed next to a miracle that any of the crew could have got ashore without being cut to pieces. The whole cargo lay strewn about in the wildest confusion. Books, pictures, pianos, music, tins of biscuits, confectionery, sardines, and hundreds of other luxuries and delicacies. Here and there dark objects were dimly discerned floating about among the rocks further out, and eager but vain efforts were made by some to reach them, for they might have been the bodies of some of the unhappy sailors, to whom animation might yet be restored if promptly rescued.

The names of the men who have been saved are: John Hodges, second-officer; James Hunter, carpenter; Richard Hamilton, steward; Duncan Campbell, cook; William Elliott, Michael Vichtstick, James O'Donnell, John Burton—the captain's son, and John Smith.

The following are those who were drowned: Captain William Burton, of Whitehaven; William Fair, chief-officer, of Liverpool; Henry M'Hardy, of Port Henry; George Morris, of Liverpool; John Williams, of Swansea; William Smith, of Halifax; William Carus, an apprentice, of Blackburn.

The following is the Port Captain's official report of the wreck, addressed to the Colonial Secretary:—

Sir,—I regret to inform you, for the information of his Excellency the Governor, that the British bark *Valleyfield*, of and from Liverpool to this port, 18th of March, William Burton, commander, was totally lost in attempting to enter the port after sundown last evening, having struck on the reef opposite the Green Point lighthouse.

The following are the particulars of this distressing accident, as near as I could gather from the second-officer and others. It appears that the *Valleyfield* was the barque which had been signalized from

the Rump on Saturday as standing in. The weather getting worse, with a falling barometer, they stood out for the night, in the hope of being enabled to run in on the following day. She appears to have been carried by the current further to the westward than was anticipated; consequently, did not get hold of the land till 4h. p.m. Captain Burton appears to have expressed himself as being confident of being enabled to run in and anchor, although a stranger to the port. They saw the Green Point light some time previous to the ship striking, bearing on the starboard bow; vessel steering E.S.E. under topsails, courses, jib, mizen, and main-top-gallant sails, with a good look-out and a man in the port main chains with the lead. As the vessel came abreast of the light, the look-out cried out "Breakers under the lee bow." The commander called out to the man at the wheel to put the helm down, when she immediately struck, the sea making a complete breach over the vessel, carrying away masts, boats, &c. Ten minutes after she struck she broke up, and in parting, the captain (W. Burton), the chief-officer (Mr. Fair), with others of the crew, were washed away.

The catastrophe was reported to me by Mr. Bainbridge, of Green Point, at about 7h. 30m. p.m. I immediately proceeded to the castle and communicated with Colonel Freeze to send out the mortar apparatus for the purpose of communicating with the wreck. I then despatched the boat's crew with coils of whale-line, &c., and hastened to the scene of the wreck, where I found two of the seamen had succeeded in getting on shore, four others following shortly afterwards by means of the long-boat and foremast. There were still some men clinging to a portion of the wreck which was entangled amongst the rocks; their cries could be distinctly heard, but, owing to the darkness, we could not see the exact spot where they were. A fire was burning and kept up close to the water's edge, which enabled us at intervals to distinguish their position.

The mortars having arrived in charge of Lieutenants Tollen and Lyons, R.A., we endeavoured to throw lines over where the men were, but could not succeed, owing to the lines repeatedly breaking. Meanwhile Captain Spence came and told me that a small dingy which he had got from Threeanchor Bay was available. Seeing that nothing could be done with the mortar and line, we had the boat launched over the rocks into a gully where the water was comparatively smooth, the tide falling. There were a number of volunteers to go off, but I selected Mr. John Roe, master-boatman, Captain Sheppard, and Thomas Hansen, one of my own crew. We bent on a good whale-line to the stern of the boat and launched her off, the drawback assisting them out. They got to the place where the men were and pulled them into the boat, namely, John Hodges, second-officer, John Smith, and J. Hunter, carpenter, the parties on shore in charge of the boat line assisting in hauling her up; and the rescued men were at once taken to the lighthouse in an exhausted state, where every assistance was rendered them by numerous gentlemen who were there. Having ascertained from the survivors that there were no

others left on the wreck, and as nothing further could be done, the gear which I had brought with me was placed upon a wagon, with the boat's crew, and returned to the port-office near midnight. I then informed the agents, Messrs. Searight & Co., of this distressing occurrence, and Mr. Ansdell at once proceeded to the wreck.

The portions of the wreck and cargo of the *Valleyfield* strewn along the Green Point beach were collected and sold on the 17th by public auction, near the lighthouse. The weather was wet and squally, but notwithstanding this a very large crowd assembled on the spot at two o'clock, and there was good competition at the sale. Mr. Jones was the auctioneer, and knocked down the wreck and cargo to the highest bidder (Mr. Henry Glynn) for £1,055. Immediately afterwards a considerable quantity of miscellaneous goods and property, which had been assorted in lots, was put up for sale and obtained purchasers.

About four o'clock in the afternoon the bodies of the dead were interred. They had all been washed ashore on the beach between the scene of the wreck and the breakwater, and they were laid out in coffins in the dead-room of the old Somerset Hospital.

The captain's son and the rest of the survivors (altogether nine in number) were present before the bodies were closed up in the coffins, and were evidently deeply touched by the sad fate of their late comrades. The grief shown by the captain's son was very distressing, and he clung to his father's remains until the last moment. The whole of the seamen spoke in the most affectionate terms of the deceased,—“A better old man,” they said, “never breathed than Captain Burton,” and each of them took a lock of his hair as a remembrance of him. The little boy, O'Donnell, was also observed to take a lock of the hair of one of the deceased seamen, who had on the night of the wreck safely lashed him to a spar and thus saved his life.

The funeral procession started from the hospital a few minutes after four o'clock. At the request of the men, the coffin containing the body of the captain was covered with an ensign and carried on their shoulders to the burial-place. The bodies of the eight seamen, conveyed in two vans, then followed. Mr. Ansdell and other gentlemen of the firm of Searight and Co. were present and accompanied them, together with a crowd of inhabitants. But only two shipmasters—Captain Sheill, of the *Springbok*, and Captain Loutit, of the *Kate*—were there, although timely notice of the ceremony was circulated in town.

The bodies of the chief-officer and seamen were interred together in one grave, and the remains of Captain Burton in a separate piece of ground. The Rev. Mr. Lightfoot read the impressive service of the Church at each place.

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

(Continued from p. 408.)

Wednesday, December 14th.—At noon we got away from Waitohi, and steamed down Queen Charlotte Sound in a tremendous squall of wind and rain, taking the Tory Channel; we carried the ebb tide, which was running like a sluice through the narrow passage, and by two o'clock the ship was clear of all dangers and in the open sea at the eastern entrance of Cook Strait: made all sail to a fine northerly wind, and got the propeller up.

It was beautiful clear weather, and we had good views of the coast about Port Underwood and Cloudy Bay. The country is hilly, with the valley of the Wairau, separating two of the highest ranges. Some remarkable white cliffs mark the South side of the entrance to the Tory Channel, which once seen could never be mistaken; this place would otherwise be very difficult to make in thick or hazy weather. The entrance to Port Underwood appears to be equally well defined. I noticed a considerable diminution outside (upwards of 7°) in the temperature of the sea water.

Rounded Cape Campbell at 6h. p.m., and the snowy range of the lofty Kaikoras was visible before dark,—a magnificent sight. About 10h. p.m. the wind began to fail and to come in gusts, the barometer falling rapidly; and shortly after midnight we were taken aback with the wind from S.W. There was a very ugly threatening look in the weather, so by way of precaution, although it was not actually blowing very hard, I close reefed the topsails and courses, and furled the mainsail; but the glass, which had been down to 29·16, began to rise directly the wind shifted, and before noon on the 15th we had a steady working top gallant breeze from the southward, right in our teeth, and fine weather.

Saturday, December 17th.—The wind has gradually died away, and as it was dead calm this morning, I got the steam up and rounded Banks Peninsula, fine bold land, apparently well wooded. We passed within a few miles of the entrance to the magnificent harbour of Akaroa, which once so nearly became a French colony (there are a few of the settlers still left), and shaped a course for Otago. The afternoon turned out remarkably clear, and we coasted along the "ninety mile beach;" Mount Cook, or rather the snowy peak of it, 13,000 feet high, distinctly visible, although fully a hundred miles distant.

Sunday, December 18th.—I got the propeller up yesterday afternoon, as there was a light breeze in our favour; but at half past four this morning we were obliged to proceed under steam again. Cape Saunders and the very remarkable cliff to the eastward of Otago, were in sight at 4h. p.m. The pilot, Captain Driver, was waiting for us outside the bar, and at eight o'clock we were at anchor in Port Chalmers in 6 fathoms, stiff mud.

The harbour of Otago is an estuary, about fifteen miles in length,

with a bar at its entrance, which vessels drawing nineteen feet may cross in fine weather at high water; but a short distance inside, the progress of anything drawing more than seventeen feet would be stopped by a shoal, which appears to have grown up since Captain Stokes's survey was made. Memo.—a good light on Tairoa Head would be a great boon to shipping. About seven miles from the entrance, and a mile North of two well wooded islets, standing apparently right across the channel, is a snug cove called Port Chalmers, with a little town in it struggling into existence. Shoal water prevents vessels of any considerable burthen proceeding further than this point. Dunedin, the provincial capital, stands at the head of the harbour, about eight miles higher up, and there is communication between it and Port Chalmers by small steamers, twice a day each way. By land the transit is not so easy, the country between the two places being densely wooded, a forest of the most valuable timber, black, white, and red pine, &c.; a road has been cut through it at great expense, and about four miles finished and metalled. The remainder of the distance, if ever completed, will cost an immense sum, but the gradients are much too steep for even bullock drays, and another line presenting fewer difficulties has been already surveyed. The shores of the harbour are wooded to the water's edge, and the scenery is not unlike that of Queenstown Harbour above Haulbowline, but very much grander. Very little has been done yet by settlers in the way of clearing,—a few log houses, perhaps a dozen, are scattered over the whole extent.

On Monday, December 19th, I left the ship in a small iron steamer for Dunedin, with his Excellency and suite, and landed at a small pier where a crowd of the principal inhabitants was assembled to welcome us with loyal manifestations. The site of the city has been well chosen; the harbour, although here unfortunately shoal, expands into a broad sheet of water; to the eastward a narrow strip of sand separates it from the ocean, and what is now a peninsula to the North of it, has evidently once been an island; rearward the land rises rather abruptly in some places, but there is ample level space for a respectable sized town, which indeed is spreading out now in all directions. Dunedin is not yet in its teens, but its advance has been even in a greater ratio than the earlier settlements of New Zealand. It was in 1848 that the first batch of colonists arrived here in charge of Captain Cargill on board the *John Wickliffe*. For some time, owing to the attempt that was made to confine the settlement to members of the "Free Kirk," it made very little way: but when this absurd regulation was relaxed, and the great and valuable capabilities of the colony as a grazing as well as an agricultural country were generally made known, the progress achieved, especially during the last three or four years, has been most satisfactory. The soil is wonderfully fertile, seventy bushels of wheat have been taken off a single acre; and I was told of a plot of six acres which produced 630 bushels of oats. It may be mentioned here that the average yield of wheat per acre at Otago is 36½ bushels, while it is only 20 at Melbourne, 17 at Sydney (New South Wales), and 13 in Tasmania.

The wool here is considered superior to any in New Zealand; the average weight of the fleece is 7lbs., and the price in the London market is 1s. 7d. a pound;* the superiority of the Otago wool to that of the other provinces in the colony is owing, I was assured, to the equable temperature all the year round.

Labour just now is very scarce and of course very dear; labourers employed by the government on the roads get 5s. 6d. a day and their rations! Skilled labour is in proportion: sawyers can earn 25s. a day. Truly there is a fine field open for the emigrant here.

Of course I paid my respects to the superintendent, whose acquaintance I made on board the *John Wickliffe*, at the Motherbank, in 1847. Captain Cargill, the leader and founder of this settlement, is a direct lineal descendent of the celebrated Donald Cargill, the Cameronian minister, who, having been hunted from place to place during the persecution in Scotland in the reign of Charles II, suffered martyrdom at the Grassmarket, Edinburgh, in the year 1680. He is himself no ordinary man, a perfect patriarch, having no less than forty-three grand children, of which number twenty-three are living in the province: increasing age, for he has long passed the allotted three score and ten, and bodily infirmities oblige him to retire from public life, and in January his place will be supplied by another superintendent, who will find himself in charge of a most thriving community.

Last year the exports of Otago amounted to over £47,000, of which wool figured for the sum of £38,215, and grain for £8,500: the imports were £96,620.† The European population of the province was 6,944; and the revenue from the customs for 1857 (I could not obtain the amount for last year) was £8,218 collected at Otago, and £332 from Invercargill or the Bluff, the southernmost port of the island, in Foveaux Straits. These figures are suggestive, and speak volumes for the industry of this young community, £2 1s. being the amount of gross revenue raised per head of population in England.

On Christmas Eve I dropped down the harbour and anchored outside the bar, to wait there for the Governor, who came from Dunedin in one of the small steamers, and landed above the Pilot Station to pay a visit to a Maori pah and native school, in which his Excellency takes much interest. I had taken on board the day before fifty tons of coal at fifty shillings a ton, hauling alongside a hulk at Port Chalmers belonging to Mr. M'Andrew for that purpose. In the afternoon the Governor came on board, with a large party of the most influential inhabitants to bid him "Farewell." And after they left, about 6h. 30m. p.m., we stood out to sea, steaming into the offing, and lifted the propeller.

"Christmas Day." We had a pleasant breeze all night from

* The best Lincoln is worth 1s. 8d. In Mecklenburg Schwerin the average weight of the fleece is only 3½ lbs., but it is worth 2s. 6d. a pound in London.

† This was written before the gold discoveries were made, and the progress since may be judged by the fact that the exports, which in 1850 amounted to £83,720, had increased last year (1861) to £844,419. The imports from £243,871 to £869,733!!!

N.N.E., drawing gradually round to the westward, so that we made very little way towards our destination, which is Port Cooper. The following morning the wind shifted into the southward, and finally settled in the South-west, and we rattled along with studding sails set; by noon Sir Joseph Banks Peninsula was in sight. The wind freshened to a gale, and as it would have been impossible to work into port against it, I brought the fires forward and proceeded under steam at five o'clock, anchoring off the town of Lyttleton at 7h. 30m. p.m., in $4\frac{1}{2}$ fathoms, veering to half a cable, as the squalls were very heavy. We should have taken up a much better berth, but the *Iris*, with Commodore Loring's broad pendant, which arrived here yesterday, was moored a long way out, and I thought it right to anchor near her.

The so called harbour of Port Cooper is nothing better than an inlet, with no protection from the sea, which comes tumbling in when the wind blows between the North and East points. The holding ground is far from good: it is therefore not a secure anchorage, and as the weather is frequently very unsettled and always squally, owing to the height of the surrounding hills, it is a very unsafe place for sailing boats. There is a small pier at Lyttleton, which is being improved; coasters can now load and discharge alongside.

This is the port, par excellence, of the province of Canterbury, for it is the only one yet available, owing to the want of a good road to Akaroa. Here all the wool produced on the extensive sheep runs is brought for shipment: the value this year amounts to £90,134. Christchurch, the capital of the province, is situated on the edge of an extensive plain about eight miles from Lyttleton; to reach it, however, a very high hill has to be crossed. There are two roads; one only a bridle path, the other, called the Summer road, about four miles longer, is practicable for vehicles, but cannot be considered very safe, being scarped along the face of the hill and carried very near the edge of the cliffs which overhang the harbour. Very few goods are conveyed this way; nearly all, both exports and imports, are carried by water in vessels of light draught to and from the Heathcote River, which falls into the sea to the North-west of Banks Peninsula. In 1858 the exports amounted to £108,713, the imports to £216,183; and both are rapidly increasing. The revenue from the customs at Lyttleton reached in the year just closed upwards of £30,000; in 1857 it was only £18,465!

About three miles from Christchurch, at the foot of the hill, in a pretty situation close to the Heathcote River, is Cashmere, the seat of Cracroft Wilson Esq., a retired Indian judge, to whom Lord Canning has accorded the proud distinction of having by his courage and determination saved more European lives during the late rebellion than any other man in India, which empty praise is all he has yet received in return for all the sacrifices and hair-breadth escapes he underwent.*

* Since the above lines were penned this gentleman has been gazetted C.B. for his distinguished services; his friends had justly hoped that a distinction more worthy of his merits would have been awarded.

And now he has cast his lot in this goodly land with every prospect of becoming a successful colonist. From this gentleman, my near connexion, I gleaned some valuable information relative to the sheep farming of the province and of this district in particular, which would be out of place here; suffice it to say, that although a most profitable occupation everything is not *couleur de rose*. One of the drawbacks to prosperity proceeds indeed from so singular a cause that I cannot help recording it: namely, the ravages made among the lambs by the wild pigs: so serious have these become that some check is considered absolutely necessary, and rewards are now offered for pigs' tails. In 1858, Messrs. Clifford and Weld gave out a contract for the destruction of three thousand pigs on their run, consisting of about sixty thousand acres. This was executed in three or four months, but without any apparent diminution of their numbers. Some four or five run-holders, holding a block of perhaps three to four hundred thousand acres, then gave a contract for twenty thousand tails, but owing to some differences between the proprietors this was broken off when two thousand had been killed, upon which Clifford and Weld gave a contract for five thousand more on their own run, which is being rapidly carried out. Ninepence a tail is the price paid, and this is not done till the contract is completed.

The province of Canterbury was founded in the year 1850 by the Canterbury association, and as a pastoral country it has made the most rapid and satisfactory progress. Its European population is upwards of ten thousand, and Christchurch bids fair to become a handsome town. All the buildings at present are of wood, but good models have been followed, such as may be seen in the old city of Chester. The new legislative buildings, far advanced in construction, will be very handsome, with quaint corbels and finials, and Louis Quatorze zinc roofs. The Wesleyans appear to have taken the lead in the church architecture here, as they have at Melbourne; a pretty spire of open woodwork, attached to their place of worship, is now about having the last touches put to it. A grand episcopal cathedral is projected. A beautifully deep clear stream called the Avon flows through the town and to the sea by the same entrance as the Heathcote, but the navigation of both rivers is impeded at the mouth by a dangerous bar. In these waters the "watercress," uncontaminated by frogs, which are unknown in New Zealand, grows with the greatest rapidity and luxuriance.

The general aspect of the Canterbury plains is not inviting at this season; about fifteen thousand acres are under cultivation, the rest is covered with tee tree and fern intermingled, presenting a sombre appearance: much of the land is tough clay, but when the scrub is burnt off, and the soil cleared, it requires but little labour to convert it into excellent wheat land: the steam plough might be worked to advantage here. The sheep runs require no preparation; the flocks roam over extensive tracts of many thousand acres; but it takes three and sometimes more acres to depasture a single sheep. Whereas, in the province of Auckland, where the land is prepared for the reception of

sheep by sowing clover and artificial grasses, the meadows will feed from five to eight sheep per acre. There can be little doubt in my mind which system will prove most remunerative in the end. Here, in the "Middle Island," the sheep "runs" are being rapidly absorbed. In Auckland the sheep "pastures" are becoming greatly enlarged, and the production of sheep and wool is keeping pace in a corresponding ratio with the means thus provided for their increase.

During the eleven days we remained at Port Cooper the weather was very variable; gales of wind succeeded each other rapidly from every quarter, and the storms of dust at Christchurch were as bad as any I ever experienced, even in Egypt. I was almost thankful to get away from such a climate, although it is but fair to add that the weather was considered very unusual.

January 6th, 1860.—The Governor re-embarked this evening, and at 4h. 40m. a.m. the following morning (Saturday the 7th) we stood out of Port Cooper, with a strong southerly wind, and got the propeller up as soon as we were clear of the entrance. The *Iris* followed us out. There was a nasty sea on, the effects of a heavy gale, and the two ships kept together till the following afternoon, when the commodore parted company, being bound to Wellington, and I steered to the northward.

At daylight on Monday Cape Palliser was in sight; fine bold land, well wooded, and uncultivated. The wind now died away, so the steam was got up, and we proceeded, coasting along shore and across Hawkes Bay, but too far off to make out anything of the infant settlement of "Napier," the capital of the province lately established here. Hawkes Bay became a separate state in 1858, and it has since made rapid strides, being in much estimation as a grazing country.

At sunset on the 10th we were abreast of Portland Isle, so called from its resemblance to its namesake at home. There is a dangerous rock off it, bearing N.E., four and a half miles, mentioned by Cook; it breaks very rarely: we caught sight of it, however, and passed about three miles outside. We stood on all night under easy steam, the weather being clear and water smooth. Rounded Young Nick's Head at 3h. a.m., on Wednesday the 11th, and at daylight anchored in 5½ fathoms in Poverty Bay, close to the entrance of the Turanga River, and within a quarter of a mile of a ledge of rocks which project to seaward, but affords no shelter even to the very smallest craft. This is in fact a very exposed place, and with any wind blowing "on shore" it would have been next to impossible to communicate; fortunately it was a dead calm during the whole time we remained. It was here that our great circumnavigator, Cook, was so disappointed in obtaining refreshment for his people, which induced him to give it the name of Poverty: I imagine it will earn a very different appellation some day, the land being as rich as any in New Zealand: all is still, however, in the hands of the natives, the government not having made any arrangement yet for the purchase of their claims, and private individuals are precluded by a law, which is at once impolitic and unjust, from opening negotiations with them on this subject. For my

part I am unable to comprehend why it is considered necessary to the successful colonization of the country that the Crown should monopolize the right of purchasing native land, thereby virtually compelling its owners to dispose of it at a price far below its market value. This method of dealing with the natives is a fertile source of distrust, and must lower the character of any member of the government who is not above land-jobbing while holding office. It would be a wise resolution, therefore, of the government to give up land dealing and remove those restrictions which at present prevent the native owner from disposing of his land in the open market and obtaining for it its real value.*

I had sent a boat ashore directly we anchored to announce the Governor's arrival, and at noon his Excellency landed on the ledge before mentioned, as no boat could enter the little river on account of its being dead low water.

The country is very beautiful, and the river deep and abounding in fish; our seining party was very successful notwithstanding the stakes driven in to mark the channel. Immense quantities of crayfish are taken here by the Maories, and there is a considerable trade with Auckland carried on in little coasters, which can come alongside a jetty in front of the only house here, about a quarter of a mile inside the bar. Our missionaries are actively employed in this locality. There seems, however, to be a bad understanding between the natives and the European squatters who have established themselves inland.

On the afternoon of the 12th the Governor returned on board, having been received with marked incivility if not rudeness by the natives: one had the impertinence to ask his Excellency what right he had to hoist an English ensign over the house he slept in (a matrimonial alliance with the gunner's daughter would have done this individual good). Another, we were told, had, during Divine Service on the previous Sunday at the mission station, when the prayer for the Queen was read, got up and said,—*your* Queen not *our* Queen!

There were, however, many loyal subjects of her Majesty, and a large party came off with the Rev. Mr. Williams, one of the missionaries, whom I permitted to go over the ship, with which they appeared much astonished, this being the first war steamer that ever appeared in these waters.

At 6h. p.m. I left Poverty Bay under steam and sail. There was a light land wind, with heavy rain squalls, which kind of weather is rather against the Maories gathering in their harvest, just now ready

* These views have been endorsed since by a good authority; Sir William Denison, Governor General of New South Wales, wrote as follows to Governor G. Browne:—

“With regard to the alienation of land, might there not exist a well founded distrust of a government which, while it did not permit the sale of land to individuals, does, by holding out inducements which few savages are able to resist, acquire the article which the Maori has to sell at a very low rate, (six-pence or a shilling an acre,) which article is instantly retailed to the white man at ten shillings an acre!”

for the sickle. We passed well inside the dangerous Ariel Rocks, and at 8h. a.m. on Friday the 13th, were abreast the island off the East Cape.

Captain Steward, the Governor's Secretary, who has had much experience on this coast, and is a most observant man in everything relating to the weather, had prepared me for a gale of wind off this cape. Hitherto all his predictions had been fulfilled; this once they were falsified, for the weather was magnificent, and we enjoyed a good view of the land, which is dotted with settlers' huts and Maori villages near the water. The high ground behind is uncleared and seems a dense forest. I steamed well to windward of the cape, and after exercising at general quarters, made sail and got the screw up. The wind was dead on end, with a nasty head sea, so we made very slow progress.

Sunday, January 15th.—We did very little yesterday, but this morning we were well inside the bay of Plenty, and as the wind declined to almost a calm, I got the steam up, and stood for "White Island," on which there is a volcano in active operation, being determined to pay it a visit if possible, as such an opportunity may never occur again. The white cloud of smoke that always hovers over it was in sight before eight o'clock, in shape like a huge palm tree, and at eleven the engines were stopped about half a mile off, and H.E. the Governor gladly accompanied me ashore, with all the officers of the ship that could be spared from duty.

As we approached the island, its aspect was of the most singular and forbidding description. Except on its northern face, to which the sulphureous vapour does not appear to reach, it is utterly destitute of vegetation: here there are a few patches of underwood; but in every other direction the island is bald, bleak, and furrowed into countless deep-worn ravines. The centre of the island has been hollowed out by the crater of the volcano into a capacious basin, almost circular, and excepting to the South, where there is a huge cleft or rent, its sides or edges rise, almost perpendicular, full eight hundred feet from the base. After some trouble, patiently waiting and carefully backing in with the swell, a landing was effected on the South side, when a most extraordinary sight was displayed to our view. Before us, in the hollow of the basin, was a lake of yellow looking liquid, smoking hot, about a hundred yards in diameter, as near as could be guessed. Around this, but chiefly towards the North side, were numerous jets of steam spouting out of the ground; a strong sulphureous smell pervaded the atmosphere, and warned us what was to be expected from a nearer proximity to the crater in active operation at the further end of the lake, to which, nothing daunted by its appearance, our party was determined to penetrate. Our advance was made cautiously; the surface of the ground was in some places soft and yielding, and we knew not to what brimstone depths an unwary step might sink us. There were little ravines to be crossed, which had to be first carefully sounded. As we proceeded on the soft crustaceous surface, little diminutive spouts of vapour would spit forth as if to resent our intrusion. In skirting the edge of the lake, its temperature and taste were both

tested: the former varied with the distance from the seething bubbling going on at the extremity; in some places the hand could be kept in, but 130° was the highest registered without risk to the thermometer by Mr. Lawrenson, Assistant Surgeon: the taste may be imagined, but not described!

Continuing our advance, the roaring and hissing became louder and louder, as though a hundred locomotives were all blowing off together, while the steam from the crater and numerous geysers surrounding it was emitted in huge volumes, ascending full two thousand feet into the air. Most fortunately it was a perfect calm, or the fumes of the sulphur would alone have sufficed to stop our progress; but there was also every reason to believe, judging from the description I have by me of a former visit, that the volcano was to day in a more quiescent state than usual. Everywhere sulphur was strewed around, and we had only to enlarge any of the vapour holes to obtain it in its pure crystallized state. We were now within a few yards of the crater,—huge bubbles of boiling mud were rising several feet from the surface of the lake,—the heat and sulphureous vapour were almost insupportable,—it was evident that no animal life could long exist here. But before leaving this cauldron, one of the mid., more venturous than the rest, climbed up a small semi-detached hill, and his example being followed, we beheld a display which beggars all description. In full activity a roaring fountain shot up into the scorching atmosphere: we deemed this to be molten sulphur, but no flame was visible in the daylight; stones were thrown in, but they were projected into the air as high as the ship's mast-heads. It was a sight never to be forgotten; and we retraced our steps to the boats with the satisfaction of having been permitted to make a closer inspection of this grand natural curiosity than any previous visitor. We saw no indication of either animal or insect life, and it is not likely that any can exist on this island. On the beach, which was composed of large boulder stones, lay the bleached bones of an enormous whale, and a couple of whale-birds hovered round the boats as they pulled back to the ship.

At one o'clock we bade adieu to this extraordinary island and stood to the northward, passing very close to three remarkable islets, one of these appeared like a perfect spire, on a N.W. bearing; another, like a fortified castle, reminding me of Melilla, on the Riff coast. * *

Shaped a course for Cuvier Island, which we rounded at 4h. a.m. on Monday; at nine o'clock Cape Colville, the extreme North of the Coromandel district, was abeam, and before one p.m. we were at an anchor off the Wynyard Pier, at Auckland once more, having been absent eight weeks and two days on this very pleasant expedition.

(To be continued.)

THE MEDINA BANK, S.E. OF MALTA,—By Captain Spratt, R.N.,
C.B., H.M.S. "Medina."

Before the soundings required in connection with the new sheet of Malta were finished, the calm moonlight nights induced me to stretch out to the new banks S.E. of the island that had been unexpectedly found by our casual soundings last year, when returning from the Syrtis and Cyrene. As these banks raised the question of the possibility of finding a shallow upon them, that might have originated the belief in the old story of a rock to the eastward of Malta by many old Mediterranean pilots and captains, my first object was to define their limits, so as to recognize any indications of their shallowest heads.

This I had effected to the extent shown in the enclosed chart when the change of weather and want of coal obliged me to return to Malta.

The extent of these banks to the eastward by this examination was found to be much greater than expected. They have, however, a very steep and deep slope on their eastern side, descending from 200 fathoms to over 1,000 fathoms within a distance of five or six miles. And although extending out in a spur to a distance of 120 miles S.E.b.E. from Malta, they still leave the old suspected position of the rock (viz., from East to E.S.E.) with water much too deep for its possible existence there.

The shoalest part found by us is a large patch at the western extreme of the banks, with 74, 80, and 90 fathoms upon it, distant from sixty to eighty miles S.E.b.S. of Malta. The bank itself runs nearly East and West, in the parallel of about $34^{\circ} 55'$, for about seventy miles in length. It also seems to be separated from the "plateau" extending from Malta by a narrow gully or deep of not less than 200 and 300 fathoms. But yet it has a shallower connection with the Karkesia Bank and coast of Tripoli.

This curious and extensive submarine plateau, between the S.E. extreme of Malta and Tripoli, bearing some resemblance to the Adventure Bank, between the N.W. extreme of Sicily and Tunis, has induced me to name it the "Medina Bank."

Then, again, as that bank has its Skerki Rocks and Keith Reef on its outlying margin, with very deep water near them, it is quite possible that it may have a shallower head than we could find (although not a danger); and thus originated the old reports which have caused so much anxiety to the mariner navigating these waters in the early part of this century.

Should these apprehensions be again revived by any future report of such a danger on the Medina Bank, the shallow heads of it being now shown, where such a danger might possibly be found, they may then be more carefully sounded. In fact, those parts may be then examined in such detailed manner as would be then both desirable and necessary, so as to relieve the mind of the seaman of all doubt on the

subject. The scale of the chart on which our soundings are laid down will materially aid in this, and I shall pass over it on my way to the Levant, with the view of adding to the information obtained of this very remarkable and interesting submarine bank.

The soundings obtained lead to the conclusion also that the shallowest submarine line connecting Sicily and Europe with Africa is by the Medina Bank, instead of by the shorter line across the Adventure Bank to Tunis.

There is also this remarkable coincidence in these two banks, inasmuch as each has a narrow gully or dip of about 300 fathoms' water through it, thus representing to a certain extent the two straits of the Bosphorus and Dardanelles, with the Pantellaria Basin and deep as a Sea of Marmora lying between them.

The existence of coral reefs, realising in a few days' fishing a considerable sum of money, having been unexpectedly discovered near the coast of these islands, I have been requested by his Excellency the Governor to ascertain the position and extent of these reefs for the information of the authorities, with the view to their prospective importance to the island and to the maintenance of proper supervision and regulations regarding the crown rights in such a matter.

HABITS AND CUSTOMS OF THE HAWAIIANS.

This topic leads me to notice the simplicity of native manners and their domestic life. Several illustrations of these themes were presented to me on my way to Kualoa, but they were insignificant in comparison with those I subsequently met in the progress of my tour over the group. While pursuing my way along this shore I was occasionally overtaken or met by some native, smiling all over his face and accosting me by the national word of greeting—*Aloha!* (love or salutation to you). Sometimes they will accompany you side by side for miles, and, excepting this single word of greeting on meeting and parting, not a syllable will escape their lips. Others, again, are as clamorous as a company of Arabs asking for *bakshish*. Whether the Hawaiian offers a real greeting or not, nothing can harrow up his feelings more than the traveller's refusal or omission to return the compliment by saying *Aloha!* Very probably at the moment of parting their taciturnity may fly away or the current of their clamour become changed, and then their sole talk is about the *haole* (foreigner.) Every feature, the colour of his hair, beard, and eyes,—every article of dress he has on,—his proficiency as a horseman,—everything becomes the theme of their ridicule or praise; and they will remember that foreigner again after the lapse of years.

In their style of living they are just as simple. They know little or nothing about artificial wants. With their ponds well stocked with

fish, their beds of taro flourishing close to their doors, their stock, requiring little or no care, increasing around them, they appear to be the happiest beings on earth.

To a certain extent they are an agricultural people. Such they were observed to be when first discovered, and such they have been from their earliest history. In this respect they differ from the aborigines of the continents of North and South America; and yet, in some relations, they seem to have descended from the same primitive Oriental stock. Until the downfall of idolatry, the Hawaiians maintained a system of pagan worship the most cruel, bloody, and debasing ever known, while the latter are more of a nomadic race, retaining an immaterial worship. Both races are, or have been, powerful and warlike, and both are passing rapidly away.

By this time the road had left the shore and resumed its course over the plains. While trying to select a good crossing place over a narrow ravine my horse's hoofs casually stumbled against a low mound. I immediately perceived it to be a funeral mound, probably of some native. The top of the grave was rudely protected by a covering of coral rocks, that looked as though they might have been there during several generations. By whose hands it had been dug, or by whom it was tenanted, I did not, could not ascertain. There it stood, near the sea shore, all silent and solitary. Not a single wild flower grew by its side to gather a few of the tears of night, not a blade of grass flourished around it. There was no indication that human footsteps came or went on any errand of touching memorial. In all probability the only requiem ever wafted over that grave was sung by the foaming surf that incessantly thundered on the contiguous shore. No man knows where he shall rest his bones—I knew not where I might leave my own. I turned away from that grave with a subdued spirit, hoping that peace might for ever reign over the ashes of the profound sleeper.

At a short distance beyond this funeral mound sat a group of which any painter might justly have been proud. It consisted chiefly of a party of native girls. Their hair and necks were ornamented with the gay flowers of their native *ohelo* (*Gualtheria penduliflorum*), as beautifully interwoven as if done by fairy fingers. They appeared as unsophisticated and happy as if they were strangers to every sorrow—more like the descendants of the "children of the sun," who dwelt amid the glories of an unfading Peruvian summer, than the offshoots of a degraded race. From such beings as these, so beautiful, bright, and happy, the old poets surely fabled their genii and naiad queens!

The chief figure in the group was an old man, who seemed to be the centre of their joys. His appearance was decidedly patriarchal. A long white beard flowed gracefully down upon his chest. A few white locks were sprinkled around his temples. When he smiled his eyes sparkled with unaffected delight, and his parted lips revealed a complete set of the finest teeth I have ever seen. Nearly a hundred summers had shone upon him, and his simplicity of appearance was increased by a long wreath of wild flowers which one of those be-

witching girls had placed on his neck. He was reciting to his little audience some of the tales of his youthful days. Truly they must have been of a thrilling nature, for he had lived during the sanguinary struggles that achieved the consolidation of the entire group under the sway of old Kamehameha I.; he had witnessed the annihilation of several pagan temples, and the destruction of 40,000 idols! This little group seemed as bright as the sun in whose rays they were basking; nor was it any wonder that those young girls should crowd around the venerable old man as he told them of past generations.

This picture was primitive in all its associations. It conveyed to my own mind a vivid idea of the early races of the great family of man. I could not but believe that mankind were far happier then than now, and I almost wished for a return of the patriarchal age. The patriarchs dwelt in tents, but they were ancestors to the greatest nations of ancient days, and they could step to the thresholds of their plain and honest abodes and look up to their future homes—the stars, and in their light and glory they could read the first truth in Nature and Revelation, the great central truth to which every reasonable man clings—“There is one God!” In this position they were infinitely happier than the proudest member of the long dynasty of the ancient Pharaohs.

Of all the characters on the group none is more interesting than that of a native judge. A singular specimen of this *genus homo* I found residing within the precincts of Kualoa. His house was constructed on the native plan, but his domestic comforts were rather superior. He was a judge, and that made the difference. He resided in the centre of a village containing six or seven other dwellings. His legal profession constituted him a sort of lord over his surrounding brethren, for they all looked up to him with feelings somewhat akin to reverence. He had no rosewood bookcases, well filled with elegantly bound and ponderous volumes; but a single shelf contained his papers and some half dozen books, from which he had drawn his legal inspirations. His house contained a few articles for domestic use that would not have disgraced the residence of many a thoroughly civilised man. Everything was arranged with scrupulous care as to the best side being placed towards the gaze of the visitor, and all was proverbially neat and clean. He had so adjusted the insignia of his office that his countrymen might at once be impressed with the majesty that civil law extends to its faithful disciples.

The judge himself was a fine-looking fellow, about six feet high, well proportioned, and with a hand that might well have belonged to a high-born patrician woman. His entire physiognomy was that of a lawyer.

It happened that two natives were present, seeking the adjustment of some private difficulty. The question having been proposed, a solemn silence pervaded the entire dwelling. His honour sat perfectly still, and an awful solemnity shrouded his countenance; while his “better-half” sat down on the mat-covered floor, looking him directly

in the face all the time. The gaze of the two men was not less intense. After some minutes' deliberation this painful silence was broken,—the defendant was fined several dollars, while the plaintiff seemed to think himself a lucky fellow, and went away with a lighter heart and more pleasant countenance. The little court was dismissed, and his honour deposited his fees in a deep recess in his nondescripts, evidently satisfied with himself and his own profession.

I have already referred to *taro* plantations. The profound interest with which they are regarded by the Hawaiians induces me to give them a brief notice. Those that were flourishing around the dwelling of that native were among the finest I saw on the group. But I would here be understood as giving a general description of the article in its nature and general cultivation.

The *taro* (*kalo* in Hawaiian) is a species of arum (*Arum esculentum*). Like the *Arum triphyllum*, it grows in damp or wet situations only. It is propagated in water by planting tops from the suckers of one year's growth that have sprouted from the sides of the original plant. The beds are excavated two or three feet deep in the earth, levelled, and beaten with cocoanut stems while wet to produce capacity to hold water. Upland *kalo* is usually much smaller than that which grows in the rich bottoms. There is a red and a white species, besides several varieties of each. Some of these plantations vary in size from forty feet square to two or three acres. Like many of the fish-ponds, the size indicates the wealth and rank of the owner. Forty square feet of land planted with *kalo* will afford subsistence for one person during a whole year. A square mile of land planted with the same vegetable will feed 15,151 persons for the same length of time.*

As an article of food *kalo* is invaluable. It is, in fact, the Hawaiian staff of life. It is the bread of the islanders. A good Providence has caused it to be indigenous. While raw it is exceedingly styptic and acrimonious, producing a burning sensation on the tongue. In this state it is frequently taken as a medicine. These properties are destroyed, however, by subjecting it to heat. Boiling, baking, or roasting leaves the root a light farinaceous substance, not much unlike the best potato. In this last state it is extensively used by the foreign population as an article of food for their daily table.

But the most precious diet of the Hawaiians is the *kalo* when converted into *poi*. It is prepared for this purpose by thoroughly cooking it and then pounding it to a pulp in a trough made out of hard wood. The pounding-mallet is a piece of lava, having a shape much like a chemist's pestle. During the process of pounding, water is frequently added. When it assumes the appearance of a thick paste it is finished, and then it receives the euphonious appellation of *poi*. As

* The above estimate is made by allowing paths three feet wide between each piece of ground of forty square feet. The great ease with which the natives sustain themselves is thus explained.

food it is simple and nutritious, and eaten with one or two fingers, according to its consistency. It is always preferred by the people after the fermentative process has commenced.

This article of diet imparts bulk rather than strength and solidity to the constitution. And this fact will readily account for the immense corpulency of some of the old Hawaiian queens, a feature which in those days was deemed the *ne plus ultra* of female beauty. *Poi* is the national dish. A native may be fed at the very best civilized table, but if he is not supplied with his favourite dish he will go away dissatisfied. And when elevated to the highest possible grade of civilization he readily mingles with his countrymen in any little party where this article of diet is certain to be found.

After a fatiguing ride I reached Kualoa (from *kua*, the back, and *loa*, long). The name seems to be derived from the peculiar ridge of mountains forming the southern boundary of the Koolauloa district. It is a highly interesting location, the home of several native families. In front rolls the wide Pacific. The scenery on the East and West is bounded by the chain of mountains above referred to, and which are huge masses of volcanic rock that have grown gray during the onward flight of unchronicled generations. Once they echoed back the war-songs of victorious chieftains returning from the field of battle, where they plucked glory from the standards of their foes. But now the race of warriors has gone, and a few wild goats take refuge in the sides of these giant landmarks. The plains of Kualoa contain about 12,000 acres, over whose surface may be traced tangible evidences of a large population long since extinct.

Nothing can surpass this spot when the sun sets below the mountains and reflects their massive shadows far out on the plain. Twilight reigns below, while all above seems bathed in the glory of the descending orb. And when night throws its veil over nature, and every sound is hushed, the very silence becomes oppressive, and the mountains stand like giant sentinels to protect the contiguous plains from all evil.—*Sandwich Islands' Notes.*

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

Departing from the precedent of the Exhibition of 1851, the class devoted to naval architecture has on the present occasion been divided into three sections: the first of these sections (A.) being devoted to ships building for purposes of war and commerce; Section B., to vessels for amusement, including boat and barge building; and Section C., for ships' tackle and rigging. Separate juries were originally nominated for each section, but it was deemed desirable to consolidate the two last named, and the following report is submitted to Her Ma-

jesty's Commissioners illustrative of the investigations of the Sectional Juries B. and C. so united.

Reviewing the short period of eleven years elapsed since naval architecture in its multifarious and varied details were so worthily represented in the former Exhibition in this country, and then received the well-merited commendation of competent judges, it will be found that not only has a great revolution—in so far as naval architecture proper is concerned—been effected, but that marked innovations and progressive improvements in connexion with the rigging and equipment of ships have been quietly, but not less surely, taking place.

The paucity of models in the Exhibition of 1862, illustrative of the numerous changes of equipment here adverted to, has rendered this preliminary remark necessary, more especially as those models—unparalleled for beauty and excellency of illustration—of some of the greatest triumphs of modern naval architecture, we allude to the *Northumberland*, the *Warrior*, and *Himalaya*, appear under the same conditions of rig with the model of the three-decked ship *Queen*, exhibited in 1851; then, perhaps, the most perfect ship of the British navy, but now far surpassed in size and every condition of availability for the purposes of war, by the novel designs of what is not inaptly termed an “iron age.”

As in all the modern appliances of the industrial arts on land, we find the economy of human labour as aided by machinery direct, or by its ingenious application to some motive power, earnestly appreciated and rapidly adapted, so in the subject immediately before us, the rig and equipment of ships for service at sea, we find a similar tendency of principle. To the commercial marine of all countries, but as affecting this nation in particular, the economy of labour is not only one of direct commercial profit, but where the application of machine power, guided by few minds, lessens by its surety and simplicity the numerous accidents inevitably resulting even among trained seamen in their duties aloft, gives rest to the harassed crew at night, or lessens exposure in wintry gales or tropical climates, the higher motives of humanity, in addition to that of efficiency, are enlisted.

Keeping in view that the progress in the respective industries since the International Exhibitions of the years 1851 and 1855 will probably be of the greatest general interest; it is proposed, as far as possible, to confine the subject matter of this report within the earliest of these epochs; and following the report of our colleagues in Section A. of this class, devoted chiefly to the hulls of ships, we commence with a brief summary of the changes in the rig of ships, proceeding then to collateral details of equipment, and the other subjects included in our duties.

On the Rig of Ships.—The commencement of the period was marked by a striking innovation in the equipment of ships aloft; this was a plan for reefing topsails and other square sails from the deck, invented and introduced by H. D. P. Cunningham, Esq., of the royal navy, early in 1852.

Closely following on Mr. Cunningham's system of reefing from the

deck, a plan for facilitating the working of the topsails by dividing them into two parts, was adopted in the mercantile marine of the United States. In this plan, one yard carrying the lower half of the topsail works on a truss at the cap, and the yard carrying the upper topsail works on the topmast; this upper sail, when lowered, hangs in a bight, and necessarily becomes becalmed before the lower topsail. This plan is known as the double topsail yard rig.

Growing out of the system of reefing from the deck and the double topsail yard rig, a modified system combining the advantages of both has recently been introduced. In this arrangement the upper topsail is fitted to roll up the whole sail to the foot, on Cunningham's plan. Captain Schomberg, of the royal navy, is the designer of this modification, which has been introduced into ships of the Netherlands navy and also into the British iron-clad ships of war *Defence* and *Resistance*, and some vessels of the merchant navy.

An improvement on the method of reefing topsails with the cumbersome reefpoints, by a system of becketts and toggles, has within the last five years been introduced generally into the British navy. The system, which is found to answer well in practice, and to be a saving of material and some labour, was originally established in the imperial navy of France. The next introduction into the French navy of fitting metal eyelet holes for the reef earrings of topsails, placing them inside the leech ropes, and thus dispensing with the rope cringles, is deserving notice. This useful addition of punched metal eyelet holes greatly facilitates sail making operations, from the rapidity with which they are formed.

Resulting from the general improvements in sailmaking by which the square sails present a flatter surface to the wind, the use of topsail bowlines in the mercantile marine have been nearly entirely given up.

Masting of Ships.—The great length of ships introduced within the last ten years, has suggested the necessity of applying an increased number of masts, over the maximum of three, which appears for the last two centuries to have been an almost universally acknowledged arrangement. To obtain the necessary amount of sail power; even as an auxiliary force, with a due regard to the powers of manual labour in the management of the yards and spars is yet a desideratum. Commander Horton, in a paper read before the Royal United Service Institution, proposed that ships of the *Warrior* class (380 feet long) should have four masts. Several merchant steam-ships have adopted this number, and the *Great Eastern* has six. A wide field for combined scientific investigation and practical experience is open on this important point.

Iron Masts and Yards.—The extended use of iron in the construction of masts and yards has become so great as to deserve special notice. We have heard that iron lower masts have been in use in Dutch vessels for a considerable time, but it is only within the last ten years that its wide introduction has taken place in the commercial marine of this country. Now, not only lower masts, bowsprits, and lower yards are constructed of iron, but it has extended to topsail and even smaller

yards; and it is understood that yards are occasionally constructed of steel. Iron tops and cross-trees will also be frequently found in merchant ships. It must not be forgotten that in addition to strength, lightness, and durability, incombustibility is also gained.

The use of galvanized iron wire-rope for standing rigging has also widely spread during the past ten years both in the royal and mercantile navies. Its strength and diminished bulk, and consequent decreased resistance to the wind, renders it well adapted for steam-ships. Several admirable specimens are exhibited in the Iron and Hardware Class XXXI. Of these we would specially mention as worthy of the inspection of the seaman [6,254, Wilkins and Weatherby, of Wapping], [6,222, Stephenson and Co., of Poplar], [5,991, Binks, Brothers, of Millwall], and [6,077, Glass, Elliott, and Co., of Cannon Street, City].

The substitution of iron for wood in the various blocks and securing appliances for the standing and running rigging of ships is becoming general. We may instance, in illustration, specimens in the exhibited articles of Messrs. Brown, Lennox, and Co. [2,779], and also the compact iron dead-eyes and hearts for standing rigging (the invention of Admiral Schantz) from the Admiralty Ironworks of Cronstadt. [Russia, 332].

The prejudice that formerly existed against the employment of galvanized iron, from the impression that the process weakened the metal, appears to have passed away. It now enters largely into the equipment of ships. In small vessels even the anchors and cables are frequently galvanized, and the admirable specimens of malleable cast-iron blocks exhibited by Messrs. Brown and Lennox [2,779], to which a medal has been awarded for their novelty, economy, and strength; are doubtless greatly enhanced in their practical utility by having undergone the process.

The extended application of steam winches for receiving and discharging cargo is a feature deserving of notice in the economy of human labour, but its further application in the larger and noble ships of the mercantile marine, in working the yards and sails, the anchors and cables, and other heavy duties, heretofore taxing heavily the strength of the ships' crews, is deserving of record.

Among the modern examples of ships' rig the self-reefing topsail, exhibited by Mr. H. D. P. Cunningham, the inventor, [2,665,] has received the unanimous approbation of the Jury, and it is only just to this gentleman to record that, had not the rules laid down by the Commissioners excepted jurors from competing for a prize, a medal would have been awarded to this invention on the following grounds: 1. That topsails so fitted can be reefed and unreefed in all weathers by the men of the watch on deck, without subjecting them to the danger and exposure attending the operation of reefing on the old method, and further this ability to reef and make sail without diminishing the speed of the ship has a sensible effect in shortening long sea voyages, and in working in narrow seas in unsettled weather. 2. That it combines, in comparison with the prevailing system, economy,

durability, and efficiency in general details, besides reducing the number of ropes aloft. It is stated to be in use in upwards of 3,000 ships in this country, and also extensively introduced in the marine of other nations, embracing the noble clipper ships of 2,000 tons and the humble coasting schooner of 50 tons; but perhaps the strongest evidence as to its unlimited capabilities of application is that the ship *Champion of the Seas*, the maintopsail-yard of which is upwards of 80 feet long, 21 inches in diameter, and weighing about 5 tons (and thus larger than that of the three-decked ship *Duke of Wellington*) has been so fitted and worked successfully for a period of upwards of four years.

The model of a gaff-yard rig exhibited by W. J. Giffard [2,781] involves considerable changes in the arrangements, shape, and mode of setting sails: we are not aware of this system having been tried on a practical scale.

Lightning Conductors.—The rapid changes from ships of wood to iron ships, and even from masts of wood with rope rigging to masts of iron with metallic rigging, necessarily bespeak serious consideration as to the probable effects of lightning on ships of this construction. According to the once prevalent and accepted opinion that metals were in themselves attractive of lightning, and hence drew down destructive electrical discharges, iron-rigged ships, together with the ships themselves, would be an extremely dangerous kind of vessel. The popular objections to lightning rods, so universally received about half a century since, were based on this ideal view of atmospheric electrical discharge,—it was said, for example, that since metallic bodies had a specific attraction for the matter of lightning, and that as we can never come to know what amount of electric power may be evolved in a thunder-storm, it is possible to draw down by a metallic conductor more lightning than can be transmitted, and hence certain destruction to bodies in its vicinity.

Mr. Harris, now Sir W. Snow Harris, about the year 1820 happily turned his attention to this branch of practical science, and pursuing the rigid course of a sound inductive philosophy, arrived at conclusions totally at variance with all the views of lightning and lightning rods hitherto accepted or acted on. After an elaborate and patient investigation of many hundreds of cases of ships and buildings struck and damaged by lightning, and much original experimental research, he succeeded in establishing new views of atmospheric electrical discharge, and in carrying out a permanent system of lightning conductors in her Majesty's ships and in buildings on shore, the result of which has been complete preservation of the royal navy from lightning; although, when tried by the received opinions of the day, it was predicted as a destructive arrangement.

As Sir W. Snow Harris's views bear more immediately upon the question of iron ships and rigging, it will be well to briefly advert to them.

According to this competent authority, electricity is a natural agency or force of a peculiar kind, capable of penetrating all kinds of

matter. Taking the operations of this agency in a practical sense, as observed in the course of lightning discharges, we find, that when forcing a path through bodies which resist its progress, such as atmospheric air, glass, &c., violent expansive and explosive action results, attended by a great evolution of light and heat. When, however, its course is determined along or through bodies opposing little resistance to its progress, then this explosive action becomes more or less transformed into a comparatively quiescent or current action attended by little or no destructive violence. Upon this principle it was Sir W. Snow Harris based his systematic method of lightning conductors for her Majesty's ships. He came to the conclusion that supposing the ship's masts, rigging, sails, and hull to be metallic throughout, no damage could arise in such a case, because from the moment the explosive lightning flash struck upon any point, that form of action would vanish and the discharge easily find its way in all directions to the sea; the action being, as he well demonstrated, not an exclusive action between the atmosphere and any mass of metal or metals in the ship, but a vast superficial effort between perhaps 10,000 acres of electrical clouds, &c., opposed by an equal extent of sea or land surface, that the ship was only struck by lightning in consequence of its being a point on one of those vast planes of action. Sir W. Snow Harris's proposal therefore was, to discard the narrow hypothesis upon which the common form of lightning rod or chain was applied, and bring the ship at once by a capacious system of copper conductors into that passive or non-resisting state she would assume, supposing the whole were a continuous metallic mass, or at least as nearly so as possible. This, as is well known, he effected by incorporating with the spars capacious conductors of copper, and tying these into connexion with the principal metallic masses in the hull, and finally with the sea, by means of the kelson bolts and other metallic communications passing through the ship. The result has been,—according to official reports,—that since this system has been universally adopted or in use, for a quarter of a century at least, not a spar has been damaged or a life lost by lightning in the royal navy.

If these principles be trustworthy, as experience has shown, we need be under no apprehension as to the effects of lightning on metallic ships; a ship if entirely of metal, in all its generality, should be perfectly safe from lightning. We have only in cases of wood masts to provide for a perfect metallic conduction as in other ships, and to see that we have in no case large explosive intervals likely to affect the course of the discharge.

Sir W. Snow Harris has more recently adverted to the question of the large amount of electrical induction likely to affect an iron ship, together with some other circumstances of minor electrical action; and although, so far as our inductive knowledge extends, we may repose with confidence on the principles he has exposed, yet he is still sufficiently wary in observing that our new class of ships is a further application of these principles, to be confirmed, as in former cases, by the march of experience.

The conducting power of iron being not above the sixth part that of copper, and iron rope rigging being occasionally covered with tarred yarn, and from its contorted construction not so well adapted to the transmission of heavy electrical discharges as plain capacious conductors of copper, Sir W. Snow Harris recommends the application of a form of copper tubular conductor proposed by him so long since as the year 1835, to be led from the lower masthead along the after swifters over the ship's side to the sea, the object being to lessen the violence of the electrical discharge upon the general mass. In case of the masts being of wood, the usual conductors for the navy are applied to them, and the connexion with the sea further completed through these tubular conductors, which are systematically adapted to the rigging so as to work with it. These capacious tubular conductors have been much used and employed in iron vessels and large mail steamers; and a model showing their application as fitted by Mr. T. W. Gray, of Limehouse, is in the Exhibition [2,681].

When the lower masts are of iron, the conductors are applied to the sliding wood masts as before, and placed in metallic connection with the lower masts. The tubular conductors of copper are then led along the after swifters from the head of the iron lower masts connected with the heels of the top mast, thus providing a continuous line of copper conduction from the highest points to the sea. In the case of iron top masts the same course is to be pursued with the wood top-gallant masts. If all iron, it will be sufficient to apply the tubular conductors to the lower rigging as before.

The substitution of iron for wood in naval construction, and the vast masses of metal subjected to electrical action, demands very serious attention; we have, in fact, yet to learn, as already observed, all the possible effects of heavy strokes of lightning upon such masses, more especially in cases in which fillings of wood and other bad conducting material of an inflammable kind are interposed between iron plates. It is quite certain that the whole ship under the influence of a thunder cloud will have its natural electrical condition greatly deranged, and the conducting power of the iron mass may become interfered with.

All these circumstances must necessarily be taken into consideration in the application of the general principles we have laid down, and which are no doubt, upon the whole, to be fully trusted in a regular line of copper electrical conduction. We have also to further take into the account the magnetic change which may ensue in the iron of the ship in all its various parts, supposing a heavy stroke of lightning to fall upon the mass, and by which the compasses may be rendered next to useless without the presence of a very perfect line of electrical conductors from the highest points to the sea. A remarkable instance of the magnetising influence of heavy strokes of lightning upon iron masses occurred in the brig *Tweedside*, of London, in April, 1857, on the coast of Africa. In this case considerable damage resulted aloft; every compass in the ship was ruined, the magnetism of the needles

being either destroyed or so deranged as to be useless, as also were the springs and steel parts of the chronometers; the after part of the ship itself was found so magnetic, although wood built, that compasses placed on two portions of the deck varied eight points at a distance of 10 feet apart; the vessel was with difficulty safely navigated to England.

(To be continued.)

VOYAGE OF H.M.S. "CYCLOPS" FROM THE CAPE TO ADEN.—
Captain W. J. S. Pullen.

(Continued from page 433.)

Approaching the doubtful George Island, I occasionally got a cast of the lead, varying between 100 and 200 fathoms, without at all detecting anything that could lead us to suppose any land was near. At length, on the evening of February 26th, when in lat. $7^{\circ} 12' S.$ and long. $60^{\circ} 52' E.$, I stopped and got a deep sounding where, if such an island as is marked with this position on the chart did exist, we should have been on shore.

Fathoms.	Times.			Intervals.		Diff.	Remarks.
	h.	m.	s.	m.	s.		
0	1	6	40	Let go.			Large whale-line, with detaching weight of 120lbs.
100	1	8	10	1	30		
200	1	10	0	1	50	20	Massey's machine, 1318. Therm. No. 6 just above the weight, showing a surface temp. of 81.5° , agreeing with the deck instrument.
300	1	11	50	1	50	0	
400	1	13	47	1	57	7	Water smooth. Wind light from North.
500	1	15	50	2	3	10	
600	1	18	1	2	11	8	
700	1	20	23	2	22	11	
800	1	22	37	2	14	8	
900	1	24	52	2	15	1	
1000	1	27	4	2	12	3	
1100	1	29	25	2	21	9	
1200	1	31	48	2	23	2	
1300	1	34	7	2	19	4	
1400	1	36	25	2	18	1	
1500	1	38	45	2	20	2	
1600	1	41	0	2	15	5	
1700	1	43	18	2	18	3	
1800	1	45	37	2	19	1	
1900	1	47	53	2	16	3	
2000	1	50	10	2	17	1	

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 359 A 6	Surface. 2000 fms.	82·5	38·2	1028 at 81·5 10245 76·5	Here the max. tell-tale came in 1° higher than it showed on starting, which I cannot account for in any way without the therm. had been quite capeized.

If deep water is a proof that neither shoal nor island can be near here we certainly have it, for although the intervals show such irregularity, the line was fairly up and down, or the weight perpendicular from the ship; and bringing it back again is proof of its never having reached the bottom.

The only way in which I can account for these irregularities in intervals is from the reel being stiff and the line quite new, not going off so smoothly as it ought to have done; (for it is the first time of using this heavy three-inch whale-line), and only in consequence of that on the port reel getting foul after the weight had been let go, and we could not clear it.

The temperature was good, the thermometer coming in with but little disturbance on the maximum side; but I feel puzzled about its ascending, instead of any shake it might have had causing it to fall, without the instrument had passed through a warmer stratum of water in its passage. This has occurred before.

The course now steering took us directly over this island, and with 132 fathoms no bottom was reached.

Our next cast of the lead was in the vicinity of the Rose Galley Rocks, being very nearly up to the position assigned them by the charts. On the morning of the 28th accordingly a cast was got, and successful this time, inasmuch as bottom was reached at a great depth; but we can hardly imagine that shoal or rock could ascend from near such a depth without having a broader base than these rocks could have, did they really exist. The weather was beautifully fine and calm smooth water, so that the view was distant without detecting the slightest ripple or break of any kind.

In this sounding, although the intervals are irregular, I consider it a good cast. The first great change was at the 2,200, and the next so exceeded it that, although we considered the weight down, to make certain the other 100 fathoms were reeled off. But our great proof was, as usual, the large quantity of the bottom brought up in the valve and adhering to the water bottle.

The thermometer used here was the one sent down on the 26th; the minimum temperature then at 2,000 fathoms was 38·2°,—to-day, at the 2,200, was 35°: from which I conclude that is correct. Again, on the 19th December, 1857, at 2,700 fathoms, on the bottom, with a different thermometer, the minimum temperature was 35°. Thus,

Fathoms	Times.			Intervals.		Diff.	Remarks.
	h.	m.	s.	m.	s.		
0	5	0	30	Let go.			Large whale-line, with detaching weight of 120lbs. and Massey's machine No. 1318. Therin. No. 10 attached: temperature of surface 82.5° by it. Smooth water, with a light N.E. wind.
100	5	1	20	0 50			
200	5	2	30	1 10		20	
300	5	4	3	1 33		23	
400	5	6	5	2 2		29	
500	5	7	5	2 0		2	
600	5	10	10	2 5		5	
700	5	12	10	2 0		5	
800	5	14	16	2 6		6	
900	5	16	28	2 12		6	
1000	5	18	44	2 16		4	
1100	5	20	53	2 9		7	
1200	5	23	6	2 13		4	
1300	5	25	18	2 12		1	
1400	5	27	35	2 17		5	
1500	5	29	46	2 11		6	
1600	5	31	58	2 12		1	
1700	5	34	12	2 14		2	
1800	5	36	28	2 16		2	
1900	5	38	35	2 7		9	
2000	5	40	45	2 10		3	
2100	5	42	46	2 1		9	
2200	5	45	0	2 14		13	
2300	5	47	36	2 36		22	

Massey registered 2110 fms.
Correction 220 ,,
Down. 2330 ,,

A beautiful specimen of bottom came up in the valve,—very fine white sand or mud.

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 359	Surface.	81.5	35	1024 at 84	The therm. returns 1° lower in max. col. than it showed when started.
A 6	2200 fms.			1025 at 76	
	53 cor. 2253 fms.				

in two different parts of the world, very far separate from each other—the latter, too, within the tropics,—do we get the same result. I am therefore inclined to believe that this is the minimum temperature of the sea. Had these same temperatures been got close to each other I should have put it down immediately to some local cause. I can hardly think either that it might have been caused by the shifting of the tell-tale, for on looking at the instrument, had the index in the minimum column altered, it would have come from a lower temperature, without the thermometer had been completely capsized, and of that we have not the least indication.

On getting our observation at noon, I found that the ship was fur-

ther to the southward than I expected; consequently not so close as the D.R. had put us at eight o'clock to these supposed rocks (Rose Galley). Still it was quite near enough to prove their non-existence.

At noon we were not more than five miles off, and our course to the northward leading over the deepest part of the Swift Bank, as given in the Admiralty chart, I carried a line of soundings up to it, and over it, not getting bottom at any one cast with 150 fathoms of line. So I conclude that this shoal is either not in existence or very far out from the position assigned it. The ship was from five to nine hours near and passing over the shoal and sounding, steaming; when, considering that I had cleared it, the fires under after boilers were drawn, keeping the foremost ones banked for the purpose of swinging ship, which was accomplished the next day. The current for the last twenty-four hours was S. 52° W., 14 miles.

On re-measuring the heavy sounding lines, that on the port reel had stretched out to 1,402 fathoms, originally 1,300. The new line, on the starboard reel, first used on the 26th, has given out 53 fathoms and 5 feet in the quantity already used. Therefore to the last cast of 2,200 this is to be added, making the depth reached 2,253 fathoms and 5 feet,—a difference of 77 fathoms less than shown by Massey when all corrections were applied. Now, on the 19th December, at the 2,700 fathoms by line, Massey, when corrected, showed 44 fathoms less; therefore we have hardly yet arrived at the true correction for that instrument.

On the morning of the 3rd of March the wind was northerly, but threatening squalls; and at two o'clock they commenced, and until noon there was a constant succession of them from North to East, with heavy rain. About noon the wind settled at N.N.E., and the weather cleared. This we may consider as the commencement of the N.E. monsoon, at least the passing of its southern limit. The current here for the last twenty-four hours was to the southward and eastward, when the next twenty-four hours it showed South and westerly, and so continued for the remainder of the voyage to Aden. The wind also veered between North and East, never any very great strength, until we got into the Gulf of Aden, when it was more steady and constant, carrying us into the Bay of Aden.

On the afternoon of the 5th, close up to the equator, in long. $58^{\circ} 26'$ E., a cast of the lead was taken; but the results for temperature, under such unfavourable circumstances, are such that I can hardly place any faith in them, merely giving the two tables,—the first showing how much the stopping to attach the several thermometers at the points of line decided on destroys the intervals, and the second the difference in the temperature from what we might expect. The distance from the equator at this time was not more than nine miles, and it was rather unfortunate that such weather should have come on after the experiment had begun. Had it been only the weight on I certainly should have gone on until I got bottom; but with the three thermometers on, the risk of losing them was too great. Previous to sounding, the ship was steered round the compass for devia-

tion; at that time there was only a light breeze, but I was anxious to get the cast, as well as the temperature, as near on the equator as possible.

Fathoms.	Times.			Intervals.		Diff.	Remarks.
	h.	m.	s.	m.	s.		
0	9	47	50	Let go.			Whale-line from starboard reel. Detaching weight of 120lbs. and Massey's machine 1318.
100	9	48	44	0 54			
200	9	50	0	1 16		22	
300	9	51	41	1 41		25	
400	9	53	57	2 16		35	
500	9	55	30	Let go.			
600	9	57	44	2 14			
700	9	59	54	2 10		4	
800	10	2	26	2 32		22	
900	10	4	50	2 24		8	
1000	10	7	30	2 40		16	At the 800 fathoms therm. No. 6 attached: surf. temp. by it 80°. At 400 fathoms stopped and attached No. 4 therm.: surface by it 81.5°.
	10	9	50	2 20		20	
1100	10	11	20	Let go.			
1200	10	13	23	2 13			
1300	10	15	20	1 57		6	
1400	10	17	45	2 23		26	
1500	10	20	3	2 16		7	
1600	10	22	25	2 22		6	
1700	10	24	47	2 22		0	
1800	10	27	20	2 33		11	
1900	10	29	47	2 27		6	Stopped and attached therm. No. 10, showing surface temp. 81°.
2000	10	32	10	2 23		4	
2100	10	34	27	2 17		6	
2200	10	37	0	2 33		16	
2300	10	39	15	2 15		18	
2300	10	41	10	1 55		20	

No. of Therm.	Depth.	Temperature.		Density.	Remarks.
		Max.	Min.		
A 359	Surface.			1024 at 81	In max. col. 4 and 6 show little difference. 10 in the max. is very wide, but I can hardly think that 4 in min. is correct; in fact, there seems some discrepancy throughout.
A 10	1330 fms.	74	41	1025 at 77	
A 4	1960 "	82	67	1024 at 79	
A 6	2380 "	80	40	1024 at 77	

There was so much difficulty in getting the line in for the first three or four hundred fathoms, by reason of the fresh breeze that sprung up after the experiment began, and sea getting up too, rendering keeping the ship in position almost impossible, that I had serious misgivings as to whether we should get any of the line back again. The deck engine did not appear to have sufficient power to overcome the resistance; and it was only by the help of all the watch

hauling on the line, assisting the fly-wheel at the same time, that it could be accomplished. It is another proof, too, that these observations, when combined, are not to be depended on for good results.

The greatest strength of the current we experienced up to the time of entering the Gulf of Aden was fifty miles on a S. 71° W. course. This was between lats. 1° 8' and 3° 6' N., long. 57° 54' and 57° E. Afterwards it gradually decreased, but getting more southerly on approaching the land of Africa, which we made early on the morning of the 12th—the high land just to the southward of Guardafui. Passing between this cape and the island of Socotra, we got the wind more steady and stronger from N.E., and about nine on the morning of the 15th anchored in Aden Harbour.

Here I found orders awaiting me from the Admiralty respecting my further proceedings in relation to the contemplated lines of soundings. They were—to proceed into the Red Sea and visit Hodeidah and Jeddah, and report, after due examination, whether they offered conveniences for establishing stations for working an electric cable, the company proposing to lay one down in sections between Suez and Aden, and these two places being selected, among others, for the purpose. From Jeddah I was to proceed to Cosire; thence carry a line of sounding up to Suez, keeping within a depth of 100 fathoms.

(To be continued.)

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*Address of the Chairman—Case of the Emilie St. Pierre—Report of the National Lifeboat Institution and great Success of its Proceedings—the Taepings—Woosung Captured—Death of Admiral Protet—Opinions of the Northerners of British Sympathy with the South—Testimonial to Captain Boag—the proposed Overland Route to British Columbia.*

The Chairman observed, in taking the chair, that since their last meeting Parliament had adjourned, after a session which had been productive of some improvement in shipping business. He would not detain his friends by going far into measures, but the exemption of the Schelde dues on our ships, while the Belgian flag is also exempted, was one of much importance, with a prospect also of tonnage dues in Belgian ports being abrogated entirely. Again the law relating to merchant shipping had received various improvements, completed in a bill called the Merchant Shipping Acts Amendment Act. In this the law of liability on the part of the shipowner in case of loss of life or personal injury,—or loss of property and lien for freight are included. A nautical assessor in case of inquiry into causes of wreck, and the subject of cancelling certificates to be done by the Court, the Board of Trade having control to approve or amend. Compulsory pilotage also

will be abolished where interests are injured. An alteration also is introduced into the laws of vessels passing each other, or, as it is termed, the rule of the road. These were the principal subjects to which he considered it right to allude. But he would not detain them except with one more observation. They had all heard of the *Emilie St. Pierre*, and the eulogies which her commander had received for her recapture. The following letter from the American officer places that act in a new light. If a parole was broken, it becomes a new question; but if no parole was given, it falls to the ground. Still he considered the protest, for so it might be called, should be preserved, for it was couched in terms that fully entitled it to being heard. It runs thus:—

*U.S. sloop of war Vandalia, off Charleston, S.C.,
July 4th, 1862.*

Sir,—In your paper of May 24th I find two portraits representing the cook and steward of the *Emilie St. Pierre*, with a laudatory notice attached. These men aided in the recapture of the vessel from its prize crew. In the American navy, in an event of this kind—the capture of a vessel supposed to be giving material aid to the rebels—the existing practice is to regulate the number of officers and men detailed to navigate the vessel to some home port for adjudication in some degree by the apparent disposition of the ship's company found in such prize. The orders to the prize crew are also modified by the same rule. Should the captured men be desperadoes in whom ideas of honour seem wanting, a larger force than otherwise would be detailed. Should they, on the contrary, as in the *Emilie St. Pierre*, seem willing to accept their parole for the voyage, and capable of understanding the nature of their oath, a smaller force is thought sufficient. This promise of non-resistance was given directly by the officers of the *Emilie St. Pierre*, including of course the cook and steward. Relying freely upon it, the prize officer, an acting master, and recently appointed to the service, did not resort to harsh measures in his treatment of the prisoners. Supposing himself secure by a given word of honour, his precautions were of the least offensive nature. In utter and disgraceful violation of this word (I say nothing of the merits of the capture, but speak of it only as followed by broken faith on the part of the captives) the captured officers and men made clandestine seizure of the vessel, and prisoners of the prize crew. Is this the conduct that excited regard in English minds? Does the gross neglect of honour and truth always merit the praise of English journalists? Or is it that uniform hatred and contempt of our endeavours to put down this rebellion override better instincts, and that the shameful and cowardly actions of the men of the *Emilie St. Pierre* are praised and rewarded because directed against the authority of the United States government, not the Federal government? Messrs. Editors, our rebellion has no more changed our name than your Sepoy insurrection changed yours. The navy of the United States has lost none of its ancient renown. The brilliant naval victories of 1812,

when it had to contend against the formidable power of England, and the more recent ones in the suppression of this rebellion, have inspired a feeling of confidence in the heart of every American naval officer which cannot but justify the hope that the honour of our old flag will be upheld as gloriously in the future as it was then and is now.

Respectfully, your obedient servant,

C. H. WELLS,
Lieut. Commanding U.S.N.

The Commodore had some doubt as to the reality of an oath having been administered or taken, but would leave that for Captain Wilson to say.

The Chairman said—Before proceeding further we must acquit ourselves of our promises in behalf of our shipwrecked mariners. The report of that excellent institution, presided over so ably by his Grace the Duke of Northumberland, somehow missed us at our last meeting. (The Secretary begged to apologise for the omission). And I think, continued the Chairman, we must allow it that precedence which we have usually granted to it. I have reason for saying that abroad our attention to this duty is looked for, and that it has been the means, happily, of forwarding the objects of that excellent institution, whose lifeboats, he would say, are the admiration of the civilized world.

The Secretary, at request, read the following—

A reward of £6 10s. was voted to the crew of the institution's lifeboat, stationed at Fleetwood, for putting off and assisting, in conjunction with a steam-tug, to save a sloop which during a heavy gale of wind had become disabled off Fleetwood on the 25th ult. This valuable lifeboat had previously been instrumental, under the most perilous circumstances, in saving twenty-seven shipwrecked persons.

A reward of £12 was also granted to the crew of the Penmon (Anglesey) lifeboat of the society, for going off, during a strong gale of wind, on the 25th ult., to render assistance to the smack *Frodsham*, of Liverpool, which was observed running before the wind in a disabled state, with a signal of distress flying. The lifeboat soon overtook the smack, and ultimately succeeded in taking her safely into Llandudno Bay, where she remained by her all night. This lifeboat had, on two or three previous occasions, rendered similar important services to distressed vessels.

A reward of £6 10s. was likewise voted to the crew of the society's lifeboat stationed at Southport, for putting off in reply to signals of distress, to the assistance of the brig *Commodore*, of South Shields, which, during blowing weather, was wrecked on the Horse Bank on the 19th ult. The lifeboat found that the wreck's crew had previously abandoned the vessel in their own boat, and had fortunately succeeded in reaching Lytham in safety. The master of the brig had been put on board a fishing-smack, from which he was brought on shore by the lifeboat.

A reward of £6 10s. was also granted to the crew of the Arklow

lifeboat, belonging to the institution, for going off in reply to signals of distress from a ship on the Arklow Bank. When about halfway, the lifeboat observed that a steam-tug had succeeded in getting the ship off the bank.

A reward of £9 was likewise voted to a boat's crew of nine men, in appreciation of their gallant conduct in putting off in a salmon-coble, during a gale of wind, and rescuing, at great risk of life, the crew of four men of the schooner *Thankful*, of Sunderland, which was totally wrecked close to Burghead, N.B., on the 19th ult. Every moment the position of the ship was becoming more dangerous as the advancing tide drove her in among the small rocks to the back of the sea wall, and no boat could live in the terrible surge that was now fast breaking up the vessel. The crew, four in number, along with the pilot, took to the fore-rigging, and in a short time the beach was strewn with pieces of the wreck; the bulwarks nearly all destroyed, the boat washed overboard, and the deck broken up. Though only forty yards from the pier, not the least assistance could be rendered to the crew, whose faces were quite distinguishable as they clung to the swaying rigging. At twenty minutes past six the foremast creaked, and its living freight had hardly time to crawl down to the only bulwark above water, for the schooner now lay on her beam ends with a bilge towards the sea, when it fell by the board. In about five minutes more the maintopmast was snapped by the gale as if it had been a reed, while the bowsprit and other gear were carried away, leaving nothing but the gutted hull with the mainmast standing. Another hour of awful suspense passed, during which the five men lashed themselves to the bulwark, the sea every minute breaking over their heads in huge masses. At half past seven, one of the sailors, a young man, was washed from the wreck, but fortunately succeeded in catching the floating rigging, by which he was able to regain his former position. Another young heroic sailor seemed to be the life of the whole company in this trying emergency, and his efforts to keep up the spirits of his companions were signally successful. About eight o'clock the waves broke over the ship with renewed violence, but still those on the shore could return no answer in the affirmative to the piercing cry that came from the wreck,—“Can't we get a boat?” The voice was that of the gallant sailor already referred to; the others were too much exhausted to utter a word. M'Intosh, the pilot from Burghead, expired from sheer cold and exhaustion. None who saw it can soon forget the fearful agony of his daughter as she bade her father farewell from the parapet of the breakwater. After renewed efforts, a boat was got over the breakwater, and at great risk succeeded in saving the other men, who were in a very exhausted condition. The nearest lifeboat station was at Lossiemouth, which is about fifteen miles from Burghead.

It was reported that two lifeboats on the plan of those of the institution had just been built and forwarded to Portugal by the Messrs. Forrestt, to the order of Admiral Sir George Sartorius, on behalf of the Portuguese Government.

The institution had lifeboats ready to be sent to Blakeney and Howth. Others would soon be despatched to Withernsea, Appledore, and Drogheda. Lord Calthorpe had sent to the society £100 in aid of the cost of the Blakeney lifeboat-house, and Miss Brightwell had paid the cost of the boat.

It was reported that Miss Alice Gedge had left the institution a legacy of £100. It was also stated that the Jury of the International Exhibition had awarded the institution a prize medal for its lifeboat and for the thorough equipment of the same.

A marine insurance company at Abo, in Finland, had sent the institution £50 in appreciation of the important services its lifeboats were often rendering to shipwrecked crews of all nations.

A model of the self-righting lifeboat of the society, mounted on its transporting carriage, was ordered to be presented to the Duke of Northumberland, K.G., President of the Institution, as a permanent memorial of the important services rendered to the cause of humanity by his grace, to whose enlightened and liberal philanthropy is to be ascribed the origin of the self-righting lifeboat now successfully used on the coasts of the United Kingdom, and on those of many other parts of the world.

Payments amounting to upwards of £1,100 having been made on various lifeboat establishments, the proceedings terminated.

The next report commenced by stating that the Committee had ordered a double reward, amounting to £45, to be made to the crew of the institution's lifeboat stationed at Caiator, on the Norfolk coast, in admiration of their daring and persevering services in rescuing in the night, during a fearful gale of wind, and under the most adverse circumstances, the crew of seven men of the schooner *Trial*, of Poole, Dorset, which was totally wrecked on the Barber Sands.

A reward of £6 was voted to pay the expences of the institution's lifeboat stationed at Polkerries, near Fowey, Cornwall, in putting off and saving in a heavy gale of wind and under very adverse circumstances, the Danish schooner *Sylphiden*, of Nakskov, and her crew of seven men. Mr. Stabb, R.N., chief officer of coast guard, had gone off in the lifeboat, and it was reported that much of the success of this valuable service was owing to his highly meritorious conduct and seamanship. The institution voted to Mr. Stabb its thanks inscribed on vellum.

The Whitburn lifeboat of the institution had recently saved from destruction, during a gale of wind and heavy surf, four fishing cobs and their crews, consisting of twelve men. This lifeboat is called the *Thomas Wilson*, after one of the benevolent founders of this truly important and national institution, whose operations seem to be attracting the admiration of all the nations of the world.

Payments were also made to the crews of the lifeboats of the society stationed at Eastbourne, Portrush, and Kingsgate for services offered to shipwrecked vessels.

The silver medal of the institution was voted to James Gough,

fisherman, and John Donovan, chief boatman of the coast guard, with £2 to the latter, in testimony of their daring conduct in swimming off through a heavy surf and at great risk of life assisting to rescue twenty-four men belonging to the ship *Queen of Commerce*, of Liverpool, which was some time since wrecked near Tramore Bay. It appeared that the ship had struck on a rock about fifty yards from a cliff, which being observed from the shore by Gough, he, closely followed by Donovan, swam out to the rock, over which the sea was constantly breaking. They got hold of a lifebuoy, which had been thrown from the ship with a line fast to it, by which means they succeeded in getting a hawser from the vessel to the shore. By this time they had received plenty of help from persons on the shore, and thus the whole of the vessel's crew of twenty-three men and a pilot fortunately reached the shore in safety.

A reward of £2 was also voted to an Irish fisherman named Peter Connor, in testimony of his daring conduct in rushing into the surf and rescuing at great risk of life, the master of the schooner *Fairy*, which, during a gale of wind, on the 11th ult., had foundered near the Tuskar Light on the Irish coast. The crew had taken to the vessel's boat, which on attempting to reach the shore was upset in the surf; two of the crew managed to reach the land, and the master, who was apparently without life, was rescued by the intrepidity of Connor, but the fourth man unhappily perished. These poor Irish fishermen are always ready on their bleak inhospitable coast to risk their lives to rescue the shipwrecked sailor, knowing full well that their self-denying acts will not go unrewarded by the National Lifeboat Institution.

A reward of £7 was granted to the crew of a salmon coble, of Benholme, Scotland, for going off, in a terrific gale of wind and through a heavy surf, to the rescue of two out of three of the crew of a fishing boat, which having shipped two heavy seas, instantly went down, carrying with it one poor fellow, and leaving the other two men struggling for their lives on the surface.

A reward of £2 10s. was also voted to the crew of a coast guard boat, for putting off and saving, amidst considerable danger, four persons from the sloop *Robert*, of Barrow, which during stormy weather had been dismasted in Douglas Bay, Isle of Man.

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

A report was read from the inspector of lifeboats to the institution of his recent visit to some of its lifeboats on the South coast of Ireland, and on the Welsh coast. He found all the stations, with few exceptions, in a state of efficiency.

A great demonstration had taken place at Ipswich on the 29th ult., when the lifeboat presented by that town to the institution was launched into the River Orwell, amidst the acclamations of some twenty thousand people. The success of that important and humane undertaking was mainly due to Mr. Bateman Byng, of Ipswich.

It was stated that Colchester, emulating the laudable example of Ipswich, had decided to collect the cost of a lifeboat, and that sermons

were to be preached in all the churches and chapels of that town on the 21st instant, in aid of that benevolent object.

Mrs. E. Hope had, as executrix of her late husband, the Rev. F. W. Hope, paid the institution £340 to establish a new lifeboat and transporting carriage at Appledore, Devon.

Miss S. Lechmere had presented to the institution £300 to pay for the Withernsea lifeboat and its transport carriage.

Legacies of £100 each had also been left to the society by the late William Lupton, Esq., of Salford, Lancashire, and Dr. T. C. West, of Kingston-upon-Hull.

A benevolent lady, a resident of Leith, had also forwarded to the institution a liberal donation of £100.

The society decided to place a lifeboat, as early as practicable, at Tynemouth, on the Northumberland coast; the cost, £250, of this boat had been presented to the institution by G. J. Fenwick, Esq.

A lifeboat was also decided to be placed at New Brighton, near Liverpool.

Several lifeboat-houses are to be built for the institution on various parts of the coast, at a cost of £1,500. One of them at Braunton, North Devon, is to be built on piles on the sand, and will, in consequence, be of a very expensive character, the sum required for this erection being nearly £230.

Payments amounting to £860 having been made on various lifeboat establishments, the proceedings terminated.

The Chairman then continued—At their last meeting they had gone into Chinese matters a little—but enough to show the character of those people; and as some further information as to the way in which the war was conducted he had preserved the following narrative, which derived additional interest from containing an account of the death of the French Admiral Protet, who had unhappily fallen. The letter, moreover, was written in that dashaway style which shows the writer to be a gentleman of education, and runs thus—

Shanghai, June 1st, 1862.

I told you in my last letter that I intended making application to be sent to the front. Well, my anxiety was gratified, and on the 6th May I got orders to proceed next morning with the force. I was attached for duty to the detachment of the 67th Regiment. We were out for seventeen days. On the morning of the 7th we embarked on board a gunboat, and proceeded up the Woosung River for about twenty miles; then disembarked, and proceeded across the country to a large walled town, where we spent the night. Next morning we got into boats, and, joined by the French, sailed up some narrow creeks, and spent the night in the boats. In consequence of the provision boat going astray I had nothing to eat for the first two days but a few biscuits. I could get nothing to purchase. As you may imagine, I was anything but jolly. However, by the aid of cigars, of which I had a good stock, I managed to repress the crav-

ings of my unruly stomach. When the provision boat arrived it was truly awful to see the good things disappear,—the capacity of my stomach was never before tested to such an extent.

Well, next day we reached the rebel town of Tsin-poo. You can have no idea of the wretched state of the country for a radius of ten miles about any city in the possession of the rebels. Every house, village, and town reduced to ashes, the bridges broken, the rivers staked—in fact, every possible obstacle thrown in the way of agriculture and commerce, and this in the richest and most beautiful country under heaven. Murder and every other crime that fiends are capable of track their progress over the country. As we neared the town headless bodies in every stage of decomposition floated past. In the papers you will read of the attack and capture of the town. We poured in shot and shell for nearly two hours, and made three good breaches. The enemy displayed great pluck, and fought till the last. They actually killed two men and wounded four whilst mounting the breach. I had a splendid view of the shot and shell practice. In the grey dawn of the morning I could see every shell from its exit to its destination. Our Armstrong shells must have astonished their weak nerves. The French rifled cannon made splendid practice. There was a tower near the walls from which the enemy kept up a sharp fire. Orders were given to the French to silence the guns, and a single shot sent the tower to “eternal smash.”

We captured 2,000 prisoners, who were handed over to the tender mercies of the Imperialists, the greater number of whom have lost their heads by this time. I never saw such villanous looking fellows. If the countenance be the index of the mind, I could believe them capable of every imaginable atrocity. Numbers had the “Taeping” mark imprinted on their cheeks and forehead. We also captured an Englishman, a deserter from one of her Majesty’s gunboats, who had been eighteen months in their service. He told us an absurd story, which no one credited; he will be hanged. Two others made their escape. I saw about five girls wounded,—one of them, about eighteen years of age had her throat slit across by some ruffian soldier after the town was taken. I saw a mandarin dying from a frightful wound in the throat, inflicted by a rascal because he would not tell him where money was concealed. A man of one of our regiments, on the line of march, went into a Chinese house and committed two frightful crimes, one of which was shooting a woman through the head, killing her immediately. He was brought down to Shanghai a prisoner. Whilst awaiting his trial he was summoned before a higher tribunal, having died of fever.

I forgot to tell you a little mishap that befel me just before the attack. We were on parade, awaiting orders as to our position, when we saw in disagreeable proximity to us one of the enemy’s nine-pounders. I must tell you that when round shot is nearing its destination you can see it distinctly and avoid it. Every man threw himself on the ground to allow it to pass; and, as ill luck would have it, there was a quantity of mud near me, and in a moment a full

length mud cast was being taken of my person. However, I had a companion in distress in the shape of another officer, who was almost as bad as I was. We found very little loot in the town. Any found in these towns is to be collected, sold, and the proceeds divided between the officers and men.

We proceeded to the rebel town of Nan-jou next day, and reached it on the 16th of May. We attacked the town on the evening of the 17th. This was the strongest place I have seen in China, with the exception of the Taku forts. If the enemy had had good marksmen here, they would have shot us down by fifties. We were completely deceived in this place. The proper wall of the town was the smallest I have seen in China; then came the stockade, consisting of sharpened stakes of wood driven deep into the earth and raised about three feet above ground,—these were as thick as grass; then came a deep wide drain filled with water, having its sides protected by sharpened stakes; then came the stockade again; then any amount of felled trees, having their branches cut off and sharpened; then again the stockade; then a mud wall concealing these impediments from view; and, last of all, a ditch twenty feet wide and twenty-five feet deep. Fancy the mischief that might be done by a body of experienced marksmen to a couple of thousand men engaged in throwing ladders over the moats, pulling up the stakes, and removing the other impediments.

Well, we commenced the attack in the evening and poured in shot and shell for about an hour. They hardly replied to us, and we thought we should have no difficulty whatever in getting into the town. At the expiration of the hour a rocket was discharged to announce to the artillery that firing was to cease. The advance was sounded, and, with our ladder and axe party in front, we rushed on. We got within about thirty yards of the stockade, when we were saluted by a rascally fire of gingalls and muskets. The bullets mostly went over our heads, as the Chinese always make the mistake of firing high. We now came to a standstill whilst the outer moat was being bridged over, and when here I saw a couple of the 31st, who were to our front, knocked over.

Just as we were moving again a Frenchman rushed past me shouting for a doctor. I hailed him, and asked what was up. He told me the French Admiral was severely wounded. I rushed off to the left about twenty feet, and found the French Admiral lying at full length on the ground, his head supported by a couple of his officers, and his heart's blood pouring out as water out of a teapot. He was insensible and dying. He had been struck by a bullet on the aorta, as it emerges from the heart. I saw at once that his case was hopeless, and told his officers accordingly. I gave him a little brandy to try and revive him for even a moment, but to no purpose. In a short time a French and an English Surgeon arrived, but of course there was nothing to be done.

There was a very sharp fire concentrated on this point. Within a radius of four feet there were three others wounded,—the Admiral's Secretary, who got a bullet through the left side of his head, which

took away a quantity of skin and hair, but did not penetrate the skull; a French soldier, who was struck by a bullet close by; and a soldier of the 31st, who was struck whilst I was attending to the Admiral.

The Admiral (Protet) lived about six minutes after he was struck, and was insensible from the first. The poor man had an *Agnus Dei* round his neck, which was bathed in blood. When I told his wounded Secretary that he was dying the tears gushed from his eyes. It was a painful sight to see a man, who two minutes before was full of life and spirits cheering on his men, knocked down in a moment insensible and dying. But such is the fortune of war. The French were very wroth at his death and vowed vengeance against the rebels; and as the sequence proved it was the most costly life the rebels ever took.

After leaving the Admiral I pushed on and saw our men mounting the breach of the inner wall, and in a moment the town was ours.

On the evening of the 18th we reached the town of Cho-lin. At eleven o'clock, a.m., on the 19th our detachment got orders to occupy certain ruined houses, one of them within two hundred yards of the wall. These houses had been partially burned the previous night by the rebels, to prevent their affording us any cover. It was considered a very ticklish piece of work to reach these houses; so, to distract the attention of the rebels, and whilst we were rushing up to them, our Armstrong and other guns began to play on the walls and town. It succeeded admirably, and we reached the houses without a casualty. Then our Armstrongs ceased firing, as the town was not to be attacked till morning. When we reached the houses we were assailed by a perfect shower of bullets. In a few moments they struck one of our men in the carotid artery, &c., and he died in one minute. They struck a man on the side of the head, and I cut out the bullet near his poll. This made our men more cautious, and although the rebels kept up the fire all the time we were there (nine hours), there were no more casualties. We made embrasures in our houses, and returned their fire with interest.

Our quarters were regular targets. Twice, when I had occasion to run from one house to another to see the wounded men, the bullets whizzed past me in a most unpleasant manner. We must have potted a good many of them: whenever a head was seen through the enemy's embrasures, a dozen English rifles were pointed at it. One fellow, a rebel, had the temerity to mount the parapet and beckon us on with his hat. He did not repeat the invitation. We quickly despatched a few leaden messengers to him. When night came on we got orders to retire quietly, as we were to form the covering party for the Armstrong guns next morning. Stretched on some hay in a ruined house we slept soundly that night.

Next morning at daybreak the attack commenced. Breaches were made in the walls in about an hour and a half, and in a few minutes the town was ours. It was the intention of the General to take three other towns, but fortunately he heard that Shanghai was threatened from some other point, and we got orders to move next morning.

We were, however, destined to have a concluding adventure. In consequence of the want of quarters about 120 men and officers were sent about a mile and a half away to some farm-houses, or rather cow-sheds. Having posted our picket and sentries we retired to rest. As we were limited for want of room, I slept near an open door way. About eleven o'clock I was rudely awakened from my sleep by a heavy boot skimming along my cheek. I jumped up and heard the rifles go pop, pop. The man who was so near damaging my countenance was one who rushed in to give the alarm that the rebels were on us. In a moment we were all armed; the night was very dark, and there was not a man or officer who did not feel decidedly uncomfortable. The sentries being interrogated, one man said he saw a hundred rebels, another man ten, another two. Of course their statements were not credited, and they got orders if they saw a rebel or two to quietly bayonet them and not alarm every one by firing. We thought these were solitary rebels who had been hiding during day and were trying to escape in the darkness.

We threw ourselves on our luxurious couches and were dropping off to sleep, when again pop, pop, went the rifles. We jumped up and armed. The adjutant rushed out to see what was up, and about twenty feet from our house came on a knot of rebels. He fired his revolver at them and they bolted. In a moment a man came in to say that one of the sentries was badly wounded. He shortly came in in the following condition. His nose—not a piece but the whole of it—was hanging over his mouth; fortunately, a small piece of cartilage on either side kept it attached to his face. This was caused by a sword aimed at his head, but which caught his nose in profile. His right shoulder joint was opened by another sword blow—I put my fingers on the head of the bone; and, lastly, a spear was thrust through the thigh from side to side. This wound at entrance was six inches long. His story was that, according to orders, he challenged a dark object, and, receiving no reply, proceeded to bayonet it, when thirty fellows rushed at him. Fortunately our picket was close at hand, and their hasty appearance saved his life. All night our picket and sentries were firing at dark objects, who made their appearance on all sides of the building. About half-past one o'clock a larger body than usual made their appearance, but a volley from the picket sent them off, shouting most discordantly. We slept very little that night.

Whilst on parade, about a quarter past three in the morning, a sergeant happened to get on what we call a "bund," an immense mound of earth, about thirteen feet high, twenty feet broad, and in this case eight miles long. He shouted to us that the rebels were close by. There was a rush at once to the "bund," and to our intense astonishment we saw no less than 8,000 rebels moving off. The chiefs were mounted on ponies, and every tenth man had a banner. They extended over the plain for a distance of four miles; the nearest to us were about 400 yards. The order was given at once to fire, and for ten minutes we patted at them, till they got out of our range.

We don't know whether we did any mischief, but we captured three wounded ponies. Fancy 8,000 of these rascals within a short distance of us for a great portion of the night. We were only 120 strong, and were a mile and a half away from the other troops. It was well they did not discover our weakness. What they were doing or where they were going no one could divine. Our sentinels only killed six during the night. We had one man wounded, and three others had great escapes: one had his bayonet bent by a bullet, a second got a bullet through his coat, and a third several spear wounds through his great coat.

We immediately commenced to march across country, and reached Shanghae on the 21st. Had I been three months on the march I could not have been more tired, weary, and exhausted. My clothes were in tatters, and my boots—oh! they were gems in their way—were exhibited for two days in my room to an admiring crowd, and several fellows requested that I would have them photographed. All the fighting will cease for the summer, to recommence in the winter.

Albert would now claim the attention of the Club to a letter which had been received by him. It related to the subject which had been alluded to by their Chairman of the extraordinary partiality, prejudice he might call it, in this country in favour of the seceding American states. He trusted that the want of caution displayed by us of publicly expressing an opinion even that leaned towards the Southern slave states, tending thereby to the appearance of wishing them a favourable result of the war, was both unbecoming to us and well calculated to make no friends of the Northerners. And that such was the case this letter would show,—but he hoped, as he said, that by this time the press, of which complaint was made, had seen the error. He would with permission now read it.

I grieve to see so much ill feeling growing up between your people and mine. Possibly enough part of the blame may be ours: but certainly *some* of it rests on your shoulders. Your newspapers, most of them, are sneering and jeering at us daily: but it is my impression that a people working as hard as we are to keep our country from falling to pieces, and to support a national existence, should be sympathized with rather than jeered at. When you had an Indian rebellion on *your* hands there was but one voice in this country for your success; and in the recent war with Russia nine tenths of the opinion and good wishes were on your side.

What was the *other* tenth? Simply something which called itself a party, led on by a few grovelling politicians; a party which had no existence outside of our large cities where the Irish emigrants congregate, and whose votes—every one votes here—were to be caught by and for the demagogue politicians referred to.

I have called this party one tenth, but I doubt if it ever constituted more than one twentieth of the country until the present ill feeling began to arise.

They have their newspapers too, edited for the most part by writers of British birth, many of whom have left their country for their country's good: and these papers I see sedulously quoted by your papers as expressing the "American sentiment." The London *Times* quotes the New York *Herald* for this purpose more than all the rest of the American papers combined. But we have good papers, plenty of them, edited with judgment, moderation, ability, and learning; but of these your press seem never to let you hear anything. The New York *Herald* is at the head of its own class, reckless and unprincipled, but, with a certain sort of vulgar ability about it. People look at it with some curiosity; but I suppose there is not one person in the whole country of education or information who attaches the slightest importance to what it says. It is owned and edited by a Scotchman, who threatens to take Canada next week, Jamaica next month, and Ireland next year. A fellow who Russell, the *Times* special correspondent, told the *Times* had "sold his birthright for a citizenship which he de-based," and when I see the London *Times* busily palming off the utterances of this fellow and such as he as "American sentiments," I cannot but apprehend the *Times* wishes mischief and intends mischief. For the *Times* knows better, though its readers may not.

Your papers which came to me by last steamer attribute the recent increase in the tariff to a "spite against England." Hardly, I think; we do not legislate in that way. Is it surprising that we should want revenue? and that we should seek to induce our people while the war lasts to consume our own productions and buy abroad as little as possible?

The Southern people have made two attempts to seize Cuba in the last ten years, loudly proclaiming, at the same time, that Jamaica and Barbados should come next in order, and that the Gulf of Mexico should be made an American lake that the English might be shut out of it. This was well known in England, is too recent to have been forgotten, and our people begin to think it is queer to see the sympathies of the English veering round to the side of these same Southern people.

Our quarrel is on the subject of slavery, as you know; we of the Northern states having little love for it, the Southern states justifying and proclaiming it, and clamorous for the reopening of the African slave trade, until just now policy has taught them to say little or nothing on that head. The Americans are *bothered* at seeing the English feeling apparently drifting over to the slavery side of such a question.

The English have no love for the repudiation of national debts: there has been some of it on the part of some of the American states, and every one of them is in arms against our general government to day. Not one of the Northern states, those supporting the government, has ever repudiated its debts,—several of them have in the last twenty years got into financial scrapes by foolish state legislation, but they never denied the debt, not a single one of them; they always promised to pay, always set to work and taxed themselves for that

purpose, always did pay: are every one of them paying to day, most of them having their state debts in a process of steady reduction. Every one of the states which has repudiated its debts, refused to pay or to promise to pay, or to attempt to make any provision for payment; every one of these is fighting against the Federal government to day; and again, the American mind is *bothered* at seeing the English mind gliding by an apparently steady process over to the side of such people.

For myself I say frankly that if I had not known the English mind to be a sensible mind before, I never should have discovered it upon this occasion.

In the general botherment, various motives are speculatively ascribed to you. "Cotton," suggests one American. "But," urges a second, "the English see as plainly as we do that cotton is not to be got in this way." "Free Trade," suggests a third; "they think these Southern fellows would entirely open their ports to English goods, and subsist their army, navy, and government on direct taxation. Bull loves no taxes except those he has the collecting of himself; he claps two or three hundred per cent. on our tobacco, and then calls our thirty and forty per cent. tariff *spiteful*; obviously Bull is after free trade with the rebels." "But," replies a fourth, "Bull knows well enough that all trade ceases in war; it is something else that moves him just now,—what the devil can it be?" "I'll tell you," answers a fifth, "its Humanity, humanity is the card just now; they have a great horror, these English, of any inhumanities but their own: they who tied their Sepoy prisoners to the mouths of their cannon and blew them from the muzzles like so many rats. Bull has a great horror of rebellion when it is his own ox that is being gored." "Gentlemen," replies a sixth, "one third of the English government, two thirds of the English people, and almost three thirds of the English press are turning against us, the motives you assign are clearly insufficient. We see them willing to shake hands with rebellion and to 'mediate' and to fight if need be in behalf of that slavery against which they have been talking and praying so stoutly for forty years. Men do not eat their own words in this way without a sufficient motive. What is that sufficient motive? Simply a wish to see this country broken into two, or into as many more pieces as possible, and they fear that that result will not be reached unless they get their fingers into the American pie." So the talk goes.

My dear Sir, this is the way the Americans talk and feel just now, and great harm will grow out of it if we do not mind. Let me say how *I* feel about it—I who am both an Englishman and an American. I say, then, that there is apparent to me a great wish lately on your side to misjudge us in every possible way. This wish is not common to every one, I presume,—but with a very large number of you the animus is very apparent to give the worst possible interpretation to everything we do or say.

The recent row in England on the subject of General Butler's proclamation about the women of New Orleans is one instance of this.

No one in England seems to have taken the slightest pains to inform himself as to the circumstances of the case. General Butler was angry—had a right to be; his proclamation was right, there was only a want of good taste in his expressions.

An Englishman always takes it for granted that everything elsewhere is as it is in England, and when he finds that it is not he requires some time to recover from his amazement. Every foreigner who comes to England from the East or from the West is struck with the freedom of the women of the town there, and with the impudent license with which they are allowed to ply their trade in the streets. They are not so allowed here, nor in France, Belgium, Holland, Denmark, Germany, Switzerland, or in any of the Hanse Towns where I have ever been. In New Orleans the law always has been that if one of these nymphs of the pavement was seen to accost a gentleman in the street, she was shut up in the calaboose (the lock-up house) till morning.

General Butler's army took New Orleans. The men of New Orleans were quiet enough, but the *ladies* of New Orleans, who thought their petticoats would protect them in anything, took to insulting our officers in the streets. Emboldened by the forbearance with which they were treated for a time, they took to *spitting* at them, and some of our officers took to searching out the husbands and brothers of these women, who considered themselves ladies, and politely inquiring if they held themselves personally responsible in the premises. Duels were beginning to grow out of it, when General Butler, who had other uses for the lives of his officers than that, issued his proclamation that all women so offending should be treated as "women of the town,"—locked up, that is to say, till next morning. A wise and humane proclamation, but not much good taste or politeness in the wording of it. I would have tried to have observed good taste, but would have wasted no politeness if I had been General Butler.

Instantly the British lion—who thanks God night and morning that he is not as other lions are—began to growl, and some one—savagely virtuous—and some one else—tearfully proper—had an opportunity to ventilate a superior morality in Parliament. They will be glad to learn, these gentlemen—including the lion,—that no officer has been insulted in New Orleans, and no woman locked up either, since the day when General Butler's proclamation appeared. Tell them so with my love—including the lion; the proclamation cured all that at once.

This is a long sermon I have written you, without any intent to do so. There is mischief in the atmosphere, and I feel apprehensive of the result. It is a pity that the people of each country could not confer with each other outside of the newspapers, most of which seem to me to be mere firebrands and mischief-makers, which need to make their sheets attractive, and are at any time ready to sacrifice the interests of other people to an exciting article or a paragraph which will make a sensation—to make their papers sell.

Pray set your face against any attempt at "mediation," and persuade your friends to do the same. It is a family quarrel. How

would you have felt about it if we had proposed to mediate between you and the Sepoys?

The letter caused a good deal of remark.

The Secretary here reported that he had applied, as directed, to the Secretary of the Mercantile Marine Association at Liverpool, on the subject of the presentation to the commander of the ship *Uncas*; but having received no answer, concluded that the institution had no Secretary.

The Chairman then said, in reference to the presentation alluded to, he was desirous of authenticating this novel circumstance, as being highly creditable to the officer in question. Captain Sproule might well comment on the value of such an officer—an ornament, he would call him, to the mercantile marine; and in the full confidence that the report was correct he should propose that the record as it stood should be entered among their papers. It stated that—

“At the rooms of the Liverpool Mercantile Marine Service Association a presentation somewhat unusual in connexion with nautical affairs took place. The recipient was Captain Boag, of the ship *Uncas*, who received at the hands of his crew a handsome telescope and barometer, as a testimonial of their appreciation of the value of the strict discipline which Captain Boag had enforced during circumstances of great peril, and when his vessel was leaky. Captain Sproule, who presided, commented upon the value of a captain who could thus awaken feelings of respect and esteem in the minds of his crew, not by acting as a martinet, but by the enforcement of rigid discipline for their mutual benefit.”

Perhaps, said the Secretary, the route to British Columbia might interest the friends of the Club at this moment. If so, here it is.

Some of the passengers sent to British Columbia overland by the Transatlantic Company, have arrived here *en route* for their destination. The newspapers of Toronto have pointed out the dangers the party have yet to undergo, consisting of possible starvation and probable encounters with Indians. The company is unknown here, and from the absurdly small time which its advertisements state to be necessary for the transit, it is clearly unacquainted with the task it has undertaken.

The route may be briefly described as follows, and under present circumstances it is not possible to accomplish it in less time than here stated :—

	Days.
By steam-ship from Liverpool to Quebec, say	13
Quebec to Toronto by railway.....	1
Toronto by railway to Detroit, and by railway to Newhaven; from Newhaven by steamboat to Milwaukie; by railway thence to Lacrosse, on the Mississippi, and up the Mississippi by steamboat to St. Paul	3
By first-class four-horse stage to Georgetown, on a tributary of the Red River, sleeping over night at hotels, travelling only by day.....	5
By steamboat to Fort Garry, the Red River Settlement	2
Total time required from Liverpool to Red River Settlement ..	24

At Red River the passengers will be at the gate of the wilderness. Here they can obtain guides, and purchase the necessary provisions to take them across the 1,300 miles of distance to the base of the Rocky Mountains. Over this distance but one large party has passed, but it has been known for years, having been traversed by the *employés* of the Hudson Bay Company, and parties of ten and twenty with the requisite guides, have often traversed it in safety. A trail to some extent, and in some instances assuming the character of an indifferent road, runs along the valley of the Saskatchewan, and the whole of this distance is infested by the Blackfoot Indians, who roam in this region as far South as the Missouri. The Rocky Mountains are held by the Kootnic Indians, who generally infest the passes. With experienced guides, who speak the language, there is no danger in encountering these tribes, but any imprudence or quarrel in which an Indian might lose his life would be rigorously avenged, and if the party in fault should manage to escape with their scalps untouched, the next batch of travellers would certainly pay the penalty. The time which a factor of the Hudson Bay Company takes to go from the foot of the Rocky Mountains to Fort Garry, using all despatch, with two horses, and unincumbered with baggage, is twenty-four days, and six days to pass through the mountains; therefore,

	Days.
The time taken by a party (travelling with impedimenta) from Fort Garry to the Rocky Mountains I estimate at	55
Through the mountains to the territory of British Columbia.....	10
And to the point they seek in British Columbia.....	10
	<hr/>
Total from Fort Garry to destination	75
	<hr/>
Add from Liverpool to Fort Garry	24
	<hr/>
Total from Liverpool to destination.....	99

The London company, I believe, advertises to forward passengers through in forty days for a certain sum; but if in addition the traveller have to pay for his own living the cost will be serious. But under proper management, even though the journey is rather a long one, there is no reason why this route should not succeed.

The Governor-General intends shortly to visit Montreal, where he will be entertained by the citizens. He will afterwards return to Quebec *en route* to the Saguenay, after which he purposes making an extended tour through Upper Canada, in the course of which he will come to Toronto to be present at the Provincial Exhibition.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 446.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	(Dist in Mls.)	(Remarks, &c. Bearings Magnetic.)
15. Eden Harbour	Look-out Pt.	Australia	F.	140	9	Est. 24th May, '62. Red seen seaward through 85°. (a.)
Gabo Island	Twofold B.	.....	F.	179	..	Est. 15th Aug., '62. (b.)
Port Albert	Corner Inlet	.....	..	..	..	Est. 1st Aug., '62. Light changed from Red to White.
16. Ashrafi Reef	Jubal Strait	Red Sea	R.	125	18	Est. 1st July, '62. (c.)
Dmdalus Reef	.....	Red Sea	F.	81	14	Est. beginning of 1863. (d.)
17. Little Holburna Head	Pentland Firth	Scotland	Ff.	75	13	Est. 1st Sept., '63. Every ten seconds a flash. (e.)
18. Sydost Brotten Grund	Sweden Cst.	Gulf of Bothnia	F.	..	10	Est. 21st July, '62. (f.)
Silow Beacon	Prussia Cst.	Baltic	..	..	..	Est. 1862. (g.)

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

(a.) 15.—It stands on the South extreme of Look-out Point, in lat. 37° 4' 30" S., long. 149° 55½' E. of Greenwich. When rounding the point on which the lighthouse is erected, give it a berth of two cables, there being many detached rocks within that distance.

(b.) 15.—It stands about a cable's length N.W. from the extreme S.E. point of the island, its approximate position being lat. 37° 35' S., long. 149° 55' E. of Greenwich.

(c.) 16.—The lighthouse is a structure of open iron work, 140 feet high from base to vane, with the keeper's dwelling near the base. It stands on the N.E. part of the reef, in lat. 27° 47' 33" N., long. 33° 42' 18" East of Greenwich.

(d.) 16.—The lighthouse is a structure of wrought iron partially open, 70 feet high from base to vane. It stands 200 yards within the S.E. extreme of the reef, in lat. 24° 55½' N., long. 35° 51' East of Greenwich. The reef is nearly oval in form, 6 cables long, N.W. and S.E., and 2½ cables wide, with its surface a little below low-water level, and very deep water close to its edge all round.

(e.) 17.—It will be seen as a white light towards Pentland Firth and Thurso Bay till it bears N.N.E., and as a red light towards Scrabster Road. It will be placed at an elevation of 75 feet above the level of high water, and should be visible in clear weather from a distance of thirteen miles. It stands twenty-five feet from the edge of the cliff, in about lat. 58° 36' 50" N., long. 3° 32' 12" East from Greenwich.

(f.) 18.—A bell is tolled in thick and foggy weather. The vessel is painted red, and the words Sydost Brettet are in large white letters on both sides. Her position is 6½ miles South of the Bonden Rock, in lat. 63° 19' N., long. 20° 9' East of Greenwich.

(g.) 18.—The beacon is octagonal in form, 66 feet high, 24 feet wide at the base, and 12 feet under the flat roof. The sides are planked, and painted with white and red alternate horizontal bands, 8 inches broad. It stands 1,447 yards from the coast, in lat. 50° 47' N., long. 17° 44' East of Greenwich. The down is 146 feet above the mean level of the sea.

TORRES STRAIT PASSAGE,—*Entering by Raine Island.*

Sourabaya, 13th June, 1862.

Sir,—I hope the following remarks may be deemed worthy a place in your valuable journal, as I am sure it is your constant and special aim to give publicity to anything calculated to benefit seamen.

The brig *Wee Tottie*, Captain A. E. B. Brown, left Hobart Town on the 28th of April, on a voyage to Sourabaya, via Torres Strait. After a succession of head winds, &c., entered the Coral Sea on the 18th of May, and sailed through it according to the latest directions of Captain Denham, on which and the charts of his latest survey too much praise cannot be bestowed. At six on the 28th, having experienced light winds, sighted Raine Island Beacon, and shortly afterwards saw a large ship ashore, near Pandora Entrance, stern on to the reef, quite upright, only mizenmast and bowsprit standing. She appeared British American built, 1,000 tons or upwards. At 10h. 15m. the tower bore North, distant one mile. Sea very smooth, very little surf on the Barrier. Hauled up S.W.b.W. $\frac{1}{2}$ W. on the ebb tide, springs; but finding the ship setting fast to northward, hauled up S.S.W., to approach the northern end of the great detached reef. At 1h. 30m. p.m. sighted Sir Charles Hardy Islands, bearing S.W.b.W.; steered direct for them until midway between Ashmore and Middle Banks, both visible. Kept away for N.E. end of Cockburn Reef, and shortly saw Cockburn Isles W.b.S. Steered for them, allowing two points for northerly current. At 5h. captain determined to anchor for the night, and had a hand in the chains for some time, giving from 7 to 8 fathoms. After clewing up let go the anchor, to our great astonishment taking all the chain on deck, 45 fathoms, before it touched the ground, hard coral. Hove up immediately; ship drifted to N.W. about a mile, when we found 22 fathoms, coral, and the night getting dark, veered away cable. Highest point of Cockburn Island S.W.b.W. $\frac{1}{2}$ W.; highest point of Sir Charles Hardy Island S.W.b.S. $\frac{1}{2}$ S. by azimuth.

There are no soundings on the chart marking this deep hole, which is full a mile and a half from N.W. to S.E., and which is as fully entitled to a place on the chart, as its neighbours to the eastward and southward of it.

Next morning, after three hours striving, got our anchor and proceeded onwards. A southerly current setting right into the bight of Cockburn Reef. Passed close to wreck of *Sir A. Campbell*, and shortly after rounded the N.W. end of the reef, which showed a small sand patch, about five feet high, on its very extreme point, which is not laid down in the chart No. 2,354, sheet 21, nor mentioned in the directory.

On the other hand there are two sand banks laid down, one as two miles N.W. of the extreme of the reef (and mentioned in the directory), the other as two and a half miles S. $\frac{1}{2}$ W. Had these banks existed at the time of our passing we must have seen them, for the day was beautifully clear, and the exact position of the ship certain.

After rounding the reef we experienced a heavy northerly current;

had to haul up S.S.W. to clear the rock, awash at low water, two and a half miles to westward. When it was cleared, kept away for Bird Island, where we came to anchor at 2h. p.m. Wind light all day, weather clear.

At daylight on the 30th got under way, and experienced steady easterly breezes throughout, with a strong N.W. current. At 5h. 30m. p.m. came to anchor in 4 fathoms, hard sand. Sand patch N.W. end of a reef bearing S.E., half a mile distant. On this end of the reef there are two sand patches (on chart and directory). We only saw one when we came to anchor, and at daylight on the following morning, when we got under way, it was covered with water. Had very light winds all day. Anchored to-night under Double Island, and on the following day, 1st of June, cleared Torres Strait by Prince of Wales Channel.

Part of the wheel and engines of the *Phoenix* still remain on Ipihi Reef. With regard to the sand banks mentioned, the question seems to present itself—Do they shift, and where may they next appear? my chief object in addressing you being to draw the attention of future navigators to aid in assisting to solve this problem.

Before concluding, however, I cannot help expressing my astonishment at the terrible ideas so generally associated with Torres Strait. I do think, after passing the barrier, with common prudence and clear weather, there is very little danger. But as the courses laid down cannot be adhered to, on account of the uncertain and various sets of current, it would become highly dangerous to run in thick weather.

We visited Booby Island and found part of the provisions there in the last stage of decay, evidently from having been heartlessly tampered with. On which subject I have addressed the Sydney Government, as it must be a source of deep regret to them and others who have been generous enough to place stores there for the relief of their fellow men.

I have, &c.,

ROBERT G. RAE.

Master-Mariner and Supercargo, Wee Tottie.

To the Editor of the Nautical Magazine.

I feel much pleasure in coinciding with the statements contained in this letter.

A. E. B. BROWN, *Master of brig Wee Tottie.*

Both Mr. Rae and Captain Brown have our best acknowledgments for their attention to these subjects, and will, perhaps, allow us to see their track when they return to England.—ED.

JAPAN ISLANDS.

Elmstone Rock.—A dangerous shoal, named Elmstone rock after the master of the merchant vessel who was first to report its existence. has been found off the West shore of the Uraga channel leading into the Bay of Yedo, South-East coast of Nipon. It has been examined

by Commander H. A. Reilly, of H.M.S. *Pioneer*, who found only ten feet on its shoalest part at low water springs, from which the East extreme of Kami Saki bears N.b.E. $\frac{1}{2}$ E., the South extreme of northern shore of Uraga Cove W. $\frac{1}{2}$ N., and the Plymouth rocks S.b.W. To avoid it do not bring Kami Saki eastward of N. $\frac{1}{2}$ E., or the Plymouth rocks southward of S.b.W. $\frac{3}{4}$ W.*

The *Uraga Channel* has lately been surveyed by Commander J. Ward, of H.M.S. *Actæon*. There are rocks off both shores, but by giving the land a berth of two miles will clear all danger. Cape Sagami may however be rounded at a mile, and Kami Saki at half a mile. No dangers were found off Su Saki, but the soundings obtained were very irregular, and a strong tidal overfall was seen on both tides.

Vessels bound to Yedo from the South-West, after passing $1\frac{1}{2}$ miles eastward of Mikomoto (Rock Island), should steer N.E. $\frac{1}{2}$ E., which will lead about four miles North-West of Oho Sima (Vries Island); from thence, the course and distance to the middle of the entrance of Uraga Channel is N.E.b.E. $\frac{1}{2}$ E. twenty-two miles. Great caution must, however, be observed when approaching Cape Sagami, as a strong indraught has always been experienced into Wodawara Bay. From $1\frac{1}{2}$ miles off the South-East point of Oho Sima to the middle of the channel, the course is N.N.E. $\frac{1}{2}$ E., and the distance 26 miles.

Light.—A light has always been found on the West end of Siroga Sima, the island lying off Sakura Point, at $3\frac{1}{2}$ miles westward of Cape Sagami. It is a wood fire burnt in an open shed, and when requiring to be replenished the flame becomes dim or temporarily obscured sometimes for the space of half an hour, especially when the fuel is damp from the rain. In clear weather it is seen from a distance of ten to fifteen miles.

Caution.—As a light has sometimes been seen on Su Saki, the East point of entrance to the Uraga Channel, care must be taken not to mistake it for the above light. The mariner is also cautioned to be on his guard in using the present Admiralty Chart of Japan, No. 2347, or any other published chart of that country, as from the recent partial survey of these islands by Commander Ward, it has been found that the coast line is incorrect, both in configuration and in position, especially in longitude, which on the West coast is from ten to twelve miles too far West. A new chart, based on the information collected on this survey, is in course of preparation, together with plans of several harbours, including the Bay of Yedo, with adjoining coast line, and the Seto Utsi or Inland Sea (commonly called Suwonada), with its East and West approaches.

Rocks off Cape King.—Vessels navigating between Yedo and Hakodadi must be careful not to approach the South-East coast of Nipon, in the vicinity of Cape King, nearer than three miles, as some dangerous uneven rocky ground was found by Commander Ward in

* See Admiralty Charts:—Yedo Bay and Harbour, No. 2657, scale m = 1 inch, on which this rock has been inserted; and Japan, No. 2247, scale m = 0.4 of an inch.

that neighbourhood. The least water obtained was three fathoms, from which the South extreme of Su Saki bore N.N.W. $\frac{1}{2}$ W., the summit of Cape Nina (nearest high land) N E.b.E. $\frac{1}{2}$ E., and the East extreme of land (a low promontory South of Cape King) E. $\frac{1}{2}$ S.; but as heavy rollers were seen in the immediate vicinity, it is probable that less water may be found.

On approaching this shoal from the southward the soundings rapidly decreased from twenty fathoms to fifteen, nine, and three fathoms; at the latter depth the bottom was distinctly seen. To avoid it when bound to the northward, do not bring Su Saki westward of N.b.W. until the East extreme of land *seen* bears E.N.E.; when bound from the northward do not approach the land nearer than to bring the above East extreme on the bearing of E.N.E. until Su Saki bears N.b.W.

Lady Inglis Reef, on which a vessel of that name is said to have been wrecked in December, 1859, is stated by the Master, Mr. H. Twizell, of Shields, to lie about S.S.E., six miles from Omae Saki, South coast of Nipon. Its exact position was not ascertained, as the vessel soon broke up, and there was barely time to save the crew in the long boat. It appeared to be a quarter of a mile in extent, and only parts showed at low water. A few hours after a native junk, it is said, struck on the same reef outside the wreck, and rolling off into deep water, sunk with all hands.

As this reef, and also the Portsmouth Breakers, lie in the direct route of vessels bound to Simoda and Yedo from the westward, a good look-out should be kept and more than ordinary care taken when approaching their locality. The position of the reef being doubtful, mariners are requested to obtain information respecting it, which may easily be done by a passing vessel in favourable weather, as parts of it being dry at low water the reef must nearly always show itself by breakers. The place assigned on the chart to the Portsmouth Breakers has been sailed over by H.M. ships, at one time when there was a high sea, but no danger has been seen. The bearings are magnetic. Variation $2^{\circ} 20'$ West in 1862.

China.—The Yang-tse Kiang light-vessel, at the entrance of that river, has been moved from the edge of the North bank to mid-channel, nearly abreast or $1\frac{1}{4}$ miles S.W. of her former position.

PORT DENNISON, Queensland.—Directions for the Southern Passage.

We have received the following from Lieutenant Heath, R.N., at Brisbane, in Queensland.

On leaving the picturesque land about Port Molle, the high land of Gloucester Island is in sight to the north-westward, several islands lie near the ship channel, all of which are incorrectly placed on the chart, and the rate at which we were passing in the *Eagle* prevented my fixing their positions correctly. Gloucester Island is a remarkable, high, sharp ridge, a side of which resembles an enormous molar tooth, the northern extreme appears to be steep close to, to within a moderate

distance. We passed within a mile of it, and as soon as it is rounded, Middle Island is seen at some six miles distance to the westward, reddish coloured, barren, rocky, and rather flat topped, and of no great height.

On rounding Gloucester Island, at the distance of about a mile, the left extreme of Middle Island is on with Mount Mackenzie, one of the hills at the back of Port Dennison, somewhat resembling in outline a saddle with a sharp pommel. The South entrance to Port Dennison then lies about in the direction of a line drawn to the southward of Middle Island, about its own width. As soon as the Cape is rounded, steer about S.W.b.W. for a sharp peak on the main land, until Middle Hill* is open to the northward of Mount Mackenzie, when keep away, taking care not to close in the above marks, which lead clear of the detached coral patches off Stone Island. As soon as the North channel is open, a vessel may haul up, and pick up her berth according to her draught of water.

On leaving the port, the coral patches are past, when Holborne Island is opened clear of Stone Island. For vessels entering the port, the southern channel being the weathermost, is in every respect to be preferred to the northern. It is considerably wider and deeper, and it has also better landing marks than the northern channel, which cannot be recommended for a vessel entering with any draught of water, with the wind at S.E. A stranger might be somewhat alarmed when steering across Edgcombe Bay, at light patches which may occasionally be seen, looking very much like shoal water, but in every instance where I sounded on these discolourations, I found the water two or three feet deeper than on the surrounding space. They are therefore, I think, caused merely by the upper coating of dark mud being displaced by the tide, leaving back the white pipe clay beneath.

The plan already published appears to show about two feet too much water at low water springs. The low water mark extending in consequence considerably further out, than it would there appear.

NEW BUOYS.

Under the title of "New Buoys" some information appears in p. 448 of our last number bearing the signature of Mr. Cunningham, the Secretary to the Northern Lighthouse Commissioners. This circumstance inadvertently escaped our notice, having been improperly added by our printer; the information itself emanating from the person whose name it bears, and having nothing whatever to do with the "Northern Lighthouse Board" at Edinburgh. We are anxious to remove the injustice thus done to the Northern Light Office and its respected Secretary, and request our readers to substitute the following for the whole of the information reported as it stands under the title of "New Buoys."—

* Middle Hill is a small well-formed cone, standing about back from the beach.

Buoy in Sound of Kerrera and North Entrance to Bay of Oban.

The Commissioners of Northern Lighthouses have given notice that "they have caused a six feet buoy, coloured black, to be moored in three fathoms water, outside the 'Little Horse Shoe Rock,' in the Sound of Kerrera, leading from the southward towards Oban, in the County of Argyll. The following are the bearings from the buoy :— Middle Bank Buoy, E.N.E. $\frac{1}{2}$ N.; Pudding Stone Point, S.E. $\frac{1}{4}$ E.; Middle of Rock, N. $\frac{1}{2}$ E." Also,—

"That they have caused a buoy, coloured red, to be moored in five fathoms water off the North Spit of the Island of Kerrera, in the Northern entrance to the Bay of Oban. The following are the bearings of the buoy :—West end of storehouse next to Oban Pier on with the Free Church, S.b.E. $\frac{1}{2}$ E.; Dunolly Old Castle, E.b.S. $\frac{1}{2}$ S.; Rock from buoy, W.S.W."

New Books.

THE ANNUAL RETROSPECT OF ENGINEERING AND ARCHITECTURE; a Record of Progress in the Science of Civil, Military, and Naval Construction. Vol. I.—January to December, 1861. Edited by G. R. Burnell, C.E., F.G.S., and F.S.A. Lockwood, London.

Such a work as the foregoing title introduces was much wanted. It is one that will not even fail in finding general readers, besides that numerous class who look for information in the important subjects which it includes; and one the success of which will evidently much depend on the care with which it is conducted. Our learned societies preserve these records separately it is true, and quite inaccessible to many. But to have them selected and brought together in one handy volume annually, of which this promises to be the first, is indeed an advantage of which very many will avail themselves. Nor should it fail to give such illustrations as may be found necessary, for full often these are required, and should not by their neglect impair the value of the book. In fact, neither pains nor expense should be spared to render the *Retrospect* complete. And why has it not an index? What is a table of contents?—perhaps an excuse for one, and a bad one too. For instance, we wanted all it contains on "tides," and to find it had to look up division iv without success, where they appear in its title, and found them in section 2 of division i, treating on harbours, docks, and canals. This is, however, but small disparagement, and will in no way operate against the merits of the work unless persevered in. We hope Mr. Burnell will see our remarks in the light they are intended, and if he is a man of business, as he must be, that he will give us what has been termed by a high authority the most valuable part of a work, but which may be truly called the key that unlocks its treasures in a moment,—for even moments of time in life are precious.

TO CORRESPONDENTS.

Captain Johnson, on Lord Howe's Group, received.

Our best thanks for the attention of our Hamburg friend in sending us the printed statement concerning the Sailors' Home.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

OCTOBER, 1862.

COAST SURVEY OF PALESTINE.

H.M.S. Firefly, Beirut, July 29th, 1862.

Sir,—I returned here from Yafa a few days since, and am happy to inform you that the coast line and soundings to El Arish are completed, thus connecting our present survey of Syria and Palestine with that of Egypt.

Finding the continual westerly swell on this exposed coast much too heavy to admit of our landing, I decided on sending Mr. Hull, accompanied by Lieutenant Bedford, by land from Yafa to Gaza. This duty was most satisfactorily performed; and after an absence of a week they returned with much valuable information, as Mr. Hull's short outline will show. Unfortunately the weather was very hazy, with the exception of the two first days.

With us in the ship, to the southward of Gaza, dense fogs generally came on at sunrise; that continued for a couple of hours, until dispersed by the powerful rays of a burning sun. I was fortunate in having moderately smooth water at El Arish, and obtained sights for meridian distance without difficulty, the results agreeing well with those obtained in H.M.S. *Tartarus* in 1859.

Mr. Hull, as you will perceive by notes taken during the trip, and from which I shall now give you a few extracts, finds Van de Velde's map of Palestine, by Petermann, very correct, with the exception of one or two villages, which had escaped his notice.

July 11th.—“We left Yafa in the morning, reached Ludd, or Lydda,
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at noon, and Ramleh at 1h. p.m. All the villages between Yafa and Ramleh appear to be correctly laid down in Van de Velde's map.

Angles were obtained from Ramleh tower. The weather being clear, all the conspicuous points along the mountains of Samaria were seen, as Deir Abu Meshal, Nebi Samwil, and Beit Unia,—important points which will connect Jerusalem with the coast. Symond's tree c and El Fejjeh were also seen, with Tell es-Saffiyeh and Nebi Yunas.

July 12th.—Started for Tell es-Saffiyeh, keeping the road as far as the well in the Wadi Rubin. We then struck into a path leading direct to the Tell, passing through two villages, Kazazeh and Glibi, not marked in the map. The road as far as the former village led through the plain; after which it passed over the low spurs of the mountain. We reached the Tell at 3h. p.m., and obtained an excellent round of angles, as the weather was clear.

Tell es-Saffiyeh occupies a commanding position. It is well described by Robinson, who used it, as did Van de Velde, as one of his stations. To the southward is another Tell, not so high, crowned with a village and ruined tower, called Berkusia.

July 13th.—Rode to Beit Jebrin by way of Dhikrin. On the south side of the castle are the remains of a cloister, half buried in rubbish, the pillars of which are in a good state of preservation. After spending some time in the curious caverns near the village we pushed on to Arab el Menshiyeh, passing the village of Beit Attub, not marked by Van de Velde. The village is easily distinguished by a woody Tell to the north with a Nebi, from which angles were taken.

July 14th.—Pushed on to Gaza, passing through the villages marked by Van de Velde, whom we here found very correct. The inhabitants were gathering in a plentiful harvest. At 3h. p.m. we reached the town, after riding nearly an hour through a grove of olive trees.

Gaza is the largest town I have seen in Syria, next to Beirût. We repaired at once to Tell Moutar for angles; but unfortunately the clear weather had left us, and they were anything but satisfactory. Tell es-Saffiyeh cannot be seen from this hill, and an intermediate station had therefore to be taken on a Tell about six miles to the N.E. Southward of Gaza all seemed desert, the palm trees round Deir el Belah being the only green seen.

July 15th.—Obtaining angles at Sheik Arduan, we rode along the beach to Askelon. We should have done much better had we taken the round by the road, the travelling being very heavy over the sand. Three miles south of Askelon we passed the mouth of the Wadi Sinsim. The water was brackish, but the stream not sufficiently strong to force its way through the beach.

From the remains of an arch, apparently forming part of a small ruined chapel, on a mound about quarter of a mile to the east of the walls, and which has the appearance of a pillar from a distance, we obtained a satisfactory round of angles, the view overlooking a fer-

tile country, dotted with groves and villages. Migdel, a considerable village, with a conspicuous minaret, is situated just inland of the coast range.

July 16th.—Leaving Askelon we took a road nearer the sea shore than the regular track through Migdel. Passing through Esdud, we turned off towards the coast, and obtained angles at Nebi Yunas. Here Van de Velde's map is slightly in error, the Nebi being on a very conspicuous sand hill within half a mile of the sea, on the south bank of the Wadi Safiyeh, a considerable stream at this point, but it does not enter the sea.

We camped at Yibneh and the next day reached Yafa, the road running generally between the coast sand hills and the plain. A guard of three men was always sent to the tent by the Sheik of each village where we slept."

I have fixed Jurmuk, from which I require a round of angles, also Um el Falim, Mount Ebal, and Gerizim; but have not had time to examine or map any part of the interior, being anxious to finish the coast and soundings during the calm season, leaving this work for the middle of September, when I propose to start from Akkah, accompanied by Mr. Hull, and commencing at Mount or Jibel Mushakka, gradually work my way to Jurmuk, Safed, and descend into the plain of Buttauf; thence to Mount Tabor, Tiberias, Nazareth, and Little Hermon, across the plain of Esdraelon, and so on to the hills of Samaria. We require Mount Ebal to connect the coast and Yafa. Nebi Samwil, with another point South, will fix Jerusalem independent of astronomical observations.

I do not think there will be any occasion to go down to the Dead Sea, as that can be fixed, as well as the mountains of Moab and Kerak, from the heights near Jerusalem and Hebron, (at which latter place I hope to find a good point,) descend into the plain to Eleutheropolis and along the foot of the hills to the Yafa road.

Should I not be able to map the whole country, still I shall have fixed points on which future travellers can work; and thus the Admiralty, in addition to the coast-line and soundings, will have the satisfaction of having contributed its fair share towards the inland topography of Syria and Palestine.

I shall leave in a few days for Cyprus, to connect that island with this place (Beirût); and if a favourable breeze will take me to Cape Kârâdash I propose going there also. Another point I am anxious to carry out on my return here, and which I see no difficulty in doing, now that the telegraph is completed, is to determine accurately the longitude of the city of Damascus.

I omitted to mention that near Yibneh we have discovered the remains of an ancient port, with a long mole extending from a cliffy point on the south (on which stood a fortress), half a mile long by quarter of a mile deep. The mole is in many places above water. Inside, the bottom is sandy and apparently clear of rocks, with an average depth of fifteen feet. I intend going there again, and if

likely to be turned to account, will make a plan of it. When there we could not attempt it, owing to the heavy swell.

By this mail I forward the plan of the bay of Akkah and views for clearing the Carmel reefs and for the outer anchorage off the town. This completes all the plans of the coast of Syria. The general coast sheet No. 3 will be all that remains on hand. As soon as I have completed the triangulation of this, with the coast and soundings, I will forward you a tracing, which will enable the engraver to commence on it at once. I hope the plans of Akkah, Khaifa, and Yafa, with the topography of sheet No. 2, have reached the Admiralty safely.

Disturbances have lately taken place in the Hauran, and a skirmish has already occurred between the Druses and the Turks, in which several were killed and wounded on both sides. This is connected with the collecting of taxes in arrears and getting conscripts for the army. Great fear is entertained of a serious outbreak. If so we may expect a repetition of the events of the year 1860. The Turkish troops in and around Damascus are far too few to attack these tribes, in such a country as the Hauran, which cost Mehemet Ali 40,000 men, without being able to subdue them.

All are well on board, and I am thankful to say we have had no sickness whatever amongst the men this summer.

I am, &c.,

A. L. MANSELL, *Commander.*

To Rear-Admiral Washington, Hydrographer.

Position of the great minaret Ghuzzeh (Gaza), depending on the astronomical position of Yafa,—lat. $31^{\circ} 29' 15''$ N., long. $34^{\circ} 27' 15''$ E.,—assuming Alexandria lighthouse to be in $29^{\circ} 51' 40''$ E.

Position of Ghuzzeh on Van de Velde's map,—lat. $31^{\circ} 29' 20''$ N., long. $34^{\circ} 33' 15''$ E., a very creditable approximation.

LATAKIYEH.

A view of Latakiyeh, from the gifted pencil of Lieutenant Brooker, R.N., accompanies our present number, and the following brief account of this place is given by Colonel Chesney:—

It is a seaport town in Asiatic Turkey, Syria, a pashalic, and seventy-five miles North of Tripoli, on the North base of a lofty promontory called Cape Zialet, which projects about a mile and a half into the sea. It was once surrounded by walls but is now open, and consists of about 1,000 well built houses, pleasantly situated among groves of myrtle, pomegranates, and olive trees, and forming two distinct portions—an upper and lower town: the former, as its name implies, occupying the higher ground; while the latter, called la Scala or la Marina, stretches along the shore in the vicinity of the harbour. This portion is composed of two streets parallel to the shore and a third leading upwards from the port, and is inhabited chiefly by seafaring people.

The principal buildings are the Greek churches, five mosques, an Armenian convent, and a bazaar of large extent, but very indifferently supplied. The harbour is well sheltered from all winds except easterly, but has a narrow entrance and little depth of water, and though once capacious enough to accommodate a thousand galleys, has become so silted up by mud and sand as scarcely to contain a dozen merchant vessels. The trade is chiefly in tobacco—which is largely cultivated in the vicinity and is famous both in the East and throughout Europe,—cotton, silk, gall-nuts, wool, and wax. The wines, once celebrated, have lost their reputation, but the raisins are still delicious. Latakia has suffered severely by earthquakes, and owing partly to them, and to a general decay of trade from other causes, the population, which once amounted to 20,000, does not now exceed 7,000.

Robinson, in alluding to Latakia, says,—

It stands on the northern edge of an elevated tongue of land, called Cape Zaret, which advances about half a league beyond the line of coast. It was formerly a walled town, there is more space allowed for building on than if it had been fortified. In the new quarter, which is to the North-east, the houses stand in the midst of gardens and plantations, enclosed by high walls. Almost all the houses are flat-roofed, the inhabitants being accustomed to sleep on their terraces during the hot summer months, as at Aleppo and other parts of the East.

Latakia appears to be subject to earthquakes: in many parts of the town I observed large fissures in the walls, and immense stones displaced by some violent concussion: that of 1822 was the most destructive. From this cause and its declining commerce, we may attribute its gradual depopulation, it being reduced from twenty to about six or seven thousand souls. Of these a large proportion are Mussulmen, and noted for their bigotry and intolerant spirit. Besides eight or ten mosques which they have in the town, they have begun building another on a hill to the East of it. It is still in an unfinished state, but to judge from the architecture and costly materials, it will not be surpassed in beauty by anything of the kind in this part of Syria. It is so unusual to see a new mosque erecting in these declining days of Islamism, that I inquired the cause of one of the workmen. He conducted me to the sepulchre of one Mahommed, a native of the Barbary States, who died a few years ago, having obtained a great reputation for sanctity throughout the country.

The port of Latakia, called the Scala or Marina, is a distinct town from the upper one, being separated from it by a distance of about half a mile, the intervening space being occupied by gardens and enclosed plantations. It consists of a double street, running parallel to the shore, and another leading down to it from the town, having its coffee-houses and other places of resort for seafaring people. The haven itself is a small basin with a narrow entrance, shallow, but well sheltered except to the westward. If the mud and sand which have

been allowed to accumulate were cleared out, vessels of one hundred and fifty or two hundred tons might enter and discharge at the quays; but this is far too great an enterprise for the present rulers of the country. On the North side of the entrance is a ruined castle, standing on a rock connected with the main land by arches. On the southern side are the remains of the ancient wall which encompassed it. At its eastern extremity is the custom-house and the landing place. At this part is an artificial indenture into the cliff, perhaps a basin for building and repairing of ships in ancient times.

The chief exports of Latakia are tobacco, grown in the Anzevry mountains, east of the town, cotton, and raw silk, the produce of the neighbouring plain. But such are the limited transactions of this place and the other parts of Syria, that European vessels of two or three hundred tons can seldom meet with an entire cargo in any one port, unless chartered for the purchase. They commence taking in goods at Beirut, and so call in at the several ports on the coast as far north as Iskenderoun, by which much time is lost and great additional expense incurred.

The bazaars of Latakia are poor and insignificant, and bear ample testimony to the declining trade of the place. The only article exposed for sale which particularly attracted my notice was the tobacco. This part of the country, as well as Djebail, which lies to the southward, is noted for producing the best tobacco in Syria. It is celebrated all over the Levant, but more particularly in Egypt, where it is principally consumed; whereas the Salonica tobacco, so highly prized at Constantinople, scarcely meets with a sale in Egypt. The dark colour which distinguishes it from the common plant is produced by the smoke of a species of wood called hezez, which is burnt under it as it hangs suspended to the ceiling, to give it a flavour.

Latakia, or Latekié, as it is called by the natives, is the representative of the ancient Laodiceæ, so named by Seleucus Nicator, its founder, in honour of his mother. It was called Laodicea ad Mare, to distinguish it from other towns of this name in the interior. Its early history is involved in some obscurity. In the time of the Crusaders it played a less important part than the other cities of this coast, being further removed from the Holy Land, so long the object of contention between Christians and Infidels. There are still, however, some few remains of the ancient city.

The air of Latakia is considered very wholesome. Its situation is less confined than that of other cities on the coast. Here the mountains are further removed from the sea, and towards the North the plain opens to a great extent. The water, however, is bad; that which the inhabitants drink is brought by an aqueduct from a great distance.

As I was walking with a friend among the plantations lying near the port, some Albanian soldiers, who had just landed from Acre, commenced, by way of amusement, discharging their muskets in the air right and left, and in order to increase the report, loaded them with ball. We had well nigh become victims of their recklessness,

for it was only by lying down under a wall we escaped the bullets that whistled over our heads. In this inconvenient position, and still more unpleasant state of anxiety, we remained for nearly half an hour, not daring to rise up till the firing ceased.

The environs of Latakia, owing to the undulated ground that encompasses it, particularly to the east and the south, being everywhere clothed with the richest vegetation, are noted for their amenity. From every little elevation one may catch a bird's-eye view of the sea, and inhale the breezes that come up from it. Of an afternoon, as the sun declines, picturesque groups begin to crown the neighbouring heights, and by the time it sinks into the far west, the whole population has evacuated the city. Their amusements on these occasions are confined, on the part of the 'Turks, to the silent contemplation of the beauties of nature; with the Christians, to conversation and innocent mirth. They are seldom seen in direct communication with one another.

By Lieutenant Brooker's plan the harbour has but a few feet depth of water in it, although a deep entrance, and about 500 yards across.

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

(Continued from p. 463.)

January 16th.—In the afternoon his Excellency the Governor landed, and before commencing to replenish the almost empty coal-bunkers, I determined to beach the ship and try and get off some of the weed, barnacles, and other parasites which cover her bottom, and have occasioned latterly a loss of full thirty per cent. speed.

Accordingly, at high water on the morning of the 21st, we slipped our mooring swivel and hauled in by a kedge on to the hard in front of Official Bay; and at low water, which left her nearly dry, we found the copper covered full half an inch thick with small barnacles and weed, which it required hard scrubbing to remove. As the ship is only four months out of dock I am at a loss to account for such an accumulation, considering she has been so continually at sea ever since, and can only attribute it to the deterioration of the copper, which has been on nearly twelve years. Experienced men tell me, however, that vessels foul very soon in these waters. I let the ship remain on the ground two tides (her greatest inclination was $10\frac{1}{2}$ degrees), and before hauling off gave her bottom a coat of whitewash; which, from previous experience while commanding the *Reynard*, in China, will, I hope, keep the weed, &c., from attaching itself to the copper for some time to come.

Sunday, January 23rd.—The Bishop of New Zealand performed Divine Service on board this morning at 9h. a.m., and I consider the

event well worthy of a record. Bishop Selwyn is a Paladin among bishops. For eighteen years (since May, 1842) he has been at the head of a great mission, furnished, fortunately, with a strength of mind and body equally great, and fully capable of grappling with and of overcoming the difficulties and obstacles that beset his path. From the first his mission promised to be the most hopeful and interesting that the English church had ever undertaken, and these promises have been more than fulfilled. The native races that inhabit the islands of New Zealand are among the noblest, both morally and physically, that have ever yet fallen under the protection of Britain by right of conquest, or as having received from her the first rays of gospel light. Bishop Selwyn has been the means, under Providence, of spreading the great truths of Christianity among them, and has given a lustre to the name of Englishman in the earnest devotion and faithfulness of his own life. He has lived and toiled through a noble seed time, but the full harvest is yet to come and thousands yet unborn will hereafter recall his name with gratitude.

February 1st.—The *Iris* arrived on the 19th ult. from Wellington and left us to day for Kau-wau, an island about five miles North of Tiri Tiri, on which there is a small grazing establishment, to fill up water, of which, owing to a long drought, there is but a scanty supply at Auckland. This want of water is becoming daily a more serious question here. The population is increasing with great rapidity,—the city spreads out wider and wider, and proportionally with that increase and extension the present too limited water supply has become both lessened in quantity and deteriorated in quality. For shipping there is positively none to be had, except by sending to a considerable distance, and a good floating tank would prove a mine of wealth to the owner. Thanks to our condenser, we are independent of extraneous sources; although, in all probability, if our old leaky pinnace had been available, instead of being hauled up on the North shore undergoing a thorough repair, I should have gone to Kau-wau too, instead of expending coal to keep the tanks full. * * *

Friday, February 3rd.—We had a grand battue to-day with the great guns at two targets: one (a cask) at 800 yards, the other at 1650 yards, whitewashed on the cliff to the northward, abreast the ship. Some excellent practice was made, both with shot and shell, and our proceedings appeared to make a sensation, judging from the crowds who flocked at all available places to get a view of the firing. Indeed it is many years since the inhabitants of Auckland have had an opportunity of witnessing a display of naval gunnery.

February 16th.—I had a visit yesterday from the Rev. Mr. Patteson and his pupils, belonging to the Melanesian mission, established at Kohimarama, about six miles from Auckland. They wandered about the ship the whole afternoon, seemingly interested, especially with the engines, having never seen anything of the kind before.

A few words about this mission will not be out of place here. Its object is to carry the knowledge of the gospel to the heathen islands of the South Pacific, and specially to those groups which lie in a

North-westerly direction from New Zealand; and it is one of the great pioneering works of Bishop Selwyn. Melanesia means "Islands of Black People," and the name is very appropriate, as the natives of those western islands are much darker in colour than the Polynesian race. In Eastern Polynesia there seems to be but one language, with many very distinct dialects: one of these is spoken by the New Zealanders. But in Melanesia the very structure of the language is often different, and several dialects are sometimes found on the same island.

Melanesia comprises the Loyalty, Banks, and Solomon Islands, the New Hebrides, Santa Cruz, and many other smaller groups. The Banks Islands lie to the North of the New Hebrides, in lat. 14° S. The islands are fertile and support a large population. There is a fine harbour at Varma Lava, the largest of the group, first discovered by the Bishop in 1857, and named by him Port Patteson. The natives of this group are very friendly and confiding, not having yet been much visited by sandal-wood traders.

Many of these western islands are of large size and thickly populated. The Bishop paid his first missionary visit to them many years ago in the *Undine*, a small schooner of twenty-one tons, and in 1849 the first Melanesian scholars were brought to New Zealand. At that time but very little had been done in the way of missionary work. Some of them had indeed been visited by John Williams, who perished a martyr to the cause on Eromongo, and whose murderer is now under Christian instruction. Native teachers had also been sent to the Loyalty Islands and southern New Hebrides by the London Society. In 1851 the Bishops of New Zealand and Newcastle together visited many of the Melanesian islands in the *Border Maid*, which had been purchased for this mission by its friends in Sydney and elsewhere.

This was one of the voyages in which the Bishop nearly lost his life. He and his boat's crew were attacked by the natives at Mallicolo, while employed watering; and but for the courage of the Bishop, who bade all walk straight on through the crowd which had assembled on the beach to prevent their return to the boat, the whole party would have been put to death by the natives. The next day the very men who had made the attack were most friendly, stating as an excuse for their previous conduct that they had mistaken the vessel,—that the crew of another had ill-treated them some time before, and that they had determined to retaliate, not at first recognizing the Bishop.

In 1852 twenty-seven scholars were brought to the Melanesian School, speaking seven languages; many of these were Loyalty Islanders. The next missionary voyage was undertaken in 1856 by the Bishop and Mr. Patteson, in the new schooner *Southern Cross*, and thirteen scholars were brought to New Zealand. In 1857 a long voyage of four months was made to Melanesia, and more than seventy islands were visited. Thirty-three scholars were obtained, from nine different islands, speaking eight languages; one of these was the Prince Regent of Lifu—the largest of the Loyalty Islands,—and he was accompanied by his wife. The following winter Mr. Patteson

stayed behind in Lifu with a small party of twelve scholars from the New Hebrides and Solomon Islands. During this time he translated the Gospel of St. Mark into the Lifu language, and 3,000 copies were printed.

In 1858 the Melanesian School numbered forty-seven scholars, from eleven different islands; and the *Southern Cross* has only just returned with the batch we saw yesterday. The anchorage of this mission-vessel is in front of the establishment at Kohimarama, where good stone school buildings have been erected at the sole expense of Miss Yonge, who gave the proceeds of the *Daisy Chain*, more than £1,600. for that purpose.

This is but a short outline of the past history of the Melanesian Mission—the only one of the Church of England in the whole Pacific,—but it is sufficient to show that a great work is in progress, and although the results have as yet been very small, more than eighty islands have been visited, and most friendly relations established on many of them.

February 25th.—Sinister rumours have been current lately as to the state of affairs at Taranaki (New Plymouth). The facts of the case, as far at least as I have been able to ascertain at present, are these. It appears that on the Governor's last visit to that province, Te Teira or Taylor, a Waitara native (Waitara is a district on the coast about nine miles North of New Plymouth) stated that he wished to sell his land, and at a large meeting of natives asked the Governor if he would buy it. Mr. M'Clean, on the part of his Excellency, replied that he would. Te Teira then placed a "paraiwai," or bordered mat, at the Governor's feet, which was accepted. This ceremony, according to native custom, placed Teira's land at Waitara in the hands of the Governor.

All preliminaries having been adjusted and the first instalment (£100) of the purchase money paid—£600 being the full price,—a survey of the land was ordered, as usual, when another native, one Wiremu Kingi or William King, now a chief of some authority, although formerly a slave himself, interfered and declared the survey should not take place, as Te Teira had no right to sell the land without his (King's) previous consent. As this was an assumption of sovereignty over the land, to which, after a thorough investigation, the Government considered he had no title whatever, his threats of opposition were unheeded, and the surveyors proceeded to perform their duty. But on arriving on the land and laying down the chains they were obstructed by some old Maori women, sent by W. King to prevent the survey taking place, a party of men lying near in readiness to assist in case of need. But the old hags' opposition was quite effectual—it was impossible to use the chain, and one of them throwing her arms round Mr. Carrington's neck, prevented the theodolite from being used, so the surveyors had to beat a retreat.

As soon as these proceedings were made known, Mr. Parris, the Land Purchase Commissioner, warned King of the consequences if his opposition were continued, and gave him twenty-four hours for consi-

deration. At the expiration of which time, as the notice was disregarded, "martial law" was proclaimed by the Military Commandant (Lieut.-Col. Murray), the militia called out, and the out settlers called in. This last and most important intelligence was received to-day by the *Airedale*, arrived in the Manukau; which also brought a requisition for reinforcements.

Sunday, February 26th.—Late last night I received notice from the Governor that my services were required immediately at Taranaki, in consequence of these untoward events. His Excellency stated also that it was his intention to go down in the mail steamer from the Manukau with the 65th Regiment, and was pleased to add "I am satisfied there will be no opposition, the object I have is prevention, which is much easier than cure"! Accordingly, at daylight, I got everything ready, completed provisions to three months, and after embarking two 24-pounder howitzers, with artillerymen to work them, and an immense quantity of ammunition, shot, and shell, at 2h. p.m. I put to sea, under steam, as the wind was foul, for our destination. But before midnight the breeze drew round, enabling us to get the screw up and proceed under sail only.

February 27th.—At daylight we were abreast the Poor Knights; but the wind died away before we were well past the entrance to the Bay of Islands, so we had to steam again. Passed several whalers on the look-out for fish, one making so much smoke from her coppers that I thought she must be on fire, and altered course to close her. The next day we rounded Cape Maria Van Diemen in a dead calm, with a very heavy swell from S.W. Immense bush fires were burning, which presented a magnificent appearance after dark.

Thursday, March 1st.—Light variable winds have prevailed since rounding the North Cape, forcing us to keep the steam up, except for about twelve hours. At four o'clock this afternoon the land about New Plymouth was in sight: the sugar-loaf shaped islets are remarkable objects. The Government Pilot, Mr. Watson, who was with Captain Liardet when he met with his accident, and escaped with less injury, although his face is still black with gunpowder, came out; and at sunset we anchored off the settlement of Taranaki, between two buoys belonging to the moorings laid down for shipping, in $6\frac{1}{2}$ fathoms, about half a mile off shore.

The *Airedale*, Inter-Colonial Mail Steamer, arrived this morning from the Manukau, with the 65th Regiment, under the command of Colonel Gold, who is accompanied by a staff sufficient for 5,000 men. The Governor came in her also. The troops were landed immediately and are encamped within the limits of the town, ready for immediate action. A message had been sent to William King, but there has not been time for a reply, and his Excellency wrote me word that "People are a good deal excited, and differ in opinion as to what reply he will send; the appearance of the *Niger* will, in my humble opinion, render resistance so absurd that W. King will not presume to attempt it"! How far this opinion of his Excellency will prove correct time will show; but those who know the Maori character well, say that, no

menaces of military interference are likely to have any effect upon men who from their childhood have been accustomed to regard it as a point of honour to shed their last drop of blood for the inheritance of their tribe. And in Dr. Thompson's work on New Zealand, lately published, are the following observations upon the laws regulating native lands (pp. 96-7):—"As the people increased, the number of landed proprietors increased also, and the exact relationship each bore to the chief was forgotten. Notwithstanding all this ignorance, *all* knew they had a legal right to the land, and no part of it could be given away without their sanction. * * * The cultivation of a portion of forest land renders it the property of those who cleared it, and this right descended from generation to generation. But this individual claim did not give the individual the right to dispose of it to Europeans." It appears to me that this is the question at issue between the Governor and Wirimu King. The land is Taylor's, acquired by settling upon and cultivating it; but he does not possess the power, according to native law, to alienate it to the Government without the consent of Wirimu King.

March 2nd.—I landed the artillerymen this morning, but kept the guns, which are too unwieldy, Colonel Gold thinks, to be of much service in an uncleared country like this. The men went ashore in fine surf boats belonging to the Government establishment. These boats are of large capacity, pulling ten oars; they are employed to land and ship the cargoes of the vessels that call here, and are admirably adapted for the heavy surf on the beach. Moorings are laid down outside, and they are worked with a hawser through the breakers.

The Province of Taranaki has a coast-line extending over a hundred miles, from the river Mokau, on the North, to the Patea, on the South, without a single harbour, or even decent anchorage. Small coasters, drawing six or eight feet, may perhaps enter these rivers, and the Waitara, at high water; but this appears to be the whole extent of accommodation for carrying on the trade of a district embracing an area of 2,400,000 acres, and which, although there are scarcely 15,000 acres under cultivation yet, has already acquired the reputation of being the "Garden" of New Zealand, owing to the great fertility of its soil, the richness of its pastures, the beauty of its scenery, and the salubrity of its climate. The sheep (real Southdowns) and cattle are magnificent, and the cheese has a great *renommée*—it is quite equal to Stilton. For these and all other agricultural produce there is a never failing demand at Melbourne, with which place a direct trade is carried on by fast sailing schooners; so that a body of enterprising colonists may be said to have their fortunes in their own hands.

Another available source of wealth is the metallic sand with which the beach is covered. This sand has the appearance of fine steel filings, and a magnet dropped upon it would be taken up thickly coated with the granules. The deposit extends several miles along the coast, to the depth of many feet; but although so many years have elapsed since its discovery, it is only recently that any attempt has been made

to turn it to a practical account by Captain Morshead, who came here on purpose to verify the reports made of its value. He had it carefully analysed, and it has been pronounced to be the purest ore at present known. It is stated to consist in every hundred parts of—

Peroxide of iron	88·45
Oxide of titanium, with silica	11·43
Loss	·12
	100

Professor Herapath states that it contains sixteen per cent. of titanium and only six of silica!

Taking the sand as it lies on the beach and smelting it, the produce is sixty-one per cent. of iron of the very finest quality; and if it be subjected to what is called the cementation process, the result is a tough steel, which seems to surpass any description of that metal known.

Metallurgists have found that if titanium be mixed with iron, steel of a superior quality is the result; but titanium being a scarce ore, the mixture is too expensive for ordinary purposes. Here, however, Nature has made a free gift of both metals united, and many millions of tons are to be had only for the trouble of taking away. Such a mine of wealth ought not to remain long dormant. Notwithstanding, however, all these advantages there is an air of utter stagnation in the colony, which I can only account for by the want of a good port.

New Plymouth, the capital, was founded by the New Zealand Company in March, 1841. Its progress appears to have been very slow. The population of the town in 1858 was only 800; and of the whole province 2,700 Europeans and 3,000 natives. The imports amounted to £32,503; exports, £11,023. The ordinary revenue was £5,810, being £168 more than the year 1857. Emigration may be said to be *nil* to this province,—135 arrived in 1857, but 109 departed. The country in the immediate neighbourhood of the town, especially where it is cleared, is very beautiful. It is intersected in all directions by ravines, with purling streams, which take their rise from the snowy sides of Mount Egmont, an extinct volcano, whose summit, towering 8,000 feet above the level of the sea, forms a magnificent back ground, a superb finish to the landscape.

Sunday, March 4th.—Wiremu Kingi continues to be what the authorities are pleased to call “contumacious.” He refuses to come in to a summons from the Governor, although a safe conduct has been promised him; and the Governor considers it *infra dig.* to go to Wirimu Kingi. The chief has retired to a strong pah in the neighbourhood, whither it is not deemed *prudent* to follow him; and after a council of war it was resolved to hold no further parley with this rebel against the Queen’s authority, but occupy the land in dispute and awe this redoubtable champion of native rights into submission. Not a shot, the Governor assures me, will be fired; directly he sees that we are in earnest he *must* come to terms.

Accordingly, arrangements were made to-day to move every man of the force here available down to the Waitara, leaving sufficient to guard the barracks, with the help of the Militia and "Volunteer Riflemen." I undertook to convey the heavy baggage, "the impediments," which was all sent on board this evening, the weather being fortunately favourable for our co-operation. And late at night the Governor and his Private Secretary embarked also, in the full belief that this demonstration will have the desired effect. Should it fail, however, the consequences will be most serious to the colony.

It *may* be an easy matter to extinguish a native title;—on that point I do not pretend to give an opinion. But I cannot help feeling that a native war, should one unfortunately result from these proceedings, will be most difficult to extinguish, and certainly ought not to be undertaken on light grounds, or without ample preparation. An awful responsibility indeed attaches to those whose measures appear to me to be driving the unhappy natives into a state of rebellion. They ought to weigh well what Swainson, no mean authority, has written in his work on New Zealand, and reflect upon his remarks, at page 153, on these Maories:—"There is not a single man amongst them who is not familiar with the use of the musket, and warfare has been the business of their lives. From lengthened experience they have become good tacticians. They can always choose their own fighting ground; are independent of any regular commissariat, and can move rapidly from place to place, either across country or by paths where ordinary European troops would be unable to follow them; and when closely pressed they have always a dense forest or some inaccessible fastness to fall back upon. The idea was formerly entertained that a single well-armed Englishman was sufficient to put to flight a horde of naked savages; but recent experience has done much to dispel this dangerous illusion, and it is now admitted that on their own ground *the Maories—man for man—are fully a match even for disciplined English troops.*"

Monday, March 5th.—At 4h. 30m. we started for the River Waitara, and anchored off the bar at 6h., within a thousand yards of three Maori paha; which, with their flagstaves and ornamental palisades, made a grand display on the left bank of the river. It was the top of high water, and after reconnoitering carefully all the neighbourhood, I commenced immediately to land the baggage in the surf-boats, which we towed round with us for the purpose; and before noon everything was safe ashore and the union-jack flying on the largest, said to be W. King's pah, which, as well as the two others, were found deserted; very wisely, for resistance would have been hopeless. The Governor, whose anxiety to prevent a collision seemed very great, then accompanied me about two miles into the country to meet the land force, whose bugles, sounding "the advance," could be heard over the fern, with which the land is everywhere covered nearly breast high.

At 2h. p.m. Colonel Gold arrived with his men, and halted on the crest of a hill overlooking the disputed territory. He had been since

3h. a.m. on the march, skirmishing the whole way, without seeing a native. A position having been selected with great natural advantages, on the site of an old war pah, about five hundred yards from the river, the camp was established there, tents pitched, and leaving the troops masters of the situation, I withdrew my pickets, returned on board with all hands, and sent the surf-boats back to Taranaki.

THE REPUBLIC OF LIBERIA, ITS PRODUCTS AND RESOURCES.—By Gerard Ralston, Consul-General for Liberia. A Paper read before the Society for the Encouragement of Arts, Manufactures, and Commerce, May 21st, 1862.

The small Republic of Liberia, founded by the benevolence of the American Colonisation Society on the West Coast of Africa some forty years ago, for the purpose of furnishing an asylum to the free people of colour in the United States, who, from the unfortunate prejudice against blacks, cannot live happily in their native land, and which has since become the asylum of the recaptured Africans taken out of the slave ships by the American cruisers for suppressing the slave trade, is becoming so interesting and important a community, that I beg to give a concise account of its present condition and its prospects, with the desire of attracting the benevolent regards of all Christian peoples, but particularly of the British nation, towards the young and rising state.

Liberia (the land of the free), on the West coast of Africa, is a place of refuge for those poor Negroes who, not comfortably situated in their native country, have migrated from Virginia, Ohio, the Carolinas, Pennsylvania, Maryland, and other States of the Union. These Negroes have been aided by the benevolence of the American Colonization Society, at Washington, to remove to the coast of Guinea, where, after undergoing a variety of hardships and afflictions incident to settling in a savage region, they have formed themselves into a respectable commonwealth, numbering some 500,000 souls, of whom about 484,000 are aboriginal inhabitants of the country, and about 16,000 Americo-Liberians.

Their form of government is that of a Republic—having an elected President, and two houses (Senate and House of Representatives) of the legislature. The Vice-President and President are elected for two years, the House of Representatives for two years, and the Senate for four years. There are thirteen members of the Lower House and eight of the Upper House; each county sending two members to the Senate. Hereafter, as the population augments, each 10,000 persons will be entitled to an additional representative. The Vice-President must be thirty-five years of age, and have real property of the value of 600 dollars; and, in the case of the absence or death of the Presi-

dent, he serves as President. He is also President of the Senate, which, in addition to being one of the branches of the Legislature, is a Council for the President of the Republic, he being required to submit treaties for ratification and appointments to public office for confirmation. The President must be thirty-five years of age, and have property 600 dollars. The judicial power is vested in a supreme court, and such subordinate courts as the legislature may from time to time establish.

Liberia is situated on that part of the coast of Guinea called the Grain Coast (most fertile in rice), having for its south-eastern boundary the San Pedro River, seventy-eight miles East of Cape Palmas, and running along the coast to the mouth of the Shobar river, 125 miles N.W. of Monrovia. It has about 600 miles of coast line, and extends back about 100 miles on an average, but with the facility of almost indefinite extension into the interior, the natives everywhere manifesting the greatest desire that treaties should be formed with them, so that the limits of the republic may be extended over all the neighbouring districts.

The Liberian territory has been purchased by more than twenty treaties, and in all cases the natives have freely parted with their titles for a satisfactory price. The chief solicitude has been to purchase the line of sea-coast, so as to connect the different settlements under one government, and to exclude the slave trade, which formerly was most extensively carried on at Cape Mesurado, Tradetown, Little Bassa, Digby, New Sesters, Gallinas, and other places at present within the republic, but now happily excluded—except in a recent instance at Gallinas, under peculiar circumstances. The country lately devastated by the infamous slave traders, is now being cultivated and enriched by peaceful agriculture and extending commerce. It furnishes a home to the defenceless natives who have fled for protection from slavery and death, liable to be inflicted upon them by their own ruthless chiefs. The natives know that within Liberian jurisdiction they are secure from the liability of being seized and sold into slavery.

The original settlers landed in Liberia and hoisted the American flag on the 25th of April, 1822, at Cape Mesurado, where Monrovia, the capital, was established, and they continued under the fostering care of the American Colonization Society until the 24th day of August, 1847, twenty-five years, when they were proclaimed a free and independent state, with the sanction of the parent society, and were regularly installed as the Republic of Liberia. England and France soon welcomed this small state into the family of nations by making treaties of amity, commerce, and navigation with her. These friendly examples being imitated by other powers, it follows that Liberia is acknowledged, and has treaty relations with some of the most respectable states of the world, situated in Europe and America. It is deeply to be regretted that the United States, the fatherland of the Liberians, has not yet acknowledged the young republic. It is to be hoped that since the power has passed out of the hands of the pro-slavery party in America, that Liberian independence will soon be acknowledged by

the twelfth nation of the world. The little republic of Africa will, no doubt, soon be acknowledged by the mighty republic of America.

Though Liberia was established on the coast of Africa as an asylum for the free coloured people of the United States, it was not intended to confine the object merely to the deportation of persons previously free. On the contrary, many slaves were emancipated expressly for emigration to Liberia, and a number of benevolent and kind masters (I will mention only one name, John McDonough, New Orleans), and particularly mistresses (I will confine myself to naming the three excellent women, Miss Margaret Mercer, of Virginia, Mrs. Reed, of Mississippi, and Miss Mattie Griffith, of Louisville, Kentucky, who manumitted all her slaves when she came of age, two or three years ago—this beautiful and noble-minded young lady was in London last year), could be mentioned who not only made great sacrifices, but nearly pauperised themselves by giving up their property in slaves, and also by furnishing them the means of comfortably reaching the colony by a long sea passage, and providing for their welfare after their arrival in their future homes.

Upwards of 6,000 persons were in this category, most of whom, and their descendants, have since become valuable and useful citizens of this little state, who if they had continued in the land of their birth would have remained depressed as an inferior class, repulsed from the society of the white race, and excluded from all but the most menial and least lucrative employments. With the natural aspirations of free men, and finding all the circumstances surrounding them in their new homes so favourable for the development of the industry, talents, and enterprise they possessed, we have witnessed all the success which was to be expected. We find them changed from the careless, listless beings they were in America into the painstaking, industrious, and energetic citizens of Liberia. It would be easy to mention the names of numerous persons in Liberia who would do credit, by their respectable character, their wealth, and their general success, to almost any civilised community, who owed their prosperity exclusively to the education of circumstances they found in Liberia; but who would, if they had remained in their native land, under the prejudices and the depressing circumstances surrounding them, have continued mere drones and nobodies.

These people were early taught to govern themselves. The white governors sent out by the American Colonisation Society had the good sense to take pains to select the most respectable of the coloured people to aid in administering the affairs of the infant colony, and the training of Lot Carey, Elijah Johnson, John B. Russwurm, and J. J. Roberts, and others that could be named, was so good that on the death of the lamented Buchanan, in 1841 (the last of the white Governors), it was resolved that all in authority hereafter should be coloured persons, and Mr. Roberts was made the Governor, and continued so for six years; and on the independence of the state being proclaimed, and the republic of Liberia instituted, Mr. Roberts was elected President, and on three subsequent occasions he was re-elected

President, thus serving eight years as chief of the republic, and previously six years as Governor, making a total service of fourteen years as chief magistrate of Liberia.*

His excellent successor, the actual President, Stephen Allen Benson, came from Maryland at the early age of six years; and having gone through all the varied vicissitudes, among others, of being a prisoner when very young among the aborigines, then being a successful merchant, then being a member of the Legislature as Senator, then Judge, then Vice-President of the Republic and, of course, President of the Senate, and occasionally Military Commander of the volunteer countrymen in resisting the attacks of the natives, became President of the Republic, and having served three terms of two years each, was inaugurated for a fourth term last January; and on the completion of eight years of service as President, he will probably retire to his large coffee estate at Bassa, and hereafter some of my present audience may have the pleasure of partaking of probably the best coffee produced in the world from his plantation.

It is instructive to contrast the cheap and successful self-government of the Liberians with the expensive and not over successful government of white men in the colonial establishments of the Europeans on the coast of Africa. White men, soon dying in the ungenial climate of Africa, require large salaries and frequent successors; whilst the blacks, living in a climate far more congenial to them than the temperate zone would be, are long-lived, healthy, and economical administrators of the simple laws of their own framing, which are well adapted to promote the prosperity of their countrymen.

Liberia has every advantage of climate and of fertility of soil, and of variety of production, to make it a rich and powerful nation. Every species of tropical produce thrives in this country. Rice is abundant, and is cultivated on the high lands as well as on the low grounds near the coast. Indian corn, sweet potatoes, cassava or cassava root, beans, peas, water-melons, pine-apples, oranges, lemons, guavas, mangoes, plantains, bananas, pawpaws, tamarinds, pome-

* No more energetic, judicious, and truly respectable and successful chief of a government could have been found, if the world had been searched over, than Mr. Roberts has been. He came from Virginia at the age of twenty, and being educated by circumstances, though not very favourable for literary and scientific development, has proved himself all that his countrymen required in a chief magistrate, and, like the great Iron Duke (as Wellington is called by the *Times*) of this country, conscientiously performed his duty under all the remarkable conditions of his varied life. On retirement to the ranks of the people, he has again been called on to fill the vastly important office of President of the Liberian College and Professor of Jurisprudence. He has lately completed the erection of a magnificent college edifice, with the same energy, good sense, and success, which characterised his past career. Mr. Roberts proves how much we are the creatures of education and of circumstances. He might have been a menial servant or a barber in Virginia, but he has become an historical character by removal to Liberia. Long may he live to enjoy the respect and grateful affection of his countrymen and the friends of his race.

granates, and a great variety of other edibles, afford ample supplies for the tables of the inhabitants and for the demands of shipping. Among other articles which already yield valuable exports, or are likely soon to do so, are coffee, sugar, cotton, ginger, pepper, indigo, ground nuts, arrowroot, palm oil, ivory, camwood, and other woods for dyeing purposes, as well as for ship and house building, &c. Nearly all these productions are indigenous in this country. The wild coffee tree may frequently be met with in the woods. It is the same species as that ordinarily reared in other parts of the world, but may be much improved by cultivation. Several of the inhabitants have applied themselves to this branch of agriculture, which may be carried on with smaller means than are required for the cultivation of sugar or cotton, though both of these articles, particularly sugar, have been produced with success. Specimens of Liberia coffee, which have been sent to the United States and to Europe, have been pronounced by good judges equal to the best received from Mocha or any part of the coffee-producing countries of the world.

The civilized population of Liberia is, however, so small (Americo-Liberians only 16,000) that important exports cannot be expected until greatly increased capital and a great addition from the free Negroes of the United States shall give a greater command of skilled and industrious settlers, who will be fortunate in finding abundance of native labourers at the low rate of three dollars and rations per month all through the country. Liberia is already prepared to receive 7,000 or 8,000 American Negroes per annum, and every year will give it increased ability to receive comfortably additional thousands, until 25,000 or 30,000 emigrants per annum will not be inconvenient. The United States has four millions of slaves and half a million of free Negroes. Liberia could receive all of these in the next twenty-five or thirty years with great advantage to both the American and the African republics.

The charity and liberality of the Liberians have been taxed by the sudden and unexpected landing upon their shores of nearly 5,000 savages, taken from slave ships, within a few months; but such has been the energy of the government and the well-directed efforts of the well-disposed people of Liberia, that the sudden and unexpected addition to their population has been provided for most humanely, and with every prospect that these poor wretches, wrested from the hands of the infamous slave traders, will be reared up to respectability and useful citizenship. An important feature of this new immigration is that it consists principally of young people, mostly boys and girls under twenty years of age, who will be more readily moulded into civilized and useful inhabitants than if they had been of more advanced years. The American Government has lately made an arrangement to allow the Liberian Government 100 dollars per head for all the landed re-captives over eight years of age, and 50 dollars per head for all under eight years. These poor creatures are carefully looked after in a moral, religious, and economical point of view. Al-

ready some of the Congoes formerly landed from the detested slavers have become useful and successful citizens, some being even magistrates, members of the legislature, and missionaries.

The climate of Liberia is warm (the latitude of Monrovia is only 6° 19' North of the equator) but equable, and tempered by frequent rains and daily sea breezes. The year is divided into but two portions, known as the rainy season and the dry season. The rainy time commences the middle of May, and the dry season commences the middle of November. It should, however, be understood that this absolute distinction is in some measure to be qualified, as there are rainy days and clear, pleasant days in every month of the year. The dry season is the warmest, and January is the hottest month of the year—the average height of the thermometer usually being about 75°.

The Negroes from the United States do not find the heat oppressive at any season. It is a mysterious and unaccountable fact that the climate which is fatal to the whites is not only innoxious, but is congenial to the blacks. This is a benevolent provision of Providence. If white men could have lived in Africa within the tropics the whole continent would doubtless have long since been subjected, like America, to the domination of rulers of European origin, which has resulted in the extirpation of the aborigines. Many attempts have been made by different nations—Portuguese, Dutch, English, French, Danes, and Swedes—to establish settlements of white colonies on various inter-tropical portions of the African coast, and all have failed from the same cause—the deadly nature of the climate. Yet, at Sierra Leone and Liberia, coloured men, whose ancestors for two hundred years had resided within the temperate zone, find the climate salubrious, and live as long as others of the race in America.

All immigrants, however, have to pass, shortly after their arrival, through what is called the acclimatising fever. It is a bilious remittent fever, which usually passes into the intermittent form. The first settlers suffered severely from this disease, but now that its treatment is better understood, and the proper accommodation and attendance are provided, it has ceased to be so much dreaded as formerly. Two or three deaths usually happen out of every 100 emigrants who arrive, but it is observed that the fatal cases are almost always those of persons who were previously in bad health, or who neglected the simple precautions which are prescribed for new comers. In many cases, on the other hand, the immigrants find their health improved by the change of country.

It is a remarkable fact that foreigners may visit this coast, and land at six or eight o'clock in the morning and remain on shore all day, until six or eight p.m., with perfect exemption from coast fever, if they only are careful to sleep on board of ship at night. It seems that African fever is contracted principally while asleep, or while exposed to the miasma which appears to be more noxious during night. There are numerous cases of foreigners being detained on shore at night, and for several nights at a time, who shut themselves up in a

close room, with a little fire to expel dampness, and who escape entirely all deleterious effects of climate, except a little lassitude for a day or two.

There are no very large rivers within the present limits of Liberia. The two largest rivers are the Cavally, in the S.E., having water enough for vessels of fifteen feet draft for eighty miles, and the St. Paul, in the N.W., having a navigation of sixteen miles for vessels of eleven or twelve feet draft of water, and having a course of 300 miles through a fertile and beautiful country. There are numerous small streams, some of which are half a mile wide at a distance of fifty miles from the ocean, but none are navigable for large boats more than thirty miles from their mouths.* Their currents are obstructed by rapids, which will make hereafter fine seats for water-power manufactories, and most of the rivers are capable of being much improved for navigation by engineering art. The rivers St. John, Junk, St. Paul, and Cavallay, are those running through the most fertile and well cultivated countries. The Junk and St. Paul countries are more famous for sugar cultivation; whilst the people upon the St. John are more addicted to coffee culture, though sugar grows well also.

Cotton grows spontaneously all over Liberia, and only requires care to make it a great staple of export. It being of good quality and so near to the exhaustless market of Liverpool (compared with India and Australia), and freight being low, it will probably become a leading article of cultivation, and thus in time render England less dependent on the Southern States of the Union, thus tending to relieve those unhappy districts from the blighting effects of slavery,—the greatest of all evils—the sum of all villainies. The Liberians, encouraged by their kind friends in England, particularly the Cotton Supply Association of Manchester, are paying greater attention to the production of cotton, and in time large exports to Liverpool will reward the Lancashire people for their fostering care of this vital interest of commerce.

For political and judicial purposes the Republic is divided into counties, which are further subdivided into townships. The counties are four in number, Montserrado, Grand Bassa, Sinoe, and Maryland. The townships are commonly about eight miles in extent. Each town is a corporation, its affairs being managed by officers chosen by the inhabitants. Courts of monthly and quarter sessions are held in each county. The civil business of the county is administered by the four Superintendents appointed by the President with the advice and

* The other rivers are Great Cape Mount River, Little Cape Mount River, Stockton River, Sesters River (usually called River Cass, navigable for twelve feet craft for forty or fifty miles interior), Sanguin River, Shebar, St. John, Junk, Gallinas, Solyma, Manna, Sinou River, Mesurado, and Booma. The ports of entry and delivery are Robertsport, on Grand Cape Mount River, in Montserrado County; Monrovia, Cape Mesurado, Montserrado County; Marshall, on Junk River, Montserrado County; Buchanan, on St. John River, Bassa County; Greenville, on Sinou River, Sinou County; Harper, Cape Palmas, Maryland County.

consent of the senate. The county system of government is capable of indefinite extension over new districts of territory that may be acquired, giving all the advantages which local self-government affords to the inhabitants, added to the conservative and effective metropolitan governmental benefits of the central power of the entire republic. The system has thus far worked well, and it may be in time worthy of imitation by other countries, provided the experience of a few more generations shall prove its efficiency.

Monrovia, the capital of Liberia, so named after Mr. Monroe, the fifth President of the United States, a great friend to the settlement of Liberia, is beautifully situated on Cape Mesurado,* about seventy-five feet above the level of the Atlantic Ocean, in $6^{\circ} 19' N.$ lat., and $11^{\circ} W.$ long., has a population of about 3,500 souls. Its position is most happy, having, by means of the Mesurado and Stockton, and the St. Paul and the Junk rivers, the greatest facilities for navigable communication with the interior. Besides being the executive, judicial, and legislative seat of government, it is well furnished with schools, churches, missionary establishments, a newspaper called the *Liberia Herald*—dating back to 1826,—a college, and other evidences of advancing civilisation and refinement.

The new college just completed is a magnificent edifice, situated on a most commanding site, on a twenty acre field for play-grounds granted by the government, and is due to the liberality of the people of Boston, United States, who not only furnished the funds for the construction of the building, but also have presented a library, geological cabinet, and otherwise endowed it. The government has also granted 4,000 acres of land, of which 1,000 acres are in each of the four counties of the Republic. This land will become valuable in the course of time. Mr. Ex-President Roberts, of Liberia, is the President of the College, and is a Professor of Jurisprudence and International Law. The Rev. S. Alexander Crummell, a graduate and M.A. of Queen's College, Cambridge, England, is a Professor of Moral and Intellectual Philosophy, the English language and its literature. The Rev. E. W. Blyden, a young man of great energy, talents, and usefulness, now the Principal of the Alexander High School for Boys, in Monrovia, and an experienced teacher, is the Professor of Greek and Latin languages and their literature.

To show how entirely sectarian principles are disregarded in Liberia, I may mention that Mr. Roberts is a Wesleyan Methodist; Mr. Crummell is an Episcopalian; and Mr. Blyden, a Presbyterian; and there is a prospect of their acting harmoniously together in the advancement of true religion, and the civilising influences of science and literature which may be expected to flow from the teaching of these excellent men. The greatest benefit to the rising generation is ex-

* The other principal capes are Cape Mount, in $7^{\circ} N.$ and $10^{\circ} 48' W.$; Cape Palmas, in $4^{\circ} 23' N.$ and $7^{\circ} 43' W.$ longitude, Greenwich observatory. There are most useful and very elevated lighthouses on Cape Mesurado and Cape Palmas, which are a great assistance to the navigation of the coast.

pected from this college, particularly as it will prevent the necessity of sending the youths to England and the United States for instruction. Measures are being taken for a superior education of girls, which has hitherto been neglected, to the injury of the State, for women, as mothers and sisters, exerting a great influence over society, particularly in attending to the youth of both sexes, are, when they are competent, the greatest social improvers. I hope some liberal Englishmen will emulate the liberality of the Bostonians towards the boy's college, by supplying the means for the High School for girls at Monrovia, which should be liberally endowed and made as effectively useful as possible.

The inhabitants of Monrovia are great Sabbatharians. They go constantly to church; and so closely do they respect the Sabbath, that when Prince de Joinville, the captain of the French frigate *Belle Poule*, came into their port on Sunday, and offered to salute the flag, it was declined, because of their unwillingness to have the Sabbath desecrated. So also when Captain Eden, of one of H.M. ships, was ordered to call at Monrovia, to salute the Liberian flag, he happened to arrive on Sunday morning, and communicated to the President that he wished to salute the flag provided it would be returned, when he was informed that it could not be done on that day, being Sunday, but it would be returned on the following day (Monday). Captain Eden being pressed for time, saluted on Sunday, with the understanding that the salute would be returned to the first British cruiser that should come into port. The conscientious British captain performed his duty, and the Monroviaans performed what they considered to be their duty; and I hope both will be justified by the opinions of their respective countrymen, as far as they have done what they believed to be right.

Such of the aborigines as have for three years previously adopted and maintained civilized habits, are entitled to the elective franchise, and a considerable number exercise this privilege. There are native magistrates and jurors. Two of the magistrates serving in Bassa county, and who act as associate justices in the monthly courts, are Bassa natives.

It is the policy of the Liberian government to induce American immigrants to settle in the interior—some fifteen, twenty, or thirty miles from the coast—where the surface of the country is undulating and hilly, and more healthy for those freshly arrived than the coast country. Carysburg, White Plains, and Clay Asbland—are some of these interior settlements from which good results have already been experienced. When a new settlement is formed, it is customary for some five, six, seven, eight, or ten families of the old residents of Monrovia, or other old towns, to accompany and guide the strangers, and indoctrinate them into the mysteries of their newly commencing Liberian life. This is a wise course. Each settler, on his arrival in the Republic, is entitled to draw a town lot, or plantation. If a town lot be drawn, he is required to build a house, of brick, stone, or other substantial materials, sufficient for the accommodation of all the family of the proprietor within two years, and he receives a fee simple deed.

If a plantation be drawn, two acres must be cultivated within two years to get a fee simple deed. Every man may have a town lot, or five acres of farm land, together with two more for his wife, and one more for each child that may be with him, provided that no family shall have more than ten acres. Women, not having husbands, may each have a town lot, or two acres of farm land, on their own account, and one acre on account of each child. Unmarried men at the age of twenty-one, arriving from abroad, on taking the oath of allegiance, shall be entitled to draw a town lot or five acres of farm land the same as family men. There is a penalty of five dollars for cutting down palm trees, except by the fee simple proprietor. Each proprietor of farm lands must show his boundaries by erecting posts at the angles of the same.

The English is the mother tongue of the Liberians, and they are extending its use along the coast and into the interior. Nothing is more common than for the native chiefs and the head men and other important persons among the tribes within the jurisdiction of Liberia, and even far beyond, to place their sons at the early age for three, four or five years in the family of the Americo-Liberians expressly to learn English and to acquire civilised habits. Among the natives, to understand English is the greatest accomplishment and advantage; and with some of the coast tribes, a knowledge of English is beginning to be regarded as a necessary qualification for the ruling men of the chief towns. Our language has become the commercial medium of communication throughout not only the African coast, but other parts of the world where ships and steamers carry the civilising influence of commerce, and in time it will become universal.

There is no standing army, but all males between the ages of 16 and 50 are compelled to serve in the militia, except clergymen, judges, and a few other privileged persons. This force is well drilled, and has the 1,500 muskets kindly presented by the present Emperor of the French, and it has proved itself to be eminently qualified to defend the country, and to make the government respected among all the neighbouring tribes and nations of the Coast of Guinea.

The navy consists of one vessel, a schooner of five guns, kindly presented by her Majesty's Government, and of an advice boat, the *Seth Grosvenor*. These vessels are most usefully employed in suppressing slave trade, and in acting as "Guarda Costa."

The revenue of the republic for the year ending the 30th of September, 1861, was 149,550,11 dollars. The expenditure was for same time 142,831,11 dollars.

A portion of the receipts and expenditure arose from the recaptured Africans landed at Liberia, and supported by the Government until they can be placed out to take care of themselves.

The import and export duties are the great sources of income. The total product of import and export duties was 44,000 dollars.

Expenses for legislation were.....	4,500 dollars
„ For Judiciary	7,900 dollars
„ For Salary or Civil List	6,400 dollars

The Liberians are under great obligations to the British Government and British people, for their kind regards and useful efforts to encourage and aid them in the great task of building up a negro nationality on the coast of Savago Guinea. The British Government* were the first to acknowledge the independence of Liberia, were the first to present them with a small vessel of war to act as "Guarda Costa" and to aid in suppressing the slave trade, and have for many years done all in their power to countenance and foster the growth of this youthful state. The British people also have manifested the most friendly and kindly feelings towards this young people. The late Duke of Sussex, Capt. Rosenburg of the Royal Navy, and Lord Bexley were early kind friends to Liberia, as well as the eminent Thomas Clarkson, and also Dr. Thomas Hodgkin of the same past age. but this last mentioned gentleman continues to the present day one of the warmest of Liberia's friends.

I must also mention, as particularly dear to Liberians, the name of Gurney. The late philanthropic and benevolent Samuel Gurney, and the present Samuel Gurney, and Dr. Thomas Hodgkin, are excellent examples of the practical and useful efforts made by members of the Society of Friends to extend social improvement over the world. Two most promising youths from Liberia are at present under the charge and at the sole expense of Mr. S. Gurney, who is giving them the best possible education to make them useful citizens on their return home. Never does a month go round that I do not receive useful books, periodicals, newspapers, and other food for the mind, from Mr. Gurney, Dr. Hodgkin, and other kind friends of the coloured race, to be sent to the libraries and reading rooms of Liberia. The good people of Edinburgh, also, are manifesting great kindness by educating two most promising young men as medical missionaries, who, on their return to Liberia, will spread the benign influences of civilization and Christianity over the aboriginal population of the republic. I must mention John A. Callender, Esq., and the Rev. Dr. Johnston, of Edinburgh, as the most forward in this labour of love towards these young Liberians, one of whom will, I hope, be rewarded by taking off the prizes awarded, in the Edinburgh University, for successful scholarship and devotion to study. Another benefactor of the republic must be mentioned; Martin Farquhar Tupper, the popular poet, and author of *Proverbial Philosophy*, who, many years ago, granted a large gold medal to be worn for one year by the most successful writer as essayist, historian, &c. The prize is awarded by a council of respectable citizens, the President, Secretary of State, and other public functionaries being *ex-officio* members of it. Great good has already been effected by this judicious stimulus to literary and scientific efforts,

* Liberia has since been acknowledged by France, Belgium, Prussia, Brazil, Hamburg, Italy, Bremen, Denmark, Lubeck, Portugal, and soon will be by the United States. With most of these States treaties of amity, commerce, and navigation, have been made, and treaties are being negotiated with other governments.

which will be more and more efficacious as population, wealth, and refinement increase, and intellect is developed.

The principal materials for building purposes are wood, stone and brick. The forests abound in suitable timber for houses, as well as ships, but for the reason that wood houses are infested with a destructive little insect, locally known as "bugabug," stone or brick building materials are preferred by those who can afford the expense. Excellent blue and grey granite, and hard sandstone, as well as clay, suitable for bricks, abound, and innumerable oysters, clams, and snails furnish shells, out of which lime for cement is manufactured.

A great variety of excellent fish are found in all the Liberian rivers, of which the mullet, angel fish, and white boys are preferred. From the sea are taken the barracouta, mackarel, cavella, and a great number of other fish for frying.

Iron ore abounds all over Liberia, but as yet no copper, tin, zinc, lead, silver, or other useful minerals have been discovered in Liberia. Some gold and some indications of coal have been found, and I hope, when the four young men now in Edinburgh and London receiving education, return home, they will discover copper, lead, coal, and other useful minerals, and also be able to construct the canal or railway between the Junk and Mesurado Rivers and the breakwater of Monrovia, and other engineering works of prime necessity and utility.

Many persons say that Liberia is a failure—that she has not advanced as she ought to have done, and that the results are far less than were expected. But if we consider the small expenditure upon Liberia—millions of pounds have been spent upon Sierra Leone, thousands of dollars only upon Liberia—and that only 16,000 Anglo-Saxon negroes have left the United States and settled on the coast, and that they have been far more numerous and prosperous, and progressive, in the forty years since they have made their homes in this savage country than were the English settlers in Virginia in sixty years after they landed, and have since become a mighty nation of 32,000,000 souls, what may we not expect from Liberia if the four and a half millions of American negroes living most unhappily in their native land should migrate in the next thirty years to the "Land of the Free" on the West Coast of Africa? There can be no doubt that Liberia is far better adapted for the American negroes than Hayti, which has the Catholic religion, and foreign language, manners, and customs—the French; whilst the Liberians have the same Protestant religion, the same language, and the same manners and customs which they left behind them in America. The negroes in the United States should desire to create a flourishing Anglo-Saxon-Negro nationality on the coast of their fatherland, which has been so well commenced by the pioneers who for forty years have been preparing the way for their comfortable residence in Liberia.

The American Liberians, in their declaration of Independence, used the following language to describe their fortunate change of circumstances by migrating from the United States to this new and improving country. They say:—"Liberia is already the happy home of

thousands who were once doomed victims of oppression, and thus far our highest hopes have been realized. Our courts of justice are open equally to the stranger and the citizen for the redress of grievances and for the punishment of crime. Our numerous and well-attended schools attest our efforts and our desire for the improvement of our children. Our churches for the worship of our Creator, everywhere to be seen, bear testimony to our piety and to our acknowledgment of his providence. The native African, bowing down with us before the altar of the living God, declares that from us, feeble as we are, the light of Christianity has gone forth; while upon that curse of curses, the slave trade, a deadly blight has fallen as far as our influence extends. Therefore in the name of humanity, virtue, and religion—in the name of the Great God, our common Creator and our common Judge, we appeal to the nations of Christendom, and earnestly and respectfully ask of them that they will regard us with the sympathy and friendly consideration to which our condition entitles us, and will extend to us that comity which marks the friendly intercourse of civilized and independent communities.”

Then follows the constitution, one section of which declares, “That there shall be no slavery within the Republic, nor shall any citizen or any person resident therein deal in slaves, either within or without its bounds, either directly or indirectly.”*

REGULATIONS FOR PREVENTING COLLISIONS AT SEA,—*From the New Merchant Shipping Act.*

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.—Art. 2. The lights mentioned in the following articles, and no others, shall be carried in all weathers between sunset and sunrise.

* Captain Robert Stockton, of the American war ship *Alligator*, and Eli Ayres, M.D., made the treaty for Cape Mesurado, 15th day of December, 1821, with King Peter, King George, King Zoda, King Long Peter, their Princes, and head men (the English and French had been trying for Cape Merurado for 100 years, and had not been able to procure it), who paid down six muskets, one box of beads, two hogsheads of tobacco, one cask of gunpowder, six bars of iron, ten iron pots, one dozen knives and forks, one dozen spoons, six pieces of blue baft (cotton cloth), four hats, three coats, three pairs of shoes, one box of pipes, one keg of nails, three looking glasses, three pieces of kerchiefs, three pieces of calico, three canes, four umbrellas, one box of soap, one barrel of rum; and to be paid hereafter, six bars of iron, one box of beads, fifty knives, twenty looking glasses, ten iron pots, twelve guns, three barrels of gunpowder.

Art. 3. Scagoing 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 ahead to 2 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 2 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 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 2 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.

Art. 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.

Art. 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.

Art. 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 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, they shall each be painted outside with the colour of the light they respectively contain, and shall be provided with suitable screens.

Art. 7. Ships, whether steam ships or sailing ships, when at anchor in roadsteads or fairways, shall between sunset and sunrise 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.

Art. 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.

Art. 9. Open fishing boats and other open boats shall not be required to carry 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 such 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.—Art. 10. Whenever there is 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.—Art. 11. If two sailing ships 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.

Art. 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.

Art. 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.

Art. 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.

Art. 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.

Art. 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.

Art. 17. Every vessel overtaking any other vessel shall keep out of the way of the said last-mentioned vessel.

Art. 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.

Art. 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.

Art. 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.

VOYAGE OF H.M.S. "CYCLOPS" FROM THE CAPE TO ADEN.—
Captain W. J. S. Pullen.

(Continued from page 481.)

After completing our coaling and making good slight defects, I left Aden on the evening of the 24th of March with a light S.E. wind, increasing to a moderate breeze as we got off the land. The next morning we passed through the small strait of Babel Mandeb, keeping rather to the island shore, and by ten o'clock were fairly in the Red Sea.

Within the strait the wind seemed to freshen, still from the S.E., but for a short time before midnight it came from S.W., hauling back again as we approached the narrow. While running through the shoal part of the sea—that to the southward, as shown in Moresby's chart—as it did not cause much delay, I determined on getting a cast of the lead every four hours. Shaped course to pass eastward of Jibbel Zeegier, the largest of the groups of islands in the southern part of the Red Sea, Mocha, and the Harnish Islands. Jibbel Zeegier itself and Ras Merjamla were successively passed, and on the forenoon of the 26th the ship was anchored in Hodeidah Roads, in five fathoms of water nearly three miles from the shore, the North fort bearing by compass N. 44° 59' E., and South fort N. 61° 59' E.: dark, soft, sandy bottom.

As an anchorage it is nothing more than an open roadstead, where all, winds except from off the land, are equally felt. Our stay was too short to give any further or better description than what already appears in *Horsburgh*. I merely landed to examine the facilities it

afforded for the telegraph, so my knowledge of the place is but slight. The streets are narrow, like all Turkish places, with extensive bazaars, pretty well crowded and supplied. The landing-place is not good, but that, I should think, could easily be improved. Supplies of water may, I believe, be easily got; and it is one of the chief coffee ports in the sea. It is a walled town, and occasionally suffers from the attacks of the Arabs; the pasha (Ackmeh) was, in fact, away now on an expedition against them.

We left Hodeidah on the morning of the 27th; passed to the eastward of the Zebager Islands and Jibbel Seer; thence, keeping nearly in the centre of the sea, we reached Jeddah on the afternoon of the 31st, anchoring in the inner harbour, having passed through the northern passage or Coyermere Channel, between the reefs of Guttal Omul Hallell, Dergoeg, and Russel Muggulat.

This harbour is about one of the most extraordinary I have ever been in, not only as to its figure but the formation of the deep channels between the coral reefs by which you enter it: These reefs exhibit a succession of natural breakwaters, running parallel to the coast, the outer ones generally covering a passage between the inner ones, which so protects the anchorage after passing through the outer gateway or channel, that you find yourself in smooth water, and this may be called the outer harbour; then through the inner gateway or channel to almost a mill pond or inner harbour, where all merchant ships and bungalows lie, but there were not more than five ships here when we arrived, and all under English colours. The Vice-Consul, Mr. Page, stated that they increase as the season advances, bringing passengers from all parts of India on pilgrimage to Mecca. As my stay was only short and for a particular purpose, my notes, both on town and harbour are necessarily brief.

The chief authority (the Governor) was at Mecca. The second, or Caimacan, I waited on, with Mr. Page, who acted as interpreter; and on acquainting this officer with the purport of my visit, he assured me that, so far as the authorities were concerned, I might count on a ready co-operation, and that the captain of the port would give me every assistance in the examination of the harbour and channels that the wire would have to pass through.

The *Cyclops* had anchored in the inner harbour, between the shoals Berry and Mayette. Thus far there would be no difficulty; but in sounding from thence in towards the shore (landings), in the different channels I could no where get a sufficient depth of water to keep the cable out of the reach of any persons who felt inclined to meddle with it. And the captain of the port, who accompanied me, stated that during the summer season, between April and the latter end of October, many of the shoals that we now saw covered were perfectly bare at the highest tides.

This was certainly a great objection, for the boats in passing in and out of these channels laden, might ground on the cable, and her Arab crew would not think much of raising it and appropriating the outer wire covering as nails, if not for the gratification of their curiosity.

My gig was constantly grounding in passing through these channels. Under these circumstances the following plan was thought of, Mr. Harris, the Second-Master, first giving the idea:—Moor a ship in the inner harbour, and lead the wires into her. She might well be used for other purposes to great advantage, as well as telegraphic service, and which I have no doubt would well pay the adventure. In the first instance fit her with condensers, and she might supply not only the shipping but the town in some measure, for the water on shore is certainly not of the best quality. She might also be used as a coal depôt; in fact, a depôt for any other species of stores. There cannot be a doubt but what Jeddah is the chief port in the Red Sea, and that it will rise into importance if steamers should ever run between the different ports in it, of which I hear there is a probability, a company in Egypt having started, and their steamers on the way from England.

On the morning of the 3rd April I left Jeddah, passing out to sea through that channel Moresby describes as in the second cluster of reefs, the outer gateway formed between the large Fellah Shoal and sunken patches South of it, 270 yards in width; thence North of the Gahan Reef. Steering for Cosire, we passed close enough to the southern part of the Eliza Reefs to observe a heavy break on them, although it was a perfectly calm sea at the time. No land was visible, for a thick haze was hanging over it.

Passing to the eastward of St. John Island, and West of the Dædalus Shoal, out of sight of both, the high land at the back of Cosire was sighted on the morning of the 6th. We ran in and anchored in the roads, in ten fathoms of water, dark mud over a hard bottom, with the centre of the fort bearing N. 50° W., and the point of bay N. 6° W., by compass.

I went on shore to make the necessary inquiries and examinations as to the facilities of the place, and calling on Ali Bey, the Governor, got the following information. He assured me that there would be no difficulty in establishing stations, and as for disturbance from the natives, no apprehension whatever was to be felt, observing that the Arabs, &c., were kept in better order in the Egyptian territory than in the Turkish provinces.

The climate of Cosire is good and healthy, but it is a wretchedly barren spot; its trade nothing more than the export of grain by the government. With regard to supplies, they are uncertain unless ordered from Kennah, a town on the Nile, the distance journeying occupying four days. Water may be got here, but it is very bad, the pasha saying that it stinks and is the worst in the Red Sea.

In bringing in and landing a cable, there is no difficulty to be encountered, but I should propose the beach a very little South of the town, where it would come through the deep water and quite clear of all interference from the vessels anchoring. They all haul close up to the reef forming the roads, having an anchor on shore. This reef affords good shelter from the North and N.W. winds, but no protection from the southward; but I believe winds from that quarter are seldom felt of any strength. There is no prominent point in the

moderately elevated land at the back of Cosire for making the roads in the night but the town, situated on the low sandy point; the fort, occupying the highest point, can be seen ten or twelve miles off.

From Cosire the line of soundings were to commence, and to be carried thence in a depth of 100 fathoms up to Suez; but having obtained a few casts on my way up thus far, shall introduce them now.

On entering the sea I decided on getting a cast every four hours, and this plan was carried on as far North as the Zebayer Islands successfully, in so far as getting bottom at depths less than fifty fathoms. As far up as Hodeidah these soundings agreed very well with those shown on Moresby's chart. After passing the Zebayer Islands, our course was more in the middle of the sea, and we only got bottom occasionally on the whole line of our course to Cosire.

Thermometers were also occasionally sent down, and the density of water brought up in the bottles always tried. Massey's Sounding Machine was always used, and in all depths for the future under 1,000 fathoms I have decided on taking its registration in preference to the line; for with the latter it is always a matter of opinion what the real depth reached is to be called, and the corrections last got for Massey bring them so near when we could be certain, for instance, where the depths were not so great, is my reason for adopting it. At all events in such great depths we cannot be far out.

The first deep cast was in lat. $17^{\circ} 49'$ S. and long. $40^{\circ} 2'$ E., 557 fathoms, fine sandy mud, the valve showing that it had passed through two strata of colour, the upper one light brown, the lower a dark slate colour.

The difference of temperature between the surface and depth reached was nearly 10° — 80° and 70.5° . The density of water brought up was also very different from the surface; the latter being 10265 at 80, the former 10280 at 78.

Thirty-eight miles further up the sea, at 495 fathoms, the bottom was reached. One other cast was attempted between this and Jeddah, but no bottom reached with 300 fathoms.

The next deep cast was not until after leaving Jeddah, in lat. $22^{\circ} 1'$ N. and long. $38^{\circ} 16'$ E., 446 fathoms, showing by what the valve brought up a soft, sandy, muddy bottom; distant about forty miles from the nearest land.

In lat. $23^{\circ} 6'$ N., long. $37^{\circ} 12'$ E., with 1,000 fathoms of line, bottom was not reached; and this was about the centre of the sea, and showing greater depths than any one anticipated. Shortly after this cast, in lat. $23^{\circ} 30'$ N., a little further westward, 678 fathoms was the depth, the valve bringing up a very fine light-coloured brown sand or mud.

At this last cast the temperature both of surface and depth reached, as well as density of water, was obtained, the difference of temperature being 7° ,—that is, the surface 77.5° and depth 70.5° . The difference in density was the same as lower down the sea, in lat. $17^{\circ} 49'$ N. Here, in $23^{\circ} 30'$, 1027 at 77.5 and 10285 at 76.5 , just 015 in excess at 678 fathoms.

One more cast was got on this coast, in lat. $25^{\circ} 24'$, about twenty-four miles from the nearest land, with 320 fathoms, the valve bringing up a light-coloured sand.

On the afternoon of the day of arrival we left Cosire and got the first cast of the lead on the line ordered, in 78 fathoms, hard bottom, not more than one mile from the shoal bounding the point of the bay. From this point a course N.b.W. compass, or $N. 19^{\circ} W.$ true was steered, and deciding on getting a cast every five miles of distance, the next depth was 293 fathoms, sand and mud. Now this was a greater depth than I had been ordered to keep in, and also greater than I anticipated, for from the distance from the land, certainly not more than a mile and a half, with the surf distinctly visible on the beach, I could not with safety venture closer, with besides the prospect of picking up outlying shoals on the coast. Moreover, as far as laying a cable, when once began it would have to be carried on during the hours of darkness as well as daylight; I therefore considered a nearer approach imprudent, and kept to the course I started with.

At eight o'clock we had got our last cast, when darkness overtook us, and as it was not possible to carry on so close to shore where several reefs lay off it, the ship's head was laid off for the night. This was just off, and to the southward of the boundary line, marking the shoal patch off Gouay, the depth Massey registered and corrected 365 fathoms, the sixth sounding obtained since leaving Cosire, and the patent log showing a distance of 23.2 miles run, giving an average of more than $3\frac{1}{2}$ miles between each cast; but as they were fixed in some measure besides by bearings, this distance does not show on the chart. Not one sounding, after the first, was less than 293 fathoms, the greatest 365.

On the morning of the 7th, the wind at daylight was fresh from N.N.W., but before we could pick up the position where left off last night, it had increased so greatly, and so much sea on, that the work of sounding would be very imperfectly carried on, the ship could do nothing; and no hope of the wind moderating, I bore up for Cosire, and anchored in the bight rather closer in than before, although in deeper water, showing how uneven the bottom is. A close berth to the reef, in 15 fathoms, with the North point of bay bearing $N. 1^{\circ} 37' W.$, and fort flag staff $N. 47^{\circ} 37' W.$

Towards night the wind moderated, but drew more northerly, when early on the morning of the 8th I steamed out of Cosire Bay, and at eight o'clock reached the position of the last sounding on the evening of the 6th. At 8h. 30m. the first cast was got, in 264 fathoms, on a hard rocky bottom, off Gouay; steering thence a $N. \frac{1}{2} W.$ compass course, and sounding as near as possible every ten miles, shown by patent log. Towards noon the wind increased, and of course our progress was not so fast. However, up to seven o'clock in the evening, when there not being time to effect another sounding before dark, we had got over a distance of 51 miles by patent log, and sounded seven times in not less a depth than 238 fathoms, the greatest 360 fathoms. This line passed outside the shoals Safadger Ulbur, Shab Shear, and

Safadger, all of which were distinctly visible from the heavy break on them. Shab Shear was the nearest, not more than one mile in shore of the line, but the shoalest water was to the southward of it, and near the first named patch.

The last cast was about six miles S.b.E. of the small island Aboo Tamalah; and with it bearing S. $76^{\circ} 34' W.$, about $1\frac{1}{2}$ mile distant, on the morning of the 9th, from a depth of 463 fathoms, we steered a N. $13^{\circ} E.$ compass course, rounding the S.E. point of the Island of Shadwan, not more than half a mile off, in a depth of 372 fathoms, hard bottom, and were fairly entered in the Strait of Jubal. Just five miles north of this cast, and not more than $1\frac{1}{2}$ miles from the land, the depth was 482 fathoms, sandy bottom, and the greatest depth we have yet had, after which the water shoaled, and six miles further North, abreast of the shoal patches North of Shadwan, the bottom was reached at 116 fathoms, and when abreast of the Island of Jubal, inclining to its side of the strait, the sounding was 45 fathoms, being within the boundary line as shown on Moresby's Chart, and what I call the southern extent of the shoal water in the Gulf of Suez.

The work was now comparatively trifling, and we could carry on throughout the night in such shoal water; therefore passing to the westward of the patch North of Toor, and in the centre of the Gulf, we anchored in Suez Roads, early on the morning of the 11th of April.

On this line of soundings, after the first cast, off Cosire, and the last deep one, 116 fathoms, in the Strait of Jubal, has a less depth than 238 fathoms been obtained, nor was it possible to keep under the 100 fathoms mentioned in my orders without running very great risk of stranding the ship. And the pilot, on commencing the work, imagining that I intended to be much closer in towards the land, became so alarmed that he declared he would give up all charge. The second cast quite damped my hopes, the first depth of 78 fathoms had led me to suppose that the line might be carried near, at all events in 100 fathoms, as the ship was quite close enough to the shore, without taking into account any of the reefs known to be lying along it. In fact, those passed between Cosire and the Jaffantine Islands appear much closer than the bearings on the chart placed the ship.

The greatest depth on the line was 482 fathoms, the first cast after entering the Jubal Strait, and it was close off the eastern shore of the Island of Shadwan.

The Straits of Jubal from the southward commence after passing a line from the S.E. point of Shadwan and Ras Mahommet, extending thence into the Gulf of Suez, nearly up to the southern part of the high land of Zeitee, which, as presenting any distinguishing point to get a bearing from, is very bare. And nearly half way through, or N.N.E. $\frac{1}{2} E.$, about five miles from the Peak of Jubal, was the first comparatively shoal cast, 45 fathoms, got. From this, throughout the Gulf to the anchorage in Suez Roads, all the depths agreed pretty well with what is shown in Moresby's Chart. Indeed all the shoal sounding, or those under fifty fathoms which we have got in the sea, show how correctly the work has been done.

The nature of the bottom from Cosire up to the entrance of the Strait of Jubal, was with two exceptions soft sandy bottom, and those exceptions were only when passing the shoal patches, either coral or rocky, the valve bringing up no indication. The first cast in Jubal Strait was also soft, but the last deep east of 116 fathoms, until well clear to the northward of the patches North of Ushruffe, was hard, generally coral bottom. And in the Gulf, the general character as shown by the valve, on the line run, was of a light soft sandy bottom. Moreover such may be said of the Red Sea, that whenever we have reached ground, either in deep or shallow water, it exhibits the same feature.

The route proposed, as I learn from my instructions, and judging from what I have yet sounded, with a careful study of the charts and information gained from various sources, may possibly be improved upon. The laying a cable down in sections is most certainly advantageous, although it will necessarily increase the first expense by having a number of stations, yet should there be anything wrong, it will easily be discovered where, and have a better chance of rectifying the damage. But instead of making Cosire a station, I would carry the line from the Strait of Jubal, close round Ras Mahommed, even adopt it as a station, thence across in the direction of Moilah, and down the Arabian side, as close outside all reefs as it is possible to go, where the bottom is soft. Wedge appears to offer facilities for a station, having good water, and supplies easily obtained. It is spoken favourably of in Horsburgh, and Mr. Page, the Vice Consul at Jeddah, who has frequently visited it, speaks well of the place.

In proposing the Arabian side of the Red Sea for the course of a cable, I adduce as my first reason, supposing Jeddah to be adopted as a station, that by keeping Ras Mahommed on board on coming out of Jubal Straits, instead of Shadwan, and getting on the eastern side of the sea at once, there is more probability of getting through the deepest water soon, and over a less distance at any rate than by crossing from either Elba Cape or Ras Rowy, or any spot opposite Jeddah as contemplated by the Telegraph Company. I am partly induced to arrive at this conclusion from the one circumstance on finding such deep water on crossing the sea from Jeddah to Cosire, and in one place finding no bottom with a 1,000 fathoms of line. Second—Between Ras Benas and Elba Cape are very many outlying shoals, particularly inside St. John's Island, which it would not be very prudent to venture inside of, even with the chance of finding less water, and there are but very few anchorages marked. But even were there, the cable once started with, must go on night and day. And lastly, the Arabian coast North of Jeddah seems to be better known, and is more frequented than the Egyptian by the native craft. Moreover the Arabs South of Cosire are said to be treacherous, or not to be trusted, so, if necessary, landing could not be effected without risk.

From Aden up to the parallel of 17° N., the winds were from S.E. to S.W., varying in strength from 4 to 1. Then we get a northerly wind, gradually freshening from 2 to 6, getting the sea up

both heavy and short, and so until nearly up to abreast of Jeddah. Drawing into the land the wind shifted to the eastward, light and variable while in port.

Leaving Jeddah with calm, light and variable winds from South to West were experienced, until well across the sea toward the Egyptian coast, and the parallel of 24° , then breezes from N.W. to N.E. all the way up to Suez, light till after leaving Cosire, when invariably they were so strong, 5 to 7, that we found it necessary to get lower yards and topmasts down; and always with these northerly winds a nasty head sea was soon raised. Occasionally in the night the wind would fall to 4 in strength.

The currents of course I can but speak little of, but thus far think the wind is the cause, except perhaps in the Gulf of Suez, where there may possibly be a tide, for on passing through the Strait of Jubal the sea was short and heavy, probably caused by a flood tide setting in against the strong N.N.W. wind blowing down. And in the narrowest part between Jubal and Shab Alley I particularly noticed the sea more heavy, short and confused.

In running this line of soundings the land was in sight all the time, and between Cosire and Shadwan on the Egyptian coast, were many remarkably conspicuous peaks, and which I looked in vain for in the charts. There were however a few, and the shore seems to be backed up by a succession of ranges, rising tier after tier, in barren and picturesque grandeur, showing out, after the sun was off them, innumerable and well defined ridges, jagged into a multitude of needle-like peaks, giving to the whole a very sterile but strange appearance.

Mount Sinai could not be seen, and not until well up the Gulf of Suez did we find out that the solitary peak on the Egyptian side was Mount Agrib. It certainly does not look so high as set down in the chart, and in fact it was some time before I could persuade myself that the peak seen was really it, imagining that the haze might hide it, or that it lay further back from the shore than what the pilot assured me was Mount Agrib. At all events the land throughout was one picture of sandy sterility.

And thus judging from what I have found the nature of the bottom and depths of water in these few soundings, from the Straits of Babel Mandeb to Cosire, thence a continuous line to Suez, I consider that the Red Sea is well adapted for a telegraph wire, and that there is a choice of routes on either shore, but I would certainly prefer, as far as I yet know, the Arabian side, as I have proposed, and I doubt not but that a soft bottom will always be found. The water is deep certainly, but not more, nor even so much as where other cables are proposed to be laid, except perhaps in the middle of the sea, and all we know of that yet is certainly of a nature to cause no injury.

In Jubal Straits I would strongly recommend the advantage of a light on some of the islands, for it certainly is one of the most dangerous parts of the sea, and from information gained at Aden from the Indian officers, they do not think of passing through it at night. The mail steamers, seldom or never, under any circumstances, always leaving

Suez in the evening, or very early in the morning to enter with daylight, also making Shadwan at such a time to have daylight through. In making the latter, even at night, there is no difficulty, for it is perfectly clear of danger to the southward, and steep to, and you might possibly get through all safe. But from the northward, no! for there is no distinguishing part of the high land of Zeitee to take a bearing from to guide you through, and I almost think that a light on it would be as well as any where. Shelter might possibly be got to moor a light vessel about Shab Alley, but as I cannot speak for certain, would prefer the Island of Jubal, and a building on its highest part, to show a fixed steady light, which should be visible all round for at least twenty miles. At all events it is a matter for consideration, and finding several of the mail steamers here, I asked the opinions of the commanders on the subject. They all agree in not considering the navigation safe in darkness, for the narrowest part is certainly not more than six miles in width, and what with current, deviation of the compass, and no certain point to take bearings from, a ship may soon find herself on some of the shoals on either side forming the narrowest part, between Shab Alley on the East, and Ushuffee Island, with shoals north of them, on the West.

Again these gentlemen recommend a lighthouse on the Dædalus Shoal, as being immediately in the fair way of both coming up and going down the sea, alleging too that as they are carrying mails, the deviation from that route is loss of time, &c.

Suez Bay or Road is a most extensive anchorage, and the small miserable place called the town, situated on the narrow tongue of land in the northern or upper part of the bay may possibly yet become a place of great importance, and vastly improved when the railroad between it and Cairo is completed, affording thus a means of getting a more abundant supply of better water than it now has, brought chiefly on camels from the distant wells of Ayan Musa, or Wells of Moses, and the Wadi Tawarik, or Valley of Atakah, brackish and often otherwise impure.

One thing, however, even yet gives it a great importance, which is from its being the point connecting not only our great Indian Empire with Europe and all the eastern world, but the western world, in fact the point of the two hemispheres. For instance, on the one hand by steam and the electric wire, on the other at present by steam alone. Soon I hope to see in conjunction with electric wire too by cable through the Red Sea, for there is no doubt in my mind that it offers as good a bed for laying a wire on, as in any other part of the world.

The two horns of the bay are Cape Atakah and Rad-el-Merkeb, the former bearing S. 24° 30' W., true, about 7½ miles from the point of Suez, and the latter S. 2° W. 3½ miles, and distant from each other about 4½ miles, on a S. 42° 30' W. true course.

The anchorage is in the eastern part of the bay between lines North and N.W. of the light vessel, which lies not quite half a mile off Rad-el-Merkeb, in 3½ fathoms of water.

The channel from and to the gulf generally used is westward of the

light vessel between it and the sometimes dry cluster of coral ledges of Karsis, and Kal'ah Kchirch, giving the former a berth of about a couple of cables.

These coral ledges cover an extent of nearly a mile North and South, and a long half mile East and West, and are well defined from the difference of colour in the surrounding water, &c., in the day time. They are rather better than a mile West of the light vessel, and have deep water all round within two cables. There is also a broad channel West of them, and anchorage may be got when within the horns of the bay, in fact for a long distance outside, in from eight to four fathoms, sandy bottom over clay. After passing the light vessel, and steering a little West of the coal hulk belonging to the P. and O. Company, you may suit yourself with a berth in from four to five fathoms, good holding ground, from a mile to one and a quarter from the extreme point of the sandy spit stretching South of the town, and which forms with the shoal patches on the Sinaitic side, the narrow but not very deep channel up to the town. In this channel, however, there is water sufficient for a small steamer, and the large boats which the P. and O. Company, or rather Egyptian Transit Company employ for landing and embarking passengers, besides cargo, from and to the numerous fleet of steamers belonging to the former company, employed carrying the mails, &c., between Suez and the principal ports of India, China and Australia. I believe this Company will soon have the contract for the latter service.

The town of Suez is of no very great extent, in appearance mean and dirty, the houses built chiefly of adobe, and flat roofed. It has however two or three respectable buildings, in the English Vice-Consul's house and the hotel, the latter showing out large and conspicuous from the anchorage, and on coming in, situated quite on the point, and is a large square white edifice. I believe it was built by the Pacha for the accommodation of the passengers who may chance to stop on their way, either to or from India. That however is seldom the case, yet it cannot be much loss to the proprietor, who has let it to Mr. Shepherd, the owner of the English hotel at Cairo, who has a house full of passengers at the time of the transit of the mails, so that even by him the loss cannot be great. And there is not a well-stocked larder, besides the water of Suez, so wretchedly bad, offers no inducements to remain at the place longer than is actually necessary.

There is a bazaar, but of no very great extent; and as all our supplies for the different messes, fresh meat and vegetables for the crew, have generally been brought from Cairo, we have not troubled it much, except for eggs, and I am sure the numbers consumed by the ship's company, obtained from Suez, are indeed legionary.

The Vice-Consul, who is also the P. and O. Company's Agent, has generally a large supply of stores on hand for the use of their numerous steamers, and we have occasionally replenished from them. He also keeps a supply of provisions for the troops crossing the desert from Alexandria. They come by train as far as the railway is finished, thence on donkeys, which appear to be, with the camels, about the

most useful animals in Egypt. Hardy and docile, far finer than any we find in our own country, and small as they sometimes appear, as if fairly about to crush down with the weight of some great strapping soldiers about to mount them; on they go, and at a good pace too, with their sometimes unruly and long-legged burdens. A most ridiculous sight, often seen, when a whole division of troops comes rattling along full tilt, on these useful little creatures; and when their several burdens are discharged outside Suez, off they start back again for Cairo, whence they are brought to where the rail extends, about twenty miles from Suez, and seldom fail of accomplishing the distance of ninety miles the next day.

When the railway is completed the loss will be with them; but at the same time Suez, I think, will benefit, and I have no doubt but that the expense of transit of goods across the desert will decrease. At present it is £4 the ton from Alexandria. Yet, with all this apparent dearness, I have been induced to send to Malta for a supply of provisions, rather than purchase in the country, for I think we shall get everything cheaper and better. Besides, taking this expense to pieces, and also the ton, it is not so much per pound—a little more than twopence. The fare for passengers is rather high.

At Suez we have a military hospital, but I believe it has had but few patients as yet—the doctors having quite a sinecure berth. And as far as climate goes it is about one of the most healthy places in the world, with all its drawbacks; and one in particular is that there is not a blade of vegetation to relieve the dreary monotony of the boundless, barren, sandy desert, all scorched up by a regular furnace-like heat, and which you will soon find affect you if you do not keep out of the sun's influence.

We anchored in Suez Bay on the 11th of April and lay there until the 24th of May. Throughout the whole of the time we may fairly say that the northerly winds were the prevalent, veering from N.E. to N.W., direct northerly the most steady and strongest, occasionally getting up to a strength of seven; then sometimes not so oppressive, bringing dense clouds of dust off the land, and termed the Camsene wind. In May we had less of this sort of wind, and the northerly winds were frequently not so strong. Towards night usually the wind would fall, breezing up about ten o'clock in the forenoon in the first month; in the next later, in fact irregular. Occasionally, in each month, the winds were South, veering to S.W.; once or twice in May S.S.E. to S.W.; strongest in April, once eight from S.S.W., obliging us to veer cable. Another time a strong puff came out from S.W., bringing dense clouds of sand off, with a very hot atmosphere, but it suddenly flew to N.W. and North and cooled down. The greatest strength of the northerly winds in May was six.

From the 11th of April to the end of the month the highest temperature was 89°, and usually the instrument would show its highest range between noon and four o'clock. The mean temperature for the month of the two-hourly observations throughout the twenty-four hours was 72.5°; of the max., 79.8°; and the min., 61.4°; but the

lowest was 54° , about six in the morning. The range of the barometer was between 30.218 and 29.72.

In May, to the 24th, the highest temperature was 94° . The mean temperature of the daily observations, 75.4° ; with the max., 85.2° ; and min., 65.8° . The lowest in this fraction of a month 60° , and, as before, at six in the morning. The range of barometer between 30.192 and 29.744.

On the 7th of May the ship was moved off to Ataka Point, for the purpose of swinging for deviation. After which a line of soundings was carried across to the eastern shores of the gulf, gradually deepening from the anchorage in eight fathoms, muddy bottom, to nineteen and a half, nearly about mid-channel; then shoaling to eight fathoms and a half outside the shoals, about a mile and a half from the shore, with no prominent or fixed points on the land near, those on the chart scarcely visible; moreover, so few that I was at a loss to fix my position. But curiosity had prompted me in this as much as anything else, merely to ascertain the real depth of water across near about where, I cannot doubt, God led the Israelites when pursued by Pharaoh's host. It is not my intention to enter into any discussion on the subject, yet I think the idea of this passage having been effected at the reflux of tide, and by the shoals being laid bare, is preposterous. There is not a greater rise and fall at Suez than six feet at any time. Moreover, shoals that dry at all are close to the shores, running parallel to them, leaving a wide and deep channel between them. Nothing in the account by the inspired writer can lead to such an idea. The attempt to do away with the miracle is indeed a most futile one, and depreciating the power of the Almighty, with whom nothing is impossible.

It is my opinion that in the bay, a little South of Ataka, thence eastward, was the site of the passage, and that then the water was deeper than now; for there is not only evidence on the shores that the sea has receded, but the clouds of dust blown off the desert and settling to the bottom, in such a number of years must have been no inconsiderable quantity.

Returning to the anchorage again in Suez Bay, a position was taken up near to the Peninsular and Oriental Company's coal-hulk, not only for the purpose of being more convenient for shipping our supply of coals, but nearer to the entrance of the channel to the town, for getting our provisions on board when they arrive.

On the 13th May the provisions arrived, and for the three following days the boats were employed getting them on board and stowed, as well as the coaling from the *Zenobia* (hulk). Neither of these was at all a pleasant service under such a burning sun, for from the intricate and narrow channel, the bringing the stores from the shore was of necessity a daylight affair. This at some future time may probably be improved upon, and with benefit to all in the facilities that will be rendered in the transit of cargoes to and from the shore and shipping in the bay.

From the S.E. point of the town there extends South a long mile and a half a broad sandy spit; thence narrowing considerably and stretching a little West of South for nearly three-quarters of a mile more; all nearly dry at the very point at low water spring tides, and which shoal forms the western side of the narrow channel leading to the town from the anchorage. Here we have at once foundation to erect a good substantial pier or wharf, at which, by carrying it a little beyond the extreme point, at an angle, so as to form an elbow, boats may lie on either side, sheltered according to the wind, with quite as much as two fathoms of water under them. Or, if the wharf was only brought to where the sand narrows, the purpose could be as well accomplished. This spit varies from more than half to three quarters of a mile in its broadest part uncovered at low water, and a trifle more than the eighth of a mile where broadest in the narrow part, decreasing till it terminates in a point.

(*To be continued.*)

THE LATE HIGH BALLOON ASCENT AT WOLVERHAMPTON,—
By James Glaisher, Esq., of the Royal Observatory, Greenwich.

Ballooning has been turned to account and we preserve for our readers Mr. Glaisher's interesting narrative of his late ascent. In this he reached the greatest height attained by a native of our globe, and shows the limits at which human life appears to be capable of support: indeed his ballooning voyages of late, but especially this, will be preserved as the most interesting on many accounts that have ever been made.

On the earth at 1h. 3m. the temperature of the air was 59° , at the height of one mile it was 39° , and shortly afterwards we entered a cloud of about 1,100 feet in thickness, in which the temperature of the air fell to $36\frac{1}{2}^{\circ}$, and the wet bulb thermometer read the same, showing that the air here was saturated with moisture. On emerging from the cloud at 1h. 17m. we came into a flood of light, with a beautiful blue sky, without a cloud above us, and a magnificent sea of cloud below, its surface being varied with endless hills, hillocks, mountain chains, and many snow white masses rising from it. I here tried to take a view with the camera, but we were rising with too great rapidity, and going round and round too quickly to enable me to do so; the flood of light, however, was so great, that all I should have needed would have been a momentary exposure, as Dr. Hill Norris had kindly furnished me with extremely sensitive dry plates for the purpose.

When we reached two miles in height, at 1h. 21m., the temperature

had fallen to the freezing point. We were three miles high at 1h. 28m. with a temperature of 18° ; at 1h. 39m. we had reached four miles, and the temperature was 8° ; in ten minutes more we had reached the fifth mile, and the temperature had passed below zero, and then read -2° , and at this point no dew was observed on Regnault's hygrometer when cooled down to -30° .

Up to this time I had taken the observations with comfort. I had experienced no difficulty in breathing, whilst Mr. Coxwell, in consequence of the necessary exertions he had to make, had breathed with difficulty for some time. At 1h. 51m. the barometer reading was 11.05 inches, but which requires a subtractive correction of 0.25 inch, as found by comparison with Lord Wrottesley's standard barometer just before starting, both by his lordship and myself, which would reduce it to 10.8 inches, or at a height of about $5\frac{1}{2}$ miles. I read the dry bulb thermometer as -5° ; in endeavouring to read the wet bulb I could not see the column of mercury. I rubbed my eyes, then took a lens and also failed.

I then tried to read the other instruments, and found I could not do so, nor see the hands of the watch. I asked Mr. Coxwell to help me, and he said, he must go into the ring and he would when he came down. I endeavoured to reach some brandy which was lying on the table, at the distance of about a foot from my hand, and found myself unable to do so. My sight became more dim. I looked at the barometer, and saw it between 10 and 11 inches, and tried to record it, but was unable to write. I then saw it at 10 inches, still decreasing fast, and just noted it in my book; its true reading therefore at this time was about $9\frac{1}{2}$ inches, implying a height of $5\frac{1}{2}$ miles, as a change of one inch in the reading of the barometer at this elevation takes place on a change of height of 2,500 feet. I felt I was losing all power, and endeavoured to rouse myself by struggling and shaking. I attempted to speak, and found I had lost the power. I attempted to look at the barometer again; my head fell on one side; I struggled and got it right, and it fell on the other, and finally fell backwards. My arm, which had been resting on the table, fell down by my side. I saw Mr. Coxwell dimly in the ring; it became more misty, and finally dark, and I sank unconsciously as in sleep.

This must have been about 1h. 54m. I then heard Mr. Coxwell say, "What is the temperature? Take an observation. Now try." But I could neither see, move, nor speak. I then heard him speak more emphatically, "Take an observation. Now do try." I shortly afterwards opened my eyes, saw the instruments and Mr. Coxwell very dimly, and soon saw clearly, and said to Mr. Coxwell, "I have been insensible;" and he replied, "You have, and I nearly." I recovered quickly, and Mr. Coxwell said, "I have lost the use of my hands, give me some brandy to bathe them." His hands were nearly black. I saw the temperature was still below zero, and the barometer reading eleven inches, but increasing quickly, I resumed my observations at 2h. 7m., recording the barometer reading 11.53 inches and the tempe-

ture —2. I then found that the water in the vessel supplying the wet-bulb thermometer, which I had by frequent disturbances kept from freezing, was one mass of ice.

Mr. Coxwell then told me that whilst in the ring he felt it piercingly cold, that hoar frost was all round the neck of the balloon, and on attempting to leave the ring he found his hands frozen, and he got down how he could; that he found me motionless, with a quiet and placid expression on the countenance; he spoke to me without eliciting a reply, and found I was insensible. He then said he felt insensibility was coming over himself, that he became anxious to open the valve, that his hands failed him, and that he seized the line between his teeth and pulled the valve open until the balloon took a turn downwards. This act is quite characteristic of Mr. Coxwell. I have never yet seen him without a ready means of meeting every difficulty as it has arisen, with a cool self-possession that has always left my mind perfectly easy, and given to me every confidence in his judgment in the management of so large a balloon.

On asking Mr. Coxwell whether he had noticed the temperature, he said he could not, as the faces of the instrument were all towards me: but that he had noticed that the centre of the aneroid barometer, its blue hand, and a rope attached to the car, were in the same straight line; if so, the reading must have been between seven and eight inches. A height of six miles and a half corresponds to eight inches.

A delicate self-registering minim thermometer read -12° , but unfortunately I did not read it till I was out of the car, and I cannot say that its index was not disturbed on descending. When the temperature rose to 17° it was remarked as warm, and 24° as very warm.

The temperature gradually and constantly increased to 57° on reaching the ground. It was remarked that the sand was warm to the hand, and steamed on being discharged.

Six pigeons were taken up—one was thrown out at the height of three miles, it extended its wings and dropped as a piece of paper; a second at four miles flew vigorously round and round, apparently taking a great dip each time.

A third was thrown out between four and five miles, and it fell downwards.

A fourth was thrown out at four miles when descending; it flew in a circle, and shortly alighted on the balloon.

The two remaining pigeons were brought down to the ground. One was found dead, and the other, a "carrier," had attached to its neck a note. It would not, however, leave, and when cast off the finger returned to the hand. After a quarter of an hour it began to peck a piece of ribbon by which its neck was encircled, and it was then jerked off the finger, and it flew with some vigour finally towards Wolverhampton. Not one however had returned when I left on the afternoon of the 6th.

Too much praise cannot be given to Mr. Proud, the engineer of the gas works, for the production of gas of such a small specific gravity.

It would seem from these facts that five miles is very nearly the limit of human existence. It is possible, as the effect of each high ascent upon myself has been different, that in another I might be able to go higher, and it is possible some persons may be able to exist with less air and bear a greater degree of cold, but still I think prudence would say to all, whenever the barometer reading falls as low as eleven inches, open the valve at once, the increased information to be attained is not commensurate with the increased risk.

RETURN VOYAGE OF THE GREAT EASTERN FROM AMERICA IN
AUGUST LAST.

Liverpool, August 6th, 1862.

Some account of the progress of the *Great Eastern* in her voyages across the Atlantic, will be acceptable to our readers, and we therefore adopt the following successful one, from the columns of one of our leading journals at request.

Sir,—Having come a passenger in the “great ship,” on her recent passage from New York to this port, I propose to furnish you with some particulars of her voyage, and some observations on the qualities of the ship. The nation that designed and constructed so vast a vessel cannot already have ceased to feel an interest in her success as a great scientific experiment as well as a commercial enterprize. It is quite unnecessary for me to enter into descriptive details, or to allude to the circumstances which for a time suspended public confidence in the undertaking and in the safety of the ship. Like all important steps in the progress of human economy, the *Great Eastern* has had to encounter serious and unexpected difficulties. One of these has been the want of experience in the business organization, and general management of so vast a vessel. There are, as I believe, also, several radical errors in her internal construction and arrangement, as well as in the application of the motive power which will doubtless be corrected in future ships of equal or greater size. But as to her strength, comfort, and sea-going qualities, she may fairly claim precedence over every other ship on the ocean.

On her last trip to America, the *Great Eastern* entered Long Island Sound at its eastern end, and took up her anchorage near the small town of Flushing, which is about seven miles from New York, and one or two miles below Hurlgate, or, as the sailors call it “Hell-gate.” As the *Great Eastern* is, I believe, the first ocean steamer that has ever approached the metropolis of the western world by this route, it will be necessary to state that the reason for it was the greater depth of water than by Sandy Hook. She could here take in a full cargo, and proceed to sea at any stage of the tide, whilst a ship of the same draught of water can only pass over the bar at “the Hook” at neap tides once or twice in a month. A brief description of “the Sound”

may also interest your readers. It is formed by Long Island, which gives to it its name. This island stretches in a north easterly direction, about one hundred and forty miles from Sandy Hook, and their regular body of water lying between it and the main land constitutes the "Sound," which varies in width from one to over twenty miles. From the anchorage of the *Great Eastern* to the southernly extremity of New York the distance is about ten miles, and the general width about half a mile. This narrow strait, called the East River, connects it with New York Harbour, a large and beautiful expanse of water. On the westernly side is the great city, which is built on Manhattan Island, and opposite to it, on the Long Island side, lie the contiguous cities of Williamsburg and Brooklyn, the latter of no mean magnitude, containing a quarter of a million of souls.

In pursuance of notice, I proceeded at 9h. a.m. on Saturday, the 26th July, to the pier at the foot of Tenth street, East River, to meet the steam tender, *Red Jacket*, herself quite a large and comfortable river boat. By some bad calculation, the 200 passengers whom I found waiting there were detained in a scorching sun, whose rays came reflected from the mirrored surface of the East River with manifold effect for a full hour and a quarter, and many had been there, when the "tender" arrived, two hours. There was, of course, the usual mountain of trunks, handboxes, and hat cases to be got on board, the greater part of which were finally taken by a small tug boat, called into requisition. In half an hour's time we steamed through the narrow strait and reached the monster ship. A more lovely sail than this short distance afforded cannot well be conceived. On the one side of the river, or more properly speaking strait, there is a continual series of villas and gentlemen's country residences, ornamented with shrubbery and shade trees to the water's edge; on the other is the celebrated Blackwall Island, on which are situate the numerous handsome public buildings of which the New Yorkers are so proud.

In half an hour after reaching the great ship the passengers were all on board. I have been speaking of the first-class passengers, who I learned numbered about 170. There were besides three other classes, numbering in all about 350. These had been mostly taken on board the previous day. We had, therefore, over 500 in all. It had been the intention of the captain to sail at twelve o'clock, but there was a barge loaded with cheeses, nicely packed in separate circular wooden boxes, on the one bow, and a canal boat with some 2,000 bushels of wheat from the Lake regions on the other, whose cargoes must be taken on board before we could get to sea. But then the tide would turn at half-past one and swing the ship's head in the wrong direction, and she could not be turned in so narrow a channel. We must therefore start by that time, or not till next day. In consequence the word was given at one o'clock to weigh anchor. This is no slight matter when the anchor weighs seven tons, and it occupied half an hour, with only a few fathoms of cable out, and required the utmost efforts of forty-five hands on a powerful patent capstan. The ship was then put under half steam, towing the barge and canal boat, which were

finally discharged and cast off at four p.m., and were picked up by our tender, which had kept us company.

During this two hours and a half, and for some time after the ship was put under full steam, our journey seaward was like the triumphal progress of a mighty conqueror. There was a fine sailing breeze blowing directly across our beam, which enabled sailing craft to run with equal facility in either direction, and the extraordinary novelty of such a ship, bound to sea by this route, drew hundreds and hundreds of vessels of all sorts and sizes to the line of our march. There were several of the beautiful and fast-sailing New York yachts; there were, fore and aft schooners and brigs, and small boats propelled by sails and by oars, and all gaily decorated with flags and streamers, and crowded with gaily dressed people of both sexes. And these, all expecting the great ship, edged in towards our course, and then drew off again, so as to get the best view of the Leviathan. Our signal guns at starting seemed to have acted like magic on the dwellers on these beautiful shores, and to have caused a thousand sails to be spread to the freshening breeze. Some of the yachts fired salutes, which were courteously returned by our captain from his larger guns, and the 500 passengers duly responded to the cheers and the greetings of the crews and the waving of white handkerchiefs. Such were the exciting scenes at the commencement of our voyage. But the interest excited by our ship followed her all across the ocean. We sighted quite a number of ships, and no matter what course they were steering, they very generally changed it, and edged in towards us, so as to get a nearer view. One of these, a Quebec ship, as I understood, bound for Glasgow, seeing us a long way off, and having a fair wind, turned several miles out of her way to give us a near berth. As we passed her within speaking distance the old skipper gave us three times three cheers from all hands mustered on his quarter deck. We of course responded. I may here mention that we had a fine view of the *Scotia*, the next largest steamship in the world, as we passed each other on Monday morning—a day and a half out from Liverpool. This gave us the opportunity of contrasting the fineness of the *Great Eastern's* lines and model with those of the crack ship of the Cunard Company. Whilst our vessel, going probably about the same speed, was slipping through the water like the blade of a knife, causing no swell and no disturbance, and making no plunges and pitches, the *Scotia* was rolling a vast swell off her bows, and pitching into the waves, and causing an awful commotion, as if some frightful monster was disporting himself on the surface of the sea. The *Scotia* is a fast ship, faster it may be than the *Great Eastern*, but her speed is obtained by her admirable engines and at the cost of enormous power; and not by her superior model. But as I have not yet made a voyage in the *Scotia*, I shall not pursue the comparison further. I can, however, say that the *Great Eastern*, though she rolls more than one can well conceive of so vast a ship, is a splendid sea vessel, and labours less than any steamer I have ever gone to sea in, and I have made fifteen voyages in almost as many vessels. Her rolling is so easy and grand as to give no un-

pleasant sensation, and I scarcely heard of a case of sea sickness all the way over. There is no vibration from the engines, no disagreeable creaking and straining of timbers and light woodwork in the cabins. And then, only think of the space on deck for exercise and amusements! A walk round is a full quarter of a mile. Her cabins are large, well lighted, and well ventilated; her berths and lounges ample and comfortable. My cabin, which was shared with one other passenger, is 9 by 14 feet on the floor, and $7\frac{1}{2}$ feet high, and there are many still larger. It has two windows, whose height from the water enables you to have them open at your pleasure, instead of requiring to be screwed up for the voyage, with orders not to open them on any account. And then, what ship has such a good saloon, 60 feet long and 40 feet wide?

Having said so much in favour of the ship I must be allowed to say a few words about her management. The captain (Paton), with whom I have no more than a bowing acquaintance, I believe to be an excellent seaman, and he is courteous and attentive to his passengers. He enters freely into the numerous amusements daily got up to while away the tedium of sea life, and is no doubt the best commander the great ship has had since the lamentable death of poor Harrison. As far as I can see he is entitled to the confidence of his employers and the public. I wish I could say the same of all the subordinate departments. The commissariat was well supplied, but the cooking and the attendance, I must say, were not in keeping with the character of the ship. The tea and coffee were abominable, and the Englishman's favourite wine, sherry, absolutely intolerable; and 8s. a bottle and 9d. a glass for brandy, which pays no duty, is not quite the thing. If Captain Paton will take the kindly advice of an old voyager, and one who knows something of steam navigation on ocean and lake, he will make the chief steward's an independent department, and place it under his own immediate control. A youthful purser is scarcely the best person to control a branch of business so essentially different from his own particular line of duties. If the chief steward is a man of experience and capacity, he will give his captain little trouble or anxiety, and will stop much grumbling aboard his ship. I trust that these remarks will not be considered out of place in what is really a very important matter in regard to the comfort of travellers by sea.

On the mornings of the two Sundays we were at sea Divine Service was performed on deck, and very eloquent and able discourses were delivered by the Rev. Dr. Irvine, of Hamilton, Canada. The amusements during the week consisted of games of various kinds, hurdle and other races, run by anybody who chose to enter, for which some handsome prizes were awarded by the liberality of the passengers. Nearly every evening there was a dance on deck, so generally fine did the great ship make the weather. I have not noted that the ship carries a band, that contributed largely to the enjoyment of the voyage, which seemed to come to an end too soon.

I cannot pass over an unpleasantness that grew out of one of these "balls," which was given in the dining saloon, on account of rough

weather, when we were about mid-ocean. The captain had ordered the room to be decorated, and it happened that, in conformity with custom, the English and United States flags were festooned together at one end of the saloon. This gave deadly offence to about twenty sensitive persons calling themselves "Confederate Americans," but who had doubtless swallowed the oath of allegiance to the Union, in order to be allowed to pass through to New York. These men insolently demanded that the captain should take down the stars and stripes, or put up the emblem of Confederate independence. He refused to do either; very properly telling them that his ship was a neutral, trading between his own country and the United States, and it would be time enough when his Queen and his employers ordered it to recognise the Confederate flag. I am told that this sort of people, who are mostly foreign to both countries and the veriest of adventurers, continually disturb the harmony of passenger ships, and carry their hatred and violence wherever they go. But the blame does not always rest with the real or assumed Southron. Even in our ship the Northerners had the bad taste to propose national toasts, and loudly discuss their national politics at the public table, to the infinite disgust of a majority of the passengers.

I shall mention only one other trifling incident of the voyage. It was the birth and baptism of a child. But this is not surprising in a population of over 800.

Last, though not least, I must speak of what the shareholders, if not the nation at large, will no doubt hear with gratification. The *Great Eastern* brought over on this occasion the largest cargo ever carried in one ship. She had 10,000 tons of freight, the gross receipts for which and for passengers amounted to £18,000 sterling, and the net profits to £8,000. This must be regarded as the beginning of a great success.

The *Great Eastern* may be set down as a failure in speed. She probably never will realise the estimates of Brunel and Stephenson, but she is not a slow vessel, and personal comfort will render her a favourite passenger ship, whilst commercial success will lead to new adventures and new improvements in ocean steam navigation. Perfection is by no means reached, and greater and faster ships than the *Great Eastern* may yet cross the seas like so many ferry boats. I think our late voyage would have been at least one day shorter had the ship been properly trimmed. She drew thirty feet aft and twenty-six feet forward when she started, and carried a very perceptible star-board list all the way over. Now I will venture to say, as the result of my observations, that she will attain the highest speed on an even keel. To keep her head four feet higher than her stern is like continually driving her up stream. But a little experience will settle this point.

I am, &c.,

H. B. W.

To the Editor of the Daily News.

HONORARY REWARDS.

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

To John Campbell, late second mate of the *John Bell*, of Glasgow, a bronze medal, for gallantly assisting in the rescue at sea of the survivors of the crew of the *John Silver*, of Halifax, on the 27th of October, 1861.

To the boatswain of the *Espiegle*, 35 francs and 25 francs to each of the three seamen of that vessel, who manned the boat and effected the rescue of the captain and five seamen of the *Susan*, of Jersey, abandoned at sea 17th of December last.

To the crew of two Spanish fishing boats, the sum of £25, for conveying to Vigo the crew (thirty in number) and passengers (twenty in number) of the *Euphrosyne*, which was lost near Vigo, 15th of April last.

To Mr. Ralph Wood, master of the *Ann Wood*, of Liverpool, a telescope, in testimony of his services in rescuing the crew of the *Typhoon*, of Liverpool, abandoned at sea 10th of March last.

To George Dalgarno, master of the *Commodore*, of Aberdeen, a telescope, in testimony of his services in rescuing the crew of the *Hope*, of Fleetwood, abandoned at sea 27th of February last.

To Captain Guisepppe Costa, of the Italian barque *Lycurgus*, of Palermo, a sextant, for his humanity in rescuing the crew of the *Edward*, of Liverpool, abandoned at sea 15th of April last.

To Captain S. P. Mandich, of the Austrian barque *Costantino*, a sextant, for his humanity in rescuing the crew of the brig *Meckens*, of Arundel, abandoned at sea 18th of April last.

To Captain Jean Joseph Mistral of the French barque *Leonie*, of Marseilles, a sextant, in testimony of his humanity in rescuing the crew of the *Lady Flora Hastings*, of Liverpool, abandoned at sea, 10th of January last.

To Captain Theodore Luders, of the Mecklenburg ship *Harmonie*, of Wismar, a telescope, in acknowledgment of his humanity and kindness to the survivors from the wreck of the steamer *Colonist*, of Treport, whom he picked up at sea 16th of April, 1861.

To William George, master of the *Gorilla*, of Liverpool, a telescope, for his services in rescuing the crew of the *Sarah Fleming*, of Teignmouth, lost at sea 14th of December last, and landing them at Baltimore 28th of January last.

To John Sadler, master of the *Raleigh*, of London, a telescope, in testimony of his services in rescuing the crew of the *Phæbus*, of Shields, 24th of January last.

To Richard Wm. Sture, master of the *Bezer*, of Dartmouth, a telescope, in testimony of his humanity in rescuing the crew of the schooner *Queen*, of Teignmouth, 8th of March last.

His Imperial Majesty the Emperor of the French has awarded to Mr. John M'Donald, master of the *Jin Kee*, of London; and to James

Kirk, first mate of said vessel, a silver medal each, in testimony of their services in receiving on board their vessel a French seaman, named Inghelore, the only survivor of the French ship *La Rocher*, of Dunkirk.

His Imperial Majesty the Emperor of the French has awarded a silver medal to Mr. James Hoskins Knight, master of the steamer *Alliance*, of Southampton, for his services in saving a French seaman, named Potin.

The President of the United States has awarded to Mr. Robert Gill, a silver medal, in testimony of his services when master of the *Anna*, of Belfast, in rescuing the crew of the barque *Benjamin Hallett*, of Philadelphia.

To Mr. David Jones, a silver medal, in testimony of his services when master of the *Mary Ann*, of Aberystwith, in rescuing the crew of the *Cornelia*, of Portland, Maine.

To Malcolm M'Gregor, a gold medal, in testimony of his services when master of the *Lifu*, of Pictou, Nova Scotia, in rescuing the crew of the ship *Ocean Queen*, of New York.

To Mr. Richard Russel, a gold medal, in testimony of his services when master of the *Success*, of Liverpool, in rescuing the second mate carpenter, and nine seamen of the American barque *Annie Buchanan*, of Boston.

To Mr. Henry Pinhey, a silver medal, in testimony of his services when master of the *Esterias*, of Plymouth, in rescuing the crew of the barque *Indian Queen*.

To Mr. George Dalgarno, a silver medal, in testimony of his services when master of the *Commodore*, of Aberdeen, in rescuing the crew of the brig *Franconia*, of New York.

The Swedish government has awarded to Herbert Williams, master of the *Simla*, of Liverpool, and to Robert Hooper, chief mate, a silver medal each; and to Henry Oswell, boatswain, John Leonard, Charles Wallace, and Oscar Fondon, seamen of said vessel, the sum of £12, to be equally divided, for their services in rescuing the crew of the *Westfold*, of Tonsberg.

To Captain A. Adelsparre, of the Swedish man-of-war *Norrkoping*, a sword, for the timely aid rendered by him to the *Leven*, of Glasgow, which, on entering the port of Matanzas, went on shore on the 12th of April last, and was in danger of becoming a wreck.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*Report of the Royal National Life Boat Institution—Chinese Naval Affairs.*

The Chairman would first call the attention of his friends at the Club to the report of the Life Boat Institution, and would then name one or two subjects for their discussion.

A reward of £12 to the crew of the Berwick life boat belonging to

the institution, for going off in the night of the 9th ult. with the view of rendering assistance to the smack *Ann*, of Hull, which, during rough weather, had struck on Spittal Point. Although the seas were beating over the little vessel her crew still clung to her. The life boat remained by her some time, but shortly after the smack drifted out of danger. In accordance with the positive orders of the institution, its life-boats' crews never encourage sailors to abandon their distressed ships. Hence it is that the life boats sometimes remain by them on occasions for many hours together; and the distressed sailors thus nerved afresh, exert themselves successfully in getting their vessels out of danger.

A reward of £7 was also voted to the crew of the Arklow life boat of the society, for putting off to the assistance of a schooner which had struck on the outlying sand bank, on the 10th ult. Fortunately the vessel floated off, and proceeded on her voyage.

A reward of £2 was also granted to four country people, who had promptly manned a small-boat and rescued three men, whose boat had struck on a rock during a gale of wind and a heavy sea off Ballysteen, on the coast of Limerick.

A reward of £2 was also given to the crew of the fishing lugger *Excelsior*, of Lowestoft, for saving the crew of five men belonging to the lugger *Caledonia*, of Buckhaven, bound to Whitby, which, during a gale of wind and squally weather, had been upset near the last-named port.

A reward was likewise granted to a fishing-boat's crew for rescuing five out of seven of the crew of another boat, which, having shipped a heavy sea, had capsized off Garnish, on the coast of Cork, on the 30th July last. The five men were in a very exhausted condition when they were rescued from the inevitable death that apparently awaited them. The other two men unhappily perished before assistance could reach them.

A communication was read from his Grace the Duke of Northumberland, K.G., president of the institution, stating that he accepted with much pleasure the model of the institution's life boat and transporting carriage which the society had presented to him, and that he should preserve them as a memorial of the important benefit which the Life-boat Institution had conferred on the shipwrecked sailor.

During the past month a new life boat and transporting carriage had been sent to Withernsea, near Hull. On the occasion of the inauguration of the boat, about 20,000 persons had assembled to witness the interesting ceremony. Another new life boat and carriage had also been sent to Appledore, in Devon.

The inspector of life-boats of the institution read a favourable report on the condition of the life-boat stations of the society on the coast of Scotland, and on the north-east coast of England.

It was reported that some French officers had recently visited one of the life-boat stations of the institution on the north-east coast, and that they had expressed their high admiration of their completeness to accomplish the humane object in view.

It was also reported that the important friendly society, the Ancient Order of Foresters, had recently resolved at their annual court, that a voluntary subscription should be asked for from their members each year, in aid of the funds of the National Life-boat Institution.

With its 122 life-boat establishments, each of which involves an annual charge of £40 ; it is quite manifest that a large permanent income is required by the institution to enable it to continue the important and national work which it has undertaken of saving the lives of persons of all nations who may be wrecked on our coast.

Payments amounting to upwards of £600 having been made on various life-boat establishments the proceedings terminated.

They would be all glad to know of the successful operations of the society, and might fairly exult in the noble example thus set by England all over the world.

Proceeding to other matters continued the Chairman, the subject of espousing the cause of the Chinese was so novel a feature in the records of naval history, that it should not pass unrecorded. A gallant officer of our navy might be now considered the Chinese Admiral and Commander in Chief in Chinese waters. We have had a naval officer at the head of the Turkish fleet, and why not one at the head of the Chinese? Some entertaining remarks passed in the Club about uniform, colour of buttons, and gunpowder tea, but all agreed that there would be an end to piracy if the new Admiral was well supported with a naval force by his Government.

But here is the order in Council from the *London Gazette*, said the Chairman, who then read :—Her Majesty, by and with the advice of her Privy Council, being desirous of enabling her subjects to engage in and enter the naval and military service of the Emperor of China, is pleased to order that, from and after the 1st day of September, it shall be lawful for Horatio Nelson Lay, one of her Majesty's subjects, and Sherard Osborn, a captain in her Majesty's navy, to enter into the military and naval service of the said Emperor, and to accept any commission, warrant, or other appointment under the said Emperor, and to accept any money, pay, or reward for their services, and to fit out, equip, purchase, and acquire ships or vessels of war for the use of the said Emperor, and to engage and enlist British subjects to enter the military and naval service of the said Emperor. And it is hereby further ordered that it shall be lawful for every British subject to enlist and enter himself by engaging and enlisting himself with the said Horatio Nelson Lay and Sherard Osborn, and no other person or persons whatsoever in the military and naval service of the said Emperor, and to serve the said Emperor in any military, warlike, or other operations, either by land or by sea, and for that purpose to go to any place or places beyond the seas, and to accept any commission warrant or other appointment from or under the said Emperor, and to accept any money, pay or reward for his service : Provided always, that the licence and permission hereby given shall be in force only for the term of two years from the said 1st day of September next, unless, by order in council made in manner aforesaid such period shall be further extended.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 498.)

Name.	Place.	Position.	F. or R.	Ht. in Feet.	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
19. Salt Mead Ledge	Solent Channel	England, S. coast	..	..	..	Est. August, 1862. (a.)
Black Rock Ledge	Ditto	Ditto	..	..	..	Est. August, 1862. (b.)
Hamsted Ledge	Ditto	Ditto	..	..	..	Est. August, 1862. (c.)
20. Buholmen	Bronösund	65° 28 5' N., 15° 13 5' E.	F.	42	10	Est. 1st September, 1862. (d.)
Reine Harbour	Norway	67° 55 8' N., 15° 8 5' E.	F.	41	6	Est. 1st September, 1862. (e.)
Orsvaag Harbour	Ditto	68° 11 7' N., 14° 27' E.	F.	92	6	Est. 1st September, 1862. (f.)
21. Hjertholmen	Ditto	68° 24 7' N., 16° 8' E.	F.	67	12	Est. 1st September, 1862. (g.)
Fiadholmen	Ditto	58° 55 3' N., 5° 33 7' E.	F.	43	8	Est. 1st September, 1862. (A.)
Tangenæs Point	Ditto	59° 2 1' N., 5° 34 2' E.	F.	32	6	Est. 1st September, 1862. (i.)
22. Tandjong Kalean	Banca	2° 5' S., 105° 7 5' E.	F.	170	20	Est 16th May, 1862. Banca Strait, North entrance.
23. Butt of Lewis	Hebrides	58° 30 7' N., 6° 10' W.	F.	118	19	Est. 15th October, 1862.
24. Rimini	Adriatic	44° 4 6' N., 12° 34 2' E.	F.	70	12	Est 1st September, 1862.
Flum	Quarnero Gulf	.....	..	..	..	Lights in clock tower and at mole head.

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

(a.) 19.—A *white* buoy is placed in 5 fathoms at low water on the N.E. edge of the ledge, with Egypt point bearing E. $\frac{1}{2}$ N., (the Gurnet buoy appears a little outside the point); Eaglehurst tower a little within Stansore point, N.E. $\frac{1}{2}$ E.; Lepe coast-guard houses, N.E. $\frac{1}{2}$ N.; Pitts Deep coast-guard houses, N.W. $\frac{1}{4}$ W., nearly; Hurst high lighthouse, W. $\frac{1}{2}$ N.; centre of the Mount trees (east end of Yarmouth), on outer extreme of Hamsted point, W. $\frac{1}{4}$ S.; North Close farm house, S.W. $\frac{1}{4}$ S.; and Hamsted ledge buoy W. $\frac{1}{2}$ N., distant 2 miles.

(b.) 19.—A *white* buoy is placed in 10 fathoms water a little outside and to the northward of the Black rock off Yarmouth, with the high tower of the Refuge in Yarmouth in line with the N.E. end of the Castle wall bearing S.E. easterly; Yarmouth church, S.E. $\frac{1}{2}$ S.; Sconce point, W. $\frac{1}{2}$ N.; Hurst high lighthouse, W.b.N. $\frac{1}{2}$ N.; Lymington church, North; and Hamsted ledge buoy East. There are only 6 feet at low water about 47 yards inside the buoy.

(c.) 19.—The *white* buoy on this ledge has been moved rather more than $1\frac{1}{2}$ cables to the north-eastward, and now lies in 5 fathoms on the N.E. end of the ledge, with North Close farm house in line with North beacon at entrance of Newtown river, S.E.b.E. $\frac{1}{2}$ E.; Egypt point E. $\frac{1}{2}$ N. (Gurnet buoy is nearly on with the point); Pitts Deep coast-guard houses, N.b.W. $\frac{1}{4}$ W.; Lymington church, N.W.; Hurst high lighthouse, W. $\frac{1}{2}$ N.; Sconce point, West, northerly; and the highest part of the Mount trees at Yarmouth just southward of the south part of Hill trees, W. $\frac{1}{2}$ S.

(d.) 20.—A *fixed* white light will be exhibited from the north side of Buholmen, at the northern entrance to Bronösund, visible from the northward

when bearing between S.b.W. $\frac{1}{4}$ W. and W.b.N. $\frac{1}{4}$ N., and from the southward between N.E.b.N. and E.b.S. $\frac{1}{4}$ S. When approaching Brönösund from the northward or southward, by keeping the light in sight a vessel will clear all dangers. In approaching from the northward and being westward of Salhuusrogn, the light should not be brought to bear more southerly than S.b.W. $\frac{1}{4}$ W., when a vessel should steer for it until the entrance westward of Buholmen is seen; then with the light on the port side steer S.W. into the sound. The light will be shown from the 15th day of August to the 1st day of May.

(e.) 20.—A *fixed* white light will be exhibited from the southern point of Olenlörens island at the entrance to Reine harbour, visible when bearing from W.b.S. round North and East to S.b.E. The channel between Lamholm and Langskjær islands will be open when the light bears between N. $\frac{1}{4}$ E. and N.N.E. This passage as well as that northward of Langskjær is clear of danger. In entering a vessel should keep westward of the light and between it and the Fiskeskjærene rocks lying about $1\frac{1}{4}$ cables W.N.W. of the light. There is good anchorage everywhere in the bay as well as close inside Langskjær and Lamholm. The light will be shown from the 1st day of September to the 14th day of April.

(f.) 20.—A *fixed* white light will be shown from the N.E. side of Sagöen island, at the entrance to Orsvang harbour visible when bearing from E.N.E. round North and West to S.E. The usual and best anchorage is with the light bearing S.b.W. About $1\frac{1}{4}$ cables N.b.W. of the light is a sunken rock with 9 feet over it, at low water. The light will be shown from the 1st day of September to the 14th day of April.

(g.) 21.—A *fixed* white light will be exhibited from the East side of Hjertholmen, at the entrance to the harbour of Lölingens (Roholmens), visible when bearing from S.W. $\frac{1}{4}$ S., round West and North to N.E.b.N. The light bearing N.E.b.N. will lead a cable eastward of the Rotvær rocks, as well as clear of Smælrumpen and Smalen. The light bearing S.W. $\frac{1}{4}$ S. will lead about three-quarters of a cable eastward of Strandodden, and also clears the Falken rock. Vessels should pass eastward of Hjertholmen which is clear of dangers on the North and East sides to the distance of half a cable from the land, with the exception of Havneskallen bank, over which there are 16 feet of water at low tide, lying about 3 cables N.E.b.N., from the light. The light will be shown from the 15th day of August to the 1st day of May.

(h.) 21.—A *fixed* white light will be exhibited from the N.W. point of Fladholmen, eastward of Rot, visible when bearing from S.W.b.W., westerly, round by South and East to N.E.b.N. There is good anchorage in 9 or 10 fathoms water, on the East side of Fladholmen, between it and Staholmen. Steer northward of Fladholmen, which is clear of dangers at a distance of about 10 fathoms from the land.

(i.) 21.—A *fixed* white light will be exhibited about 500 yards north-westward of the old lighthouse on Tungenæs point, about $5\frac{1}{4}$ miles N.W. of Stavanger. The light will be visible when bearing from E.b.N. $\frac{1}{4}$ N., round by South and West from the direction of Hundvaagöen. The old light will be discontinued. The light bearing E.b.N. $\frac{1}{4}$ N. leads about 2 cables northward of the Villeboen.

The Bragen rock with an iron pillar on it is N.N.W. $\frac{1}{4}$ W. from the light. Vessels anchoring off the light should avoid the Tunge reefs lying W.b.N. $\frac{1}{4}$ N., and N.N.W. $\frac{1}{4}$ W. of it. Also, the Skodholm bank lying W. $\frac{1}{4}$ S. of the light and a cable from the land. The light will be shown from the 15th day of July to the 16th day of May.

REPORT ON LORD HOWE GROUP, SOUTH PACIFIC,—By *Thomas Johnson, Master of the ship "Beemah."*

Shanghai, June 25th, 1862.

Sir,—I left Newcastle, N.S.W., on the 8th of May, 1862, bound to Shanghai, *via* route West of New Caledonia, and East of Solomon Islands, during which time I experienced nothing but variable light airs from the eastward with heavy rain.

Cleared the East end of Christoval Island on the 21st of May, and on the 25th found myself in sight of Lord Howe Group. These islands I consider much more extensive, and not correctly in the position assigned to them on the latest charts, corrected to 1860, of which I am in possession. I counted twenty-four islands large and small, thickly covered with wood, to the height of thirty-five or forty feet, and extending about W.b.N. and E.b.S. a distance of 27 or 28 miles, and not visibly connected to each other at a distance of four miles from the mast head, in a clear day, though I have no doubt on a closer examination they would be found in many places connected to each other by reefs, which at the above distance, and being a calm day, were not visible, excepting off the West end, where broken water was seen to extend for a short distance.

I make the West end in (by three good chronometers previously rated in Sydney,) long. $159^{\circ} 10'$ East, and lat. $5^{\circ} 24'$ South, which you will find differs from the position assigned to them on the latest charts.

You will oblige me by inserting the above in your valuable columns, as it may be observed by ship masters traversing the above route.

Yours, &c.

THOS. JOHNSON, *Master Ship "Beemah."*

P.S. I beg to add, that on the 8th of June I passed through the Caroline Islands, West of Swede Island. Here the natives came off in five canoes with five or six men in each, with shells, fruits, &c., to trade with. They appear a strong healthy race of people. I treated them with kindness, and gave them some trifling things, for which they appeared thankful and in every way friendly, though I do not think it would be safe, unless well prepared, to land amongst them. The sun being obscure prevented me from taking observations when passing these islands and reefs.

To the Editor of the Nautical Magazine.

We do not know what chart Captain Johnson used, but the position of the West extreme of Lord Howe Group in the Admiralty chart of the Pacific, sheet No. 2464, agrees within a few minutes of longitude and quite in latitude with the foregoing—ED.

TO CORRESPONDENTS.

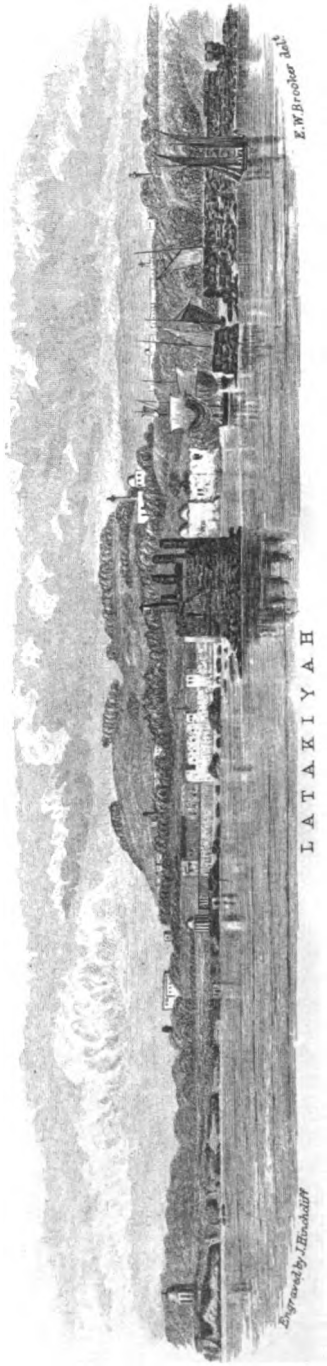
A pressure of other matter has obliged us to omit much of the proceedings of the Club.

Mt. Buffavere,



Mt. Potadokylon

KYRENIA
SEFOSMIA



E.W. Brecher del.

LATAKIYAH

Engraved by J. Enochoff

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

NOVEMBER, 1862.

REPORT ON THE DEEP SEA SOUNDINGS TO THE WESTWARD OF IRELAND,—made in *H M.S. "Porcupine,"* in June, July, and August, 1862.

Belfast, September 30th, 1862.

Sir,—The Atlantic Submarine Telegraph Company having requested the Lords Commissioners of the Admiralty to have some deep soundings taken off the western coast of Ireland, principally to ascertain whether the apparent sudden dip in the soundings from 550 to 1,750 fathoms, found by Commander Dayman in the year 1857, in the parallel of 52° 15' N., extends further North or South, and to endeavour to seek out a more gradual slope into the bed of the ocean, their lordships were pleased to direct that the *Porcupine*, then fitting at Devonport for the survey of the North Sea, should be despatched on this service.

The *Porcupine* is a paddle steamer of 130 horse power and 380 tons. She was manned by a crew of forty-nine officers and men, and was fitted with a donkey engine for heaving in the line; also with five light iron reels, three large for the deep sea line, and two small for cod line, capable of holding 2,000 fathoms of line each. From these reels the line was run off when sounding, and reeled on them by hand, as it was hove in by the donkey engine. The *Porcupine* was also supplied at Devonport with 10,000 fathoms of the ordinary deep sea line and 13,000 fathoms of cod line, made expressly for deep sea sounding, with an ample supply of sinkers and weights, and the Bulldog and other apparatus for bringing up the bottom; Johnson's

and Hearder's pressure gauges to show the depth were also supplied, as well as metallic and ordinary deep sea thermometers to test the temperature. At Galway a further supply of 10,000 fathoms of Messrs. Newall's cod line was received on board, besides 11,500 fathoms of a smaller and less expensive line. The weight per 1,000 fathoms, with the breaking strain of these sounding lines, was as follows:—

Lines.	Fathoms.	Weight.		Breaking Strain	
		lbs.	Cwt.	lbs.	
Ordinary deep sea	1000	230	6	63	
Newall's cod	1000	56	3	14	
Laid twine	1000	17½	0	100?	
Marline	1000	29	0	100?	
Mackerel	1000	26	0	100?	

The lines were marked in the usual way, viz., blue at 50 fathoms, white at 100 fathoms, and red at 1,000 fathoms.

The soundings were always taken from the bow of the vessel. With the main and mizen sheets out we had no difficulty in keeping her head to wind; and an occasional easy turn ahead sufficed to keep her bow directly over the descending lead.

The principle of using a small line and heavy weight for obtaining the depth was that adopted. I believe it to be the only means at present known for obtaining the true depth.

When using a heavy line, such as the ordinary deep sea line, the difference of interval after the weight strikes the bottom is not sufficiently marked to enable one to say confidently when it is down, particularly should there be any sea, and none of the instruments we were supplied with, whether of a rotatory character, like Walker's, or those depending on compression, as Johnson's and Hearder's pressure gauges, give any results that can be at all relied on.

The cod line supplied by Messrs. Newall, of Gateshead, is an admirable line for this purpose. The weight was sometimes brought up by it from great depths. On one occasion it raised a 64 lb. weight from a depth of 1750 fathoms; but as the whole quantity out is frequently sacrificed at each sounding, the expence becomes a serious consideration when the soundings are required near each other; and I found the lighter and much less expensive lines answer equally well in smooth water, where the depth of water alone was required.

The strongest line we had for bringing up a specimen of the bottom, with the instruments for testing the temperature and pressure, was the ordinary deep sea line. If, as it sometimes happens, the weight does not detach itself, this line would prove unequal to the strain, and at some sudden heave of the sea would break away, losing all our instruments.

The simplicity, cheapness, and certainty of action of the cup lead,

of from 56 lbs. to 75 lbs. weight, renders it an invaluable instrument in depths under a thousand fathoms, bringing up a good wine glass full of the bottom at each cast. It may be used either with the cod or ordinary deep sea line. In greater depths when a specimen of the bottom was required, we used the Bulldog machine.

To save time, the two operations of determining the depth by a small line, and sending down the instruments for scientific purposes, were carried out together, an officer being stationed at each line to time the marks in their passage over the gunwale. A deep sounding, when the instruments were to be recovered, would occupy from two to four hours.

Having made these preliminary observations, I may now proceed with the progress of the voyage.

Having swung ship for compass deviation, I sailed from Plymouth Sound on the 22nd of June, and on the 24th commenced our examinations, in pursuance of your orders, at the 100 fathoms line on the 51st parallel of latitude. The deep water valley crossed by Commander Dayman ninety miles west of Valentia, was found to extend to this parallel, as we had 1,180 fathoms in its deepest part and 375 fathoms on the bank outside it. From the depth of 1000 fathoms in this depression, the Bulldog machine brought up a bivalve shell embedded in the soft clay.

On crossing the bank to the westward, we passed from a depth of 710 fathoms to 1,550 fathoms in a distance of seven miles. Although this increase of depth seems so great, if the incline is gradual, of which we have no evidence to the contrary, it amounts to but 12 feet of dip in 100 feet horizontal, or about 1 in 8.

To the westward of this we dropped our lead on the position of a reported vigia (the Brazil Rock) and obtained 2,350 fathoms, and here the deep sea line being unequal to the strain broke, taking with it all our instruments attached.

With reference to this and other vigias in this part of the ocean, I may observe that we frequently passed balks of timber, covered with barnacles and sea weed, having somewhat the appearance of a rock awash.

Carrying out the system of sounding laid down for me in your orders in the parallel of $51^{\circ} 35'$, we passed from 1,440 to 930 fathoms in a distance of 2.7 miles, or a little under 19 feet of dip to 100 feet horizontal, and this is the steepest incline we have met with.

The unsettled weather we experienced frequently interrupted our work, and on the 8th of July, having expended our coals, I ran into Galway to replenish, and obtain a fresh rate for our chronometers.

We were detained here by continual gales until the 21st, when the weather moderating we again sailed, carrying out a line of soundings with us; but had scarcely arrived on our ground, when the weather became more severe than ever, and on the morning of the 24th, while lying to in a heavy gale, we had the misfortune to twist our rudder-head off. This compelled us to return to Galway for repairs, and in

the absence of the proper means for effecting them, we were delayed there until the 6th of August. During this time and indeed throughout the whole of our cruise, the weather was very unsettled, occasioning a great loss of time.

On the 8th of August we were enabled to sail from Cashell Bay, where, on leaving Galway, I had gone for shelter. Carrying out a line of soundings on the parallel of Slyne Head, at the distance of one hundred and twenty miles to the westward of it, we crossed the tail of a bank of 82 fathoms, coarse gravel. This being entirely new, I have named it the Porcupine Bank. It will be of use to vessels bound to Galway from the westward as a means of ascertaining their position by the lead. The bottom both to the northward and southward is deeper, being composed of fine dark sand, while the bank is composed of gravel and coarse sand.

August 10th, in lat. $53^{\circ} 30'$, long. 15° , found the current from a boat moored to the bottom S.E. $\frac{1}{2}$ S. 0.5 knot, which agrees with that shown by our reckoning for the last two days. Numerous pipe fish, some with ova attached, were swimming on the surface; some of these were preserved.

Aug. 11th.—Our soundings this day taught us that in the parallel of $54^{\circ} 10'$, the Irish Bank does not extend so far to the westward, and that Rockal is probably a separate bank.

Aug. 12th.—Weather again unsettled, with a heavy sea. Having determined the N.W. limit of the Irish Bank, bore away towards the tail of the Rockal Bank, sounding at intervals in from 1,500 to 1,200 fathoms, shoaling as we approached the Rockal Bank.

Aug. 14th.—At noon observed Rockal with several fishing vessels near it. There being too much sea to do anything in the vicinity of the rocks, hove to for the night.

Aug, 15th.—Got observations for latitude and longitude; found the current setting with flood tide N.b.E. 0.8 knot. The weather having become fine with only a moderate swell, sent a boat with a party to land on the rock; but the sea broke so heavily round it that the officer in command thought it would be imprudent for them to do so. One of the party, Mr. Johns, the boatswain, succeeded in getting a footing, but not at the part where the summit is accessible.

The fishery is in the vicinity of the rock; but this very remarkable peak of a submarine mountain standing as it does in solitary grandeur above the ocean surface, is not unworthy of some attention in this report.

Rockal is in lat. $57^{\circ} 35' 53''$ N. by meridian altitude of sun; long. $13^{\circ} 42' 21''$ W., mean of a.m. and p.m. sights, four chronometers, sea horizon. The rock has an elevation of 70 feet above the sea, is about 250 feet in circumference at its base, and is composed of a coarse granite.*

The summit of the rock, sharp pointed and whitened by birds, can

* Specimens have been sent to various museums in Ireland.

only be gained from its N.E. side, and landing is at all times difficult, for it is steep on all sides. On the N.E. side, however, is a small detached rock, called Haslewood Rock, uncovered at half tide, with 30 fathoms of water between it and Rockal, from which it bears N.E.b.N. a cable and a half distant.

Helen Reef, bearing S. 79° E. two miles from Rockal, has about 6 feet water over it at low water. It is so called from a vessel of that name that was wrecked on it, and is very dangerous. The situation of it is generally shown by its breakers, but towards high water and in very fine weather, it only breaks at long intervals. From being small and steep to, there is then nothing to indicate the approach to it. To avoid it keep Rockal clear of a W.b.N. bearing. There is a safe passage between it and the rock.

The lowest estimate that was formed of the range of the tide, (judging from the appearance of the rock,) was 6 feet; but this seems large for a tide wave in mid ocean. Purdy's *Atlantic Memoir* presumes to discredit the existence of any danger near Rockal, but is mistaken.

From Rockal we steered for the Irish coast, when nearly midway between it and the Irish Bank, we obtained one sounding of 1,660 fathoms, and found the current here from a boat moored to the bottom S.E.b.E. $\frac{1}{2}$ E., one knot.

From the edge of the Irish Bank I carried a line of soundings into Enis Head, and then proceeded to Valentia for coals. On receiving which, having carried out my instructions and effected the object of our cruize, I returned to Cork for further orders, getting a few soundings by the way.

In the course of our operations we found the donkey steam engine and the light iron reels for running the line off very serviceable, indeed indispensably necessary to our success. The Bulldog machine fully answered the purpose of bringing up a large quantity of the bottom, but we could not always get the weight to detach. On one occasion, too much line having been paid out, the light got between the jaws of the nipper and prevented its closing; this lost us our specimen, but it affords another illustration of the line going straight down on the weight, and the consequent absence of any under current.

In carrying out this service I received every assistance from the officers on board, who all united their best endeavours to bring our cruize to a successful termination.

With reference to the principal object of our inquiry, that of finding a more gradual slope into the bed of the ocean, I consider that our soundings, shown in the accompanying chart, clearly prove that the general dip of the bank presents no difficulty whatever to laying a cable either from Valentia or Loop Head, or any other part of the West coast of Ireland between Bantry and Blacksod Bays, that may offer facilities for securely landing and working it.

Much pains were taken by sounding at short intervals to discover if anything like a precipice existed. Our steepest incline shows a

difference of level of 3,060 feet in 2·7 miles, or about 19 feet in 100 feet.* On the parallel of 51° 20' we have a dip of 7,680 feet in a distance of fourteen miles. The intermediate soundings give no evidence of a precipice; but a mountain of this height on the land would present an imposing appearance, with perhaps some steep escarpments.

On the adjacent coast of Ireland we have precipices of 2,000 feet in height within half a mile of the shore. However these may have been caused, whether by the continued action of the Atlantic waves at their base, or by the erosive power of glacial or atmospheric agencies operating on their slopes, it is certain that the submarine mountains are not exposed to this action, or to any denuding process whatever. But it is more probable that any inequalities in them arising from original formation have been filled up by the gentle depositions of the soft clay that we found everywhere covering their slopes.

On examining the soundings the slope will be found to vary from 6 to 19 feet dip in 100 feet horizontal, a dip that cannot possibly strain or injure the cable. The knowledge of this fact will, I trust, remove one of the supposed difficulties in the way of laying it, and help to forward the successful realization of this great national undertaking.

I am, &c.,

R. HOSKYN, *Master and Surveyor.*

Rear-Admiral Washington, F.R.S., &c.,

Hydrographer.

Abstract of the Experiments made with the Pressure Gauges and Deep Sea Thermometers from the Sounding Log.

June 25th.—In 1,000 fathoms water.

Board of Trade min. ther., No. 49, registered 44°.

Johnson's metallic ther., No. 8 37°.

Johnson's pressure gauge, did not act, the stopper had not moved.

Header's pressure gauge, all the mercury ran out of the legs into the tube, probably from its having capsized on the bottom.

June 27th.—In 2,350 fathoms.

Board of Trade min. ther., lost by line carried away.

Johnson's metallic ther., lost by line carrying away.

July 22nd.—In 200 fathoms.

Johnson's pressure gauge, did not act.

Board of Trade min. ther., registered 54°.

* Those depths to which we have added an asterisk (*) indicate, with others on the bank inside of them, the places where this gradual slope of the bank is found; the incline being about one half of that of the usual shingle beach.—ED.

Johnson's metallic ther., No. 9, 49°.

Board of Trade min. ther., 50·5°.

Johnson's metallic ther., No. 9, 48·5°.

August 10th.—In 540 fathoms.

Header's pressure gauge, the mercury was all disjointed, some in outer tube, no result.

In 820 fathoms.

Header's pressure gauge, lost by line parting.

In 1,500 fathoms.

Board of Trade ther., No. 18, registered 59°.

In 1,550 fathoms.

Johnson's metallic ther., No. 9, 31°.

August 11th.—In 1,540 fathoms.

Header's pressure gauge, No. 2, on coming up the short leg registered 750 fathoms; the long leg was full; in a few minutes after coming up the short leg fell to 1,000 fathoms.

August 12th.—In 690 fathoms.

Header's pressure gauge, No. 2, on coming up the short leg registered 1,200 fathoms; the long leg was full: shortly afterwards the short leg registered 1,425 fathoms.

August 16th.—In 1,660 fathoms.

Board of Trade ther., No. 18, 51°.

August 29th.—In 400 fathoms.

Johnson's pressure gauges, Nos. 1 and 2, did not act.

Repeated the experiment,—they did not act.

Header's pressure gauge, short leg registered 950 fathoms, long leg, 300 fathoms.

Every injunction of the inventors for using these instruments was strictly complied with by Mr. Davis, who took great pains to secure their efficient working.

Johnson's metallic thermometer appears to give good results.

I think the reading of the Board of Trade thermometer is sometimes vitiated by the index not retaining its position.

Johnson's pressure gauge never seemed to be in the slightest degree affected by pressure. Is it not possible that the water may pass freely round the cork without moving it? If the plug is forced into the tube with the finger, instead of compressing the water passes it.

Header's pressure gauge is of no practical use in its present form. The liability to fall on its side on the bottom, will always interfere with its results.

R. HOSKYN.

In all cases in the following soundings the bottom was found and the depth fairly measured,—but where the line parted in coming up, the sounding being lost the character of the bottom could not be ascertained.

Date.	Latitude.	Longitude.	Depth.	Nature of Soundings.
June 25	50 44·5	11 36·5	900	Drab coloured sandy mud.
"	50 55	11 52	980	Stiff sandy clay.
"	50 56	12 6	1000	Stiff sandy clay.
"	50 57	12 20	1080	Sandy clay.
"	50 58	12 40	1120	Line broke from strain, 1,050 fms.
"	50 59	13 0	1180	Sandy clay.
"	51 0	13 22	1175	Sandy clay.
" 26	50 59	13 30	930	Sandy clay.
"	51 3	14 46	510	No indication.
"	51 4	15 6	710	Sp. sand.
"	51 4	15 19	1550*	Line parted—no bottom found.
" 27	50 56	15 21	1900	Line parted at 1,000 fathoms.
"	51 9	15 59	2350	On site of Brazil Rock—a good up & down soundg.—lost at 2,250 f.
"	51 19	15 32	2050	Line parted at 1,900 fathoms.
"	51 19	15 15	1750	Good up & d. sndg.—lost at 1000 f.
" 28	51 25	15 15	1550*	No indication.
"	51 35	15 19	1440*	Clay.
July 2	51 52	15 22	1200*	Line parted at 1,000 fathoms.
"	51 51	15 21	1250	Line parted at 1,150 fathoms.
"	51 50·5	15 31	1450	Sandy clay—ending unsatisfactory.
" 3	51 57·5	15 17	1250*	Parted at 1,000 fathoms.
"	52 8	15 30	1240*	Sandy clay.
" 6	52 21	15 31	1570*	Sandy clay.
"	52 18	15 15	710	Sandy clay.
"	52 19	15 2·5	570	Sand.
" 23	52 58	15 8	1050	Line parted.
"	52 58	15 20	1470*	Sandy clay.
Aug. 10	53 22·5	14 45	820	Line parted at 700 fathoms.
"	53 22	15 0	1500*	Sandy clay.
"	53 40	15 4	1550	Sandy clay and stones embedded. Greenstone & basalt ang. $\frac{1}{4}$ in. sq.
"	53 40	14 47	1300	
" 11	53 39	14 46	1220*	Line got into nippers.
"	53 53·5	14 14	900	Muddy sand—parted at 800 fms.
"	53 59	14 25	1540	Sandy clay & stones—lost at 1 400 f.
"	54 0·5	13 58	1120	Sdy cly. Bank recedes E. Rockal is probably on a separate bank.
" 12	54 8	13 25	1350*	Sandy clay.
"	54 6	12 50	690	Sandy clay.
"	54 16	13 6	1580	No specimen, line parted.
"	54 39	13 44	1500	Line parted at 1,400 fathoms.
" 18	55 14	14 42	1300	Line parted at 1,280 fathoms.
"	55 33	14 40	1220	Line parted at 1,050 fathoms.
"	55 53	14 38	800	Sandy clay.
" 16	55 31	12 11	1660	Mud.
" 17	54 20	12 44	840	No specimen.
"	54 20	12 23	1380	Drab coloured sandy mud.
"	54 20	12 7	980	Sandy clay.
" 28	52 40	15 38	1750	Sandy clay.
"	52 45	15 15	1120	Sand and shells.

The foregoing report sets at rest the imagined difficulty of the precipitous character of the approaches from the sea bed to the western coast of Ireland; Mr. Hoskyn having found several depths (to which we have affixed an asterisk in his tabulated statement) where the slope has been found by him in some as little as one in six,—that of an ordinary shingle beach. A few more soundings would have been acceptable to the southward, but sufficient are obtained on a direct line to show that a cable may be laid there so as to gain the deep bed of the Atlantic by an easy descent. This would be better shown on a large scale, but we have sketched out this section on our chart as conveying an idea of the slope in that latitude, and probably sufficient data will be found in the report for others hereafter. The whole operations of the voyage are highly creditable to Mr. Hoskyn, and his report as far as it goes quite satisfactory in regard to a line for a cable.—ED.

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

(Continued from p. 519.)

The following morning early, I paid the camp a visit with the Governor. The troops had been under arms since 2h. a.m., but every thing was quiet, and his Excellency returned on board apparently satisfied that no attempt would now be made by the natives to disturb the peace of the colony. We were getting under way afterwards, to return to New Plymouth, when two guns in quick succession were fired from the camp. This startled us not a little, but I interpreted it as a signal for assistance, although utterly at a loss to conjecture the cause.

Hoisted the boats out immediately, and landed with the small arm company and marines, a twelve pounder howitzer, and rocket tube, and joined the force under Colonel Gold, which with this reinforcement mustered upward of 440 men, viz., 350 of the 65th regiment, 18 royal artillery and sappers, and 72 naval brigade, besides a strong boat guard.

We now ascertained the cause of alarm. It appears that during the night the Maories had thrown up a pah or stockade on the road to New Plymouth, within two miles of the camp, and threatened to stop all the supplies; three provision carts escorted by mounted volunteers having only got past with some difficulty, and showing a bold front. As this sort of thing could not be permitted, the die was now cast, and the following letter was sent to the natives by the Governor, through the native agent, Mr. Parris.

"To the Chief who obstructs the Queen's road.

"You have presumed to block up the Queen's road, to build on the Queen's land, and to stop the free passage of persons coming and going.

"This is levying war against the Queen. Destroy the places you have built, ask my forgiveness, and you shall receive it. If you refuse the blood of your people be on your head.

"I shall fire upon you in twenty minutes from this time, if you have not obeyed my order.

"Signed—T. GORE BROWNE."

"*Camp Waitara, 6th March, 1860.*"

The reply to this missive was a request for ten minutes more time, and as this was considered evasive, if not impertinent, the force moved out at once with a hearty cheer, and advanced to the assault behind a strong body of skirmishers to guard against surprise, but the pah, a very strong one, with galleries and trenches, and a double pallisading round was deserted; it was therefore fired and utterly destroyed; the troops then returned to the camp, and my men on board, every thing being re-embarked, and the boats hoisted in before dark; and so ended our day's work, which although no blood was shed, will be a memorable one in the annals of the province. We have drawn the sword and the effect of our demonstration will soon manifest itself. In the mean time, I shall simply remark that for the natives to have constructed such a formidable place in a single night, so close to our troops, evinces much determination, or great ignorance of the amount of force opposed to them; that the place should have been given up to us without a struggle is equally unaccountable, but it is difficult to fathom the mind of a savage. At night the entrance of the river was illuminated by the blaze of the pahas; two of them were destroyed by Colonel Gold, ostensibly with the object of securing his position, a step for which I was unable to see the necessity, and which is certain to be retaliated upon the settlers.*

I was much disappointed with the capabilities of the "Waitara." It was represented to me that the bar had never less than six feet water on it, but we found it nearly dry at low water, and at half-tide the pinnacle was nearly capsized in going in: in my opinion no vessel drawing more than eight feet ought to attempt to enter even in the finest weather, and inside, the deep channel is so circumscribed, that nothing larger than a gun boat could lay afloat, moored head and stern. In bad weather no vessel can approach the coast, as a tremendous sea rolls in from the North-west, and there is no shelter from it of any kind.

Friday, March 9th.—I brought the Governor back to Taranaki on Wednesday, and he has since been very busy, together with Lieut.-Colonel Murray, the commandant of the garrison, in organizing the defences of the place, especially against a night attack, which is much dreaded, being in accordance with native tactics. But the resources are somewhat limited. Allowing the barracks to be secure against surprise, one bombardier of the royal artillery, and about twenty men fit

*My forebodings proved correct. The following night two houses were burnt in the outskirts of the settlement of Taranaki.

for duty belonging to the 65th are all the regulars left to protect the remainder of this straggling place. There are certainly the militia, and a volunteer rifle corps, mustering altogether nearly four hundred men. But it appears no great confidence is reposed in forces so lately organized; nor without any reflection on the individual courage of the members can this be wondered at, they have not had time yet for the necessary training to enable them to act together. Under these circumstances the Governor applied to me for assistance, and as the case appeared one of emergency, I did not feel myself justified in refusing it, although at the expense of the ship's efficiency. Accordingly this morning I landed Lieutenants Blake and Wells, Midshipmen Price and Theobald, Assist.-Surgeon Lawrenson, Assist.-Paymaster Hyde, the gunner, thirty seamen and twenty marines, with a twelve pounder howitzer and rocket tube, and occupied a position commanding the northern approach to the town. The commissariat had provided tents, but it rained so heavily that the superintendent of the province, G. Cutfield, Esq., turned out the inhabitants of two houses close by for our accommodation, and here the "naval brigade" established its quarters.

Saturday, March 10th—I accompanied the Governor and Lieut.-Colonel Murray to day over the ground we are to take under our especial surveillance, and the sites of two advanced posts were fixed upon; one on the entrance point of an elevated tongue of land projecting from the race course, was named "Fort Niger" by the Governor. It commands a good view of every thing to the North as far as the Bell-block; the other to be called "Fort Cracroft," close to the sea, will prevent any approach to the town by the beach. Block-houses are to be built on each of these commanding positions, and the space between is to be carefully watched, night and day. Having seen every thing arranged for the comfort of my men, and given Lieut. Blake directions for his proceedings.* I returned on board with a re-

Niger, off Taranaki, March 9th, 1860.

* You are hereby required and directed to proceed on shore with the detailed officers and men, and take up a post which will be pointed out to you for the purpose of defending the town of New Plymouth from a threatened attack of the Maories.

Your supplies, including tents, will be found by the commissariat, and as the ship may have to put to sea at any moment to avoid being caught on a lee shore, you will be practically independent of me, and otherwise on your own resources. Under these circumstances, having every confidence in your judgment and discretion, I have only to remind you, that the discipline of your force is to be preserved as far as possible by following the rules of the service afloat, although as the country is under martial law, more stringent measures may be taken if necessary to enforce due subordination.

You will put yourself in communication with Lieut.-Colonel Murray, the commandant of the garrison of New Plymouth, and be prepared to act in concert with him in any movements he may consider necessary for the safety of the town, and as it is of the utmost importance that you should act unanimately, it would be better to give way a little should any difference arise in opinion, rather than run the risk of preventing the most cordial co-operation

quisition from the Governor to go back to Auckland immediately for supplies of all kinds, which are most urgently needed here in the altered condition of affairs. * * *

Dispatch is indeed necessary, at 5h. 30m. p.m. I received his Excellency's letters, wayed and stood to the northward, with a fine south-westerly wind; made all possible sail, and set the screw vertical, as Captain Wing, who piloted the *Airedale* down, and was returning to his station with us, said the wind was sure to fail during the night, a prediction which was verified, for at midnight we had to steam again.

Sunday, 11th.—The high land at the entrance of the Manukau was in sight soon after eight o'clock, and I steered in for the bar: there was a heavy swell on it which toppled right across occasionally, but we came over very well, and stood right up the harbour, past our former anchorage off the Whau, nearly as high as the White Bluff, where at 1h. 15m. p.m., the anchor was let go in five fathoms, about a mile and a half below the township of "Onehunga."

Saturday, March 17th.—We have been very busy all this week taking on board supplies for the troops at Taranaki, and the ship is pretty well crammed, for I have refused nothing the authorities thought proper to send. On the lower deck 20,000lbs. of flour are stowed in bags, 200 in number; then there are arms and accoutrements, ammunition, rum, zinc roofing for block houses, a huge fire engine, medical stores, besides baggage belonging to the officers of the staff and 65th, for which of course there is no room below. Our own provisions have been completed to three months, and about seventy tons of Drury coal, from which great things are expected by the Waihoi-hoi company, received on trial, and nothing now detains me here but the English mail, which is due at Auckland to-day. What an immense advantage to the colony a railway across the isthmus would be! What a saving in time! The distance is only six miles, the traffic, slowly conveyed in one horse drays at great expense, would increase an hundred fold with increased facilities of transit; but notwithstanding the advantages that a railway is acknowledged to possess, public attention seems to be directed to a canal as more desirable, and a report upon the practicability of making one to connect the Manukau and the Tamaki has been lately made to the Government by Colonel Mould. R.E., but he is not of opinion that the project can be beneficially entertained at present. In my humble opinion something ought to be done, and that speedily.

The villago of Onehunga, (it has not arrived yet at the dignity of a town,) was originally one of the Pensioner settlements; its site was well chosen, and it has become a thriving place. A pier has lately

between you, and the other forces, regular and irregular, which are under his command.

I have only to add that you will keep me informed of your movements, and your force prepared for embarkation at a moment's notice, should H. E. the Governor consider your services no longer required on shore.

P. CRACROFT, *Captain.*

To Lieut. H. Blake, H.M.S. Niger.

been constructed by the Government, which the mail steamers can lay alongside of, and it is otherwise a great convenience. All our stores and supplies were embarked there. The coal was brought in small sloops direct from the mine: the price, delivered alongside, was twenty-four shillings a ton. The quality of this coal has been pronounced by competent authorities to be very good. It is a true "lignite," and equal to the best canal coal of Germany. Dr. Hochstetter in his Report on the Geology of the Province of Auckland, calls it a "glanzkohle," with conchoidal fracture, and says it is quite as good as that which is used in Germany for fuel, for manufactures, for locomotives and steamers, and also for domestic purposes. But he considers it unsuitable for steamers having to make long sea voyages, on account of its bulk. We shall soon have an opportunity of testing its merits.

The mail steamer from Sydney had not arrived at Auckland on the 20th, and as I cannot afford to wait any longer for it, late in the evening a detachment of the 65th regiment, thirty-eight men, under Quarter-master Withers, embarked, and the next morning at eight o'clock, the tide being about half flood, I stood down the Manukau. It was a beautiful day with an occasional squall, by way of a reminder that the Equinoctials were not far off, but the barometer was high, and there was nothing to indicate bad weather outside. It was therefore a great disappointment to me on arriving in sight of the pilot station to see the signal up for the bar being "unsafe." However there was no help for it so I turned back, and anchored in a lovely spot just inside Popunga, within two cables' lengths of a beautiful sandy beach.

This neighbourhood, the property of the Manukau Company, was once occupied by a party of emigrants, under the conduct of Captain Symonds, a son of the late surveyor of the navy, who was unfortunately drowned, and I cannot conceive a better situation for a settlement and port. The channel affords a safe harbour, and the land a superior site for a town; it was deserted, however when Auckland was proclaimed the capital, and is still tenantless. The view from the crest of the hill abreast the ship is superb. To seaward the bar can be plainly seen, breaking now right across, frightful to look at. The pilot station at Paratutai, with its flag staff erected on a conical rock, which seems to have been formerly an island at high water, is a most picturesque object. This rock is rather difficult of access, the landing place is on a narrow ledge immediately under the flag staff, with very deep water close alongside, and the boats, for want of room to haul them up, are slung in cradles and hoisted clear of the swell which sometimes rolls in heavily. The pilot's residence is situated high up on the main, a bleak exposed spot, but commanding a good look-out. Between this and the pilot station is a fine bay called the Huia, opening out of the reach to the northward, about three-quarters of a mile deep, affording excellent shelter for vessels wind-bound. The Kauri forest, almost an impenetrable maze, reaches down to the beach here, and there are two saw mills at the head of the bay hard at work: the scenery is very beautiful.

Friday, March 23rd.—The signal to “Take the bar—no danger” was displayed this morning from Paratutai, and at 9h. a.m., I started, so as to arrive on it at the top of high water. We were burning the Drury coal, which appeared to give plenty of steam, and for some time progressed satisfactorily against the heavy breaking sea, but the boilers primed to such an extent that the engines had to be eased, and the ebb tide, which makes earlier outside, running to the northward right across the channel, set the ship nearly upon the Orwell Bank: her position indeed was one of extreme peril, and as it was impossible to get the leading marks on again, I managed with great difficulty to get her head round and steamed back to our former anchorage. “Tis an ill wind that blows nobody good,” and I took advantage of this detention to get some small spars. The woods in our vicinity afforded a supply for nothing, and the carpenter soon cut as many as we wanted. We got some excellent plank also out of the drift wood (Kauri) of which there was any quantity on the beach.

March 24th.—We made another attempt to-day to get out, and happily succeeded, although it took nearly two hours to drag through the heavy swell which broke at times right across the bar. As soon as we were clear, I put the ship under treble topsails and reefed courses, and stood away to the westward.

Sunday, March 25th.—About 8h. a.m., spoke the *Airedale*, (s.s.) from Taranaki, the weather had moderated a little so the fires were brought forward, and I proceeded under steam and sail, and the following morning anchored off the town.

During this fortnight's absence great changes have taken place. Hostilities have commenced in earnest and blood spilt on both sides, the first shot being fired by the troops. The collision occurred on this wise. A few days after I left the Waitara, a small party of natives built a pah within the limits of the debateable land, and although no competent authority had decided that the said pah was not built on ground belonging to the persons who built it, the officer in command of the troops (Colonel Gold,) immediately took up a position before it, and sent a summons to its occupants to surrender, which however they would neither read nor receive. Fire was therefore opened upon it with shot and shell, and rockets, that was answered by the natives with small arms. After expending about 150 rounds from the howitzers, the firing ceased on both sides, and it was supposed that the pah was deserted. Under this impression, and anxious to ascertain the fact, two or three of the mounted volunteers in the most gallant manner galloped to the palisading, but were received with a volley, which mortally wounded one of them named “Sarten,” who fell from his horse, and would probably have been dispatched then and there, but for the noble conduct of Lieut. Wells, of this ship, who rushed out, and brought him back at the risk of his own life.

This officer, who was serving with a detachment of the men I landed, then volunteered to lead a storming party, but his offer was not entertained. Nothing more was done that night, and the following morning, after a breach had been effected, and preparations made for an assault

the place was found deserted, and so ended our first contest with the natives, who boast of being the victors, from being enabled thus easily to effect their retreat from a very superior force.

This miscarriage seems to have had a most damaging effect upon our reputation, and indignation is pretty freely expressed in the settlement. From its shape this work has been called the L pah. Its length was a hundred and ten feet, and width thirty-three; the ditches were five feet wide, and four deep, covered with a frame work of split timber, with about two feet of fern and earth on the top; these communicated with underground galleries and chambers. A large quantity of provisions was found in the interior of the pah, which it has been ascertained was defended by only seventy natives, of whom several were wounded. Our casualties amounted to three wounded, two of them mortally.

Since this affair of the 17th, Colonel Gold has come in from the camp, with the greater part of his regiment, and assumed the command of the garrison. His first acts were to ignore almost every thing the Governor had done during his absence; the limits contained within his Excellency's projected blockhouses are to be further circumscribed. Fort Cracroft is abolished, and Fort Niger would have shared the same fate, but that the Governor insisted on its retention. I am at a loss to understand the motive for wishing to do away with two posts situated in such commanding positions.

Wednesday, March 28th.—We were favoured by the weather on Monday, and succeeded in landing every thing before dark, the surf-boats doing their work right well. It wont do to throw away fine weather here, for yesterday morning there was a complete change, and so heavy a sea set in, and there was withal such a threatening appearance to the northward, that I got the steam up, and stood out to sea at half-past nine. Having secured a good offing the ship was put under fore and aft sails, the screw set vertical, and fires banked up; there was a heavy swell from South-West, but she lay as easy and easier than if she had been at anchor.

This morning I wore round and stood in under all sail, the wind had shifted to the southward, (the fine weather quarter,) the barometer went up, and I regained my anchorage about noon. At 1 p.m. two guns were fired from the barracks, this was the signal that an attack upon the town was about to be made by the natives, and I hastened ashore with every man fit for duty to assist in its defence, anticipating a requisition, which met me, from the Governor and Colonel Gold, to land immediately. I took with me Lieut. Villiers, Messrs. Smythe, acting mate, Gassiot and Curslake, Midshipmen, Patrick, Surgeon, and Hyde, assistant paymaster, who has been withdrawn from our brigade on shore to act as my aide-de-camp, and fifty-three seamen and marines, (sixty in all,) with a twenty-four pound rocket tube.

We piled arms on the hill behind the boat houses, and waited in anxious expectation to hear the result of an expedition which had been sent out about two hours before to bring in some of the outsettlers, whose lives are threatened by these pitiless savages, but no immediate

danger being now apprehended, I went up to the barracks on Marsland Hill. with the Governor, to wait the course of events. There was a good view from hence of the surrounding country, and we had not been there long before the sound of firing was heard in the direction of Omata, and shortly after Lieut. King, of the volunteer cavalry, came galloping in at full speed, with a report that Lieut.-Colonel Murray in command of the expedition was hotly engaged with the natives, and in want of more ammunition and reinforcements. There was no time lost in sending both, we were ready and anxious for something to do, so Colonel Gold's request that I would move forward to the support of his brother officer was responded to with the greatest alacrity. The men were in high glee. Here was an opportunity for them to do something of which they might be proud hereafter, and they marched along merrily, the rocket tube with its geer and rockets following in a bullock dray, keeping up as well as it could across country, our carpenter pioneers clearing the way for it.

We took the road as far as the Grey Institution, then across the fields into a green lane, which led to the Great South Road. From thence it was all plain sailing to the Amata Blockhouse, where I halted to give time for our dray which lagged astern a good deal to come up, and here to my sorrow I found poor Blake stretched on a bedstead, badly wounded with a ball in the right breast. He had not been brought in more than a quarter of an hour, and did not appear to be suffering any pain.

The rattle of musketry was going on all this time, and was most continuous between this fortified post and the sea. It was in that direction, that is to say on our right, that Lieut.-Colonel Murray was operating, and during the halt I was enabled to take a good survey of the state of affairs. In our front, about a mile distant, occupying a commanding position on the crest of a hill, a pah had been erected by the natives, three flags were flying from a lofty staff in it, in token of defiance, or perhaps because it was the head quarters of the Maories, and the frequent puffs of smoke that issued from the fern in its immediate vicinity, showed that at all events they were in some strength here. This was the target also for a six pounder rocket tube in charge of Lieut. McNaughten, R.A.

As soon as the dray arrived I called my men together, explained to them in a few words the critical position we were in, confronted by a race who neither gave nor expected any quarter, reminded them how much was expected of us, that the first lieutenant lay close by, dangerously wounded, as well as one of their shipmates, a marine, pointed out the pah to them, and stated that I had made up my mind to lead them to it, and give them an opportunity of repaying the loss the ship had sustained with interest, if they would support me. The quiet determined tone with which the words "we'll go, sir." were uttered in reply to my address was most satisfactory: it showed that one and all were in earnest. * * * The fresh supply of ammunition for Colonel Murray having by this time arrived, I despatched my aid-de-camp to inform that officer of my intended diversion in his favour,

and three volunteers, Francis Mace, Edward and Charles Messenger, having offered their services as guides, we advanced along the Great South Road, taking every precaution against surprise.

It was half-past five before we left the blockhouse, and the shades of evening were rapidly descending. As we moved quickly along, the spot on the road where the bodies of three men and two boys (peaceable unarmed settlers) were found yesterday, was pointed out. They were waylaid, brutally massacred by the natives and mutilated; two splendid bullocks killed at the same time were passed lying dead in their yokes, in a yard close to the Omato tavern.

The village of Omato, about half a mile beyond the blockhouse, is prettily situated, the ground is broken *accidenté*, as the French term it, well wooded, with high furze hedges round the gardens and orchards, and beautiful pastures, altogether quite Devonian; but the houses had been all cleared out, and deserted, a melancholy sight! Close to the before-mentioned tavern a road turned off to the left, and at its intersection, on a small open space commanding a good view of the pah, I planted the rocket tube, the distance being estimated at about 800 yards, and the first rocket went over it, very nearly striking the flag staff. There was however if anything a better position about a hundred yards further on, so I shifted the tube and commenced firing shell rockets, but it took so long to bore out and fit them, that before half a dozen had been fired, it was almost dark, and the men were get-very impatient. I therefore unrigged the triangle, called in the sentries posted all round, who by the way had been repeatedly fired at, and also exchanged shots with the invisible natives, formed the storming party, told off a detachment to look after the rockets and tube left by the road side, and, with an inward conviction that the blessing of God accompanied us I gave the order to advance.

(To be continued.)

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

(Continued from page 476.)

Anchors.—Resulting from the various patterns of anchors exhibited in the International Exhibition of 1851, certain influential shipowners of London, Liverpool, and Glasgow, submitted to the Lords Commissioners of the Admiralty the desirability of determining their relative merits. The report of the Committee appointed, in consequence of this request, was made in February, 1853, and although brief in the details of the trials,—which were made under the auspices of the Admiralty at Sheernees, and with unlimited appliances,—is an instructive exposition of the general requirements of an anchor. The experiments were exhaustive of the special capabilities of each anchor tried, and establish a good precedent for future investigations.

The properties considered by this Committee essential to a good anchor were as follows:—Holding qualities at long and short scope; quick holding; exemption from fouling; facility of stowing; fishing in a heavy seaway; canting; quick tripping; facility of transport in boats, and facility of sweeping; the corresponding proportional value of these qualities were assumed to be 80, 15, 10, 10, 10, 5, 5, 5.

From this report it may be concluded, that of the anchors of solid construction, Rodgers' small palmed anchor (which received a medal in 1851) proved itself the most efficient; and of anchors constructed in detached parts, Trotman's, or the improved Porter, was the best. Models of Trotman's anchors, as furnished to H.M. Yacht, *Victoria and Albert*, and H.M.S. *Warrior*, are exhibited by the inventor, [2,807], and Messrs. Hawks, Crawshay, and Sons [2,784]. A medal is awarded to Mr. Trotman for his improved anchor.

The model of an anchor on this principle, used in the Northern Lighthouse Commissioners' steam-vessel *Pharos*, by Heriot Currie, is deserving attention.

An ingenious anchor (as also models) on the "detached part" principle is exhibited by its inventor Mr. Martin, [2,793] and by the patentee and agent [2,789, 2,797]. The arrangement of the parts of this anchor provides for both flukes or arms being in the ground at the same time, so that great holding power is compatible with diminished weight. The report of trials made before the members of the Trinity House, Newcastle-on-Tyne, on the sands on the South side of the Tyne, is highly favourable, and the experiences of many ship-masters are adduced in its favour. A medal is awarded for its novel and ingenious form.

An admirable specimen of anchor forging, from the Royal yard at Horten [Norway, 85], weight 7,793lbs., is exhibited, for which a medal is awarded; as also good specimens on a smaller scale from the Soderfors iron works in Sweden [327], to which honourable mention is awarded.

Chain Cables.—Some comparatively recent deplorable wrecks on the coasts of the United Kingdom have directed public attention to the desirability of invoking legislative aid in ensuring faithfulness in the quality and construction of chain cables. The jury record with satisfaction the admirable specimens of cables and chains exhibited by H. P. Parkes, of Staffordshire [2,795, a medal]; Messrs. Wood & Co., Liverpool [2,814, a medal]; David & Co., Havre, [1,375, a medal], as also of several worthy specimens from Russia, [Admiralty Kolpino iron works, 334], Belgium [345], Norway [85], and Sweden, [Furudal iron works, 326, honourable mention]; but it has not been within their power, from the limited time at their disposal, to apply comparative tests of strength.

Under this head a medal has been awarded to Madame Sinibaldi [1,710], exhibited in Class VII., for an ingenious and novel mode of making chain cables. The chain is made of hoop iron, taken of the breadth required, and wound on a reel by a simple machine, into an oval shape, to the same breadth as the original or outer surface. The

whole is then brazed, by being passed through a furnace of molten metal, and the edges rounded off. Specimens are officially reported to have withstood the tests as applied to chain cables of the ordinary pattern, and it is stated that their cost is less. We are not aware of this peculiarly constructed chain having been used under the general conditions of a chain cable afloat.

Capstans, Windlasses, &c.—Capstans for the direct lead of the chain cable, and lever or pumping windlasses, were extending in use prior to the year 1852; their general efficiency appears to have left little room for striking improvements. A new windlass has, however, been introduced into the British mercantile marine from America. This windlass, known as Emerson and Walker's (in connection with which is also attached Wardill's patent stopper), and exhibited by G. C. Warden & Co., occupies a reduced space; mechanically it combines quick motion with slow purchase, so that the anchor can be purchased with few hands; it is reported that one man by means of the brake, which has complete control, can give the ship cable and bring her up with perfect ease. Honourable mention is awarded.

Messrs. David & Co., of Havre. [France, 1,375], exhibit good specimens of iron capstans, with a neat arrangement attached for the preventing the riding and surging of hemp ropes or cables; and M. Salette, of Marseilles, [1,364], exhibits an ingenious, but somewhat complicated model of a windlass, combining the systems of MM. Barbotin and Le Goff, for which medals were awarded in 1851.

Rogers, of Poplar [2,799], also exhibits models of a windlass and chain cable stopper and controller, and T. Watson [2,811] a model of a friction break for ships' capstans.

Cordage and Ropemakers' Work.—Some excellent specimens of foreign manufacture are exhibited in Class XII., in addition to those in Class XIX., to which latter "ropes, lines, twines, nets," &c., are more properly confined by the Commissioners' classification.

Conspicuous among those in Class XII. is the good quality and perfection of workmanship of various specimens of hemp rope, by F. Bernard, Richou, and Genest, of France [1,377]; excellent specimens of ropemakers' work from Norway by H. Balchen of Bergen [75]; strong, serviceable flax rope from New Zealand [49], exhibited by Neil Lloyd, to which medals are severally awarded.

The attention of the maritime profession is strongly directed to the admirable productions in the manufactures from flax and hemp of Class XIX. from various countries for marine purposes.

The Mariner's Compass.—The Jury observed with satisfaction the progress generally made in the construction of this invaluable instrument. Excellence and fidelity of workmanship, combined with a minute attention to details, are prevailing features of the exhibited specimens. This is progress in the right direction, for with the increasing use of iron in shipbuilding and fittings, an efficient compass is imperative, and thorough efficiency cannot be secured without the same care in details and delicacy of manipulation as is bestowed on the sextant or chronometer; such was not the compass of a past generation; but it was not an "iron age."

In connection with the mariner's compass, the subject of the magnetism of iron ships is one of such importance at the present time, that the Jury are tempted to digress, perhaps, from their legitimate path, to review briefly the past and present state of this branch of science as affected by the great changes in naval architecture. In 1851 the laws and general principles affecting the compass in iron ships were professionally unknown. They had seriously engaged the attention of a few leading men of science, and so far back as 1839, the present Astronomer Royal of England had made an extended series of experiments by the desire of the Lords Commissioners of the Admiralty in the iron merchant ship "Rainbow." The resulting abstruse investigations did not receive then the attention they merited, though a tentative mode of adjusting the compass published in 1840 by Mr. Airy, became the basis of a system of compensation since generally adopted in the mercantile marine.

The rapid increase of iron built ships subsequent to 1851 and the consequent appreciation of compass disturbances produced numerous plans; some for detecting the deviations without the aid of astronomical or other well known observations, others for correcting the deviations by peculiar arrangements of magnets, and even appliances for isolating the compass from the effects of local attraction appeared; many of these plans resulting from an imperfect knowledge of the laws and mode of action of magnetism were undoubted failures.

The melancholy loss of the iron emigrant ship *Taylor*, with a great number of the crew and passengers, on the east coast of Ireland, in the early part of 1854, was traced in the main on the official enquiry to the changes of the ship's magnetism, or the imperfect action of the compasses which had been compensated at Liverpool a few days previously to the ship sailing from that port. Public opinion, which was much divided on the subject, eventually invoked the aid of science. A special discussion took place at the British Association at Liverpool in 1854, and ultimately a committee composed of practical and scientific men, interested in the question, was formed at Liverpool for the purpose of collecting information and making the necessary experiments. Three reports of this committee, the last dated February 1861, have been presented to the Board of Trade, this department of Government having liberally assisted the enquiry throughout. To this source and to the investigations of the Astronomer Royal and Archibald Smith, Esq., F.R.S., with the researches in the same field by other well known names, among whom we may worthily select the President of the Royal Society, General Sabine, the Jury have every confidence that a secure foundation of the theory and practice of compass management in iron ships is laid, which alone requires the general spread of education to render familiar to the intelligent seamen.

The recent improvements in the mariner's compass may be considered under three heads:—1. Independently of the deviation of the compass caused by the local attraction of the ship. 2. As regards arrangements for the correction of the deviation. 3. As regards arrangements of the compass for the purpose of diminishing, but not for the purpose of correcting the deviation of the compass.

1.—The principal modern improvements have been the introduction of compound needles, and in the manufacture and fitting liquid compasses, the use of the latter in any excessive motion of a ship or boat being almost indispensable. Sir W. Snow Harris has also introduced a very effective compass, in which the oscillations are much reduced by the application of a thick copper ring in the compass bowl, and allowing the poles of the needles to approach very near to it.

By substituting two or more parallel bars for a single bar, which was formerly in universal use, several advantages are obtained, for example, the bars may be placed on their edge, whereby there can be no alteration of their magnetic axes. Greater directive power is obtained with the same weight. Also a combination of two equal parallel bars, of which the ends are 60° , or four of which the ends are 30° apart, have the moments of inertia about all horizontal axes equal, and oscillations of the card about any axes are performed without any wobbling motion.

The following remarkable property also exists :—When magnets or soft iron are placed as correctors, unless the needle be very short compared to the distance of the disturbing magnets or iron, a deviation is introduced depending on the length of a needle. This disappears if instead of the single bar needle the compass is composed of two bars, of which the effective ends are 60° apart. The same is the case with the needles, arranged as in the common Admiralty compass, viz., at 15° and 45° on each side of the diameter. Such compasses are therefore much better adapted for being corrected than single bar needles.

2.—Since the attention of the public has been turned to the subject of the deviation of the compass many schemes have been suggested, and many patents taken out for obviating entirely the effect of the iron of the ship on the compass, the projectors overlooking the fundamental law of magnetism that the interposition of a body between the magnet and the needle on which it acts can as little intercept the action of the magnet as the interposition of a body between the earth and another body would intercept the action of the gravitation of the earth, and also overlooking a very obvious consideration, that if any body could intercept the action of the ship's iron, it would also intercept the action of the earth's magnetic force on the needle.

As such inventions can rarely be embodied in a model without opening the eyes of the inventors, it is, perhaps, not surprising that of the many inventions which have been proposed for this purpose not one has been sent to the exhibition.

The mode of correction by magnets and soft iron is susceptible of so many modifications that a greater number of appliances for this purpose than have been sent might have been anticipated. Two only are exhibited, one the model of a binnacle or steering compass, designed originally for the main deck of the *Warrior*, and ships of her class, is exhibited by the Lords Commissioners of the Admiralty. The arrangement thus introduced is remarkable both in itself and also historically. It was many years ago observed that two compasses placed near each other as in the common double-binnacle, would produce a mutual dis-

turbance. A regulation about the time was issued by the Admiralty, forbidding the placing such compasses within such a distance as to allow of the effect being perceptible.

It lately occurred to the Superintendent of the Compass Department of the Admiralty (Mr. F. J. Evans, R.N.) in following up some investigations, that the disturbance thus caused being exactly opposite in direction to that part called the quadrantal, which is found more or less in every iron ship, (but especially large in amount in armoured war ships,) might be made use of to correct that error. On the model in question two compasses are arranged side by side, the distance being adjustable, and a scale being given of the amount of quadrantal deviation in a ship which can be corrected at different distances, so that when the quadrantal deviation is found in the usual way by swinging the ship, the compasses can be adjusted to a corresponding distance. This arrangement has also the advantage of permitting the correction of the remaining part of the deviation to be made in both compasses by one set of magnet bars placed between them.

In the other arrangement exhibited, magnets are introduced in the bottom of the compass bowl, (which is of the ordinary size): and the adjustment for different latitudes is made by the application of magnets of different powers. Approval cannot be awarded to this arrangement. The magnets are much too near the compass. The supplying magnets of different power is not only a rude mode of adjustment, but requires much greater knowledge and practical skill than an adjustment by change of distances.

3.—The iron ships of the present day have generally iron beams, and sometimes iron decks. The effect of this when the binnacle compass is placed on the deck is very serious, and it becomes of great importance to have the steering compass as high above the deck as is consistent with being seen by the steersman.

Much taste is displayed in some of the compass binnacles exhibited; their efficiency for iron ships is however impaired by being made so low. In any vessel with iron beams, every compass should be at least three feet six inches from the deck.

Mrs. J. Taylor [2,819] exhibits a good liquid compass, fitted in a low binnacle, which latter will no doubt attract the attention of yachtsmen from the neatness and compactness of the design.

Mr. G. Gowland, of Liverpool, [2,902] for the introduction of a vertical card, useful, especially for elevated positions in iron ships where the ordinary compass card cannot be seen, honourable mention is deservedly awarded. It is to be observed on this otherwise useful application, that in those which are represented by a thin hoop of steel on which the points of the compass are painted, great care is required in the selection, as they frequently have a large index error. See 3rd report of Liverpool Compass Committee, p. 25.

England, France, Russia, Holland, Norway, the Zollverein, and Brazil exhibit mariner's compasses. In the English collection the Admiralty group deserves notice; the standard compass still merits the encomiums bestowed on it by the Jury of the Exhibition of 1851. It

has since been largely adopted by several of the navies of Europe, and the United States of America. For the progressive improvements as shown in the Admiralty collection and for the model of the double binnacle designed for the *Warrior* a medal is awarded.

J. G. West & Co. [2,812] are the exhibitors of some excellent specimens of liquid compasses. By a self-acting arrangement contained within the bowl (a diaphragm of corrugated metal), their compass, when filled with liquid, retains its efficiency in all changes of climate; for the improved arrangements, combined with excellence of workmanship and attention to details, a medal is awarded.

To an ingenious arrangement of the binnacle top of a standard compass to secure more exact bearings at night and in rainy weather, exhibited by the nautical instrument manufactory of St. Petersburg, and designed by M. Haritonoff of the Russian Imperial navy [338], as also for an application for preventing vibration by means of fluid below the freely-suspended card in an open bowl, which, exhibited in the same compass promises well for steering purposes, a medal is awarded.

The liquid compass of Dent & Co. [2,894] in its portable and neat binnacle for day or night service, as used by the Life Boat Institution, is a worthy contribution: deeming it in character, applicable by its portability and efficiency, to the wants of fishermen and small coasting craft, we have awarded it a medal. For the excellent manufacture and beautiful finish of the compasses and binnacles exhibited by M. Santi of Marseilles [1,411], a medal has been awarded.

To P. Cameron, Glasgow [2,872], and to J. W. Blakeney & Co., Hull [2,777], honourable mention is awarded; to the first named for his appliances to the mariner's compass for the more ready making astronomical observations in connexion with it; and to the latter, for various minor improvements introduced.

In lighting compasses at night, an efficient introduction by Mr. Brunton, of the Compass Department of the Navy, as exhibited with the Admiralty compasses, deserves honourable mention. A simple apparatus in the chimney of the binnacle lamp secures the light against the strongest wind, at the same time allowing the free egress of smoke. Candles for illumination are introduced into some of the binnacles exhibited. In a temperate climate this is doubtless equally efficient and more cleanly than the use of oil; but in hot climates the pressure of the spring in the candle lamps has been found to derange the wick.

Buoys and Beacons.—In the valuable report of the Royal Commissioners appointed to inquire into the condition and management of lights, buoys, and beacons, presented to the British Parliament in 1861, it is stated that on the coasts of the United Kingdom there are 1,109 buoys in position, and 573 in reserve; these numbers not including wreck or warping buoys; the cost of these buoys varies from sixteen guineas to £130, and even £197 each. It is therefore evident that a very large outlay and annual expenditure, with the most careful attention to details and supervision, is requisite to secure an efficient and economical system of buoyage.

The Commissioners, in their report, state that "generally speaking

the buoys in use are not constructed on scientific principles, but there are others either used or designed, which show more thought," and that "the buoys in foreign countries do not appear to equal those of the British Isles either in size or general efficiency." They consider the prime requisites of a buoy are, that it should be conspicuous, distinctive, and permanent, and that "the best form for a conspicuous floating body to be permanently anchored at a particular spot, and the best mode of securing it have yet to be decided."

Of the exhibitors of this class, Mr. Herbert [2,785] appears to have been the first to attach the mooring chain to a point in the line of flotation instead of at the lower part of the immersed body. His principle is to suspend the mooring chain from the centre of gravity, which, from the shape and distribution of the weight of the floating body—the bottom being hollowed out so as to form a hollow cone—is made coincident with the plane of the centre of flotation. By this arrangement it is considered that the tendency to pitch and roll is greatly reduced, as great resistance is offered both by the mode of suspension and by the body of water filling the conical hollow of the bottom, as also that with stability the tendency is for the body to be borne on the top of the wave rather than to be dragged through it.

The Royal Commissioners report that Herbert's buoys have been tried on a large scale at Liverpool, in Ireland, and in England, and appear, when properly constructed, to be excellent; and at page 6 of the Appendix to their Report it is more specifically stated that they are reported as riding well in exposed situations, tide ways, &c., and to float very upright.

Mr. Herbert extends his mode of mooring to floating batteries and light beacons, several interesting models of which are exhibited. For this novel mode of mooring, and for the improved form of beacon buoy, a medal has been awarded.

The model of an efficient refuge buoy beacon is also exhibited by Captain Peacock [2,796], (together with several ingenious appliances resulting from his nautical experience). The hull of this buoy which is formed of sheet iron, is of a semi-oval shape, like the horizontal half of an egg, and is surrounded by an open frame work; it is capable of holding several persons, and of affording them a safe temporary asylum without risk of being washed away. Steadiness and capability of riding over the crest of the waves is given by the rounded bottom, which has an attached curvilinear deep keel near the mooring chain, the latter being secured at about one-third the length of the hull from the large end or breast. A bell can be advantageously appended to these buoys where required. The Commissioners of Inquiry report that this buoy "appears to ride successfully."

The following notice of a Peacock's refuge beacon buoy, which is placed in a very exposed position off the S.W. tail of the shingles in the Needles channel, appears in the *Channel Pilot*, published by order of the Lords Commissioners of the Admiralty in 1856. "These buoys, which are constructed of iron, are rendered very conspicuous by their large size, upright position, and conical frame work. The upper part

of this frame work is terminated by a triangular glass reflector, which, in the beacon on the shingles, is 20 feet above the water. There is a refuge deck or platform round these buoys, with a seat and rail about two feet above the water."

Captain Peacock has been awarded a medal for the design of his beacon buoy.

In connexion with beacons, M. Tallois-Foucault [France, 1,370] exhibits various models of appliances for fog bells, whether to floating beacons or lighthouses: they merit attention.

The Iron Boat and Buoy Company, of Hamburg, [35] exhibit, among several corrugated and galvanized metal articles (to which honourable mention is awarded), a good specimen of a can buoy. At page 6, of the Appendix to the Commissioners' Report before quoted, an objection is raised to iron buoys from its having been found impossible to prevent them from rusting, and becoming liable to be mistaken for red buoys, whatever their original colour may have been. They are also more liable to accidents from collision, being easily stove; but on the other hand it is claimed for iron buoys that their repairs, taking one year with another, are less expensive than wooden buoys.

From Madras [India, 267] a recovery buoy (Templemore's) for saving submerged property is exhibited. This is the ordinary iron nun buoy, with powerful vertical hooks attached to the lower half for grappling purposes. The inventor proposes to attach one of these buoys, which is to float under the surface of the water, to every anchor and cable, and indeed to all submerged property, in order to render their recovery certain by the aid of sweeping. There certainly appears to be no objection to the use of buoys under the proposed conditions, so far as cargo is concerned, except the difficulty in any ship of providing space to carry a sufficient number.

(To be continued.)

NAUTICAL DESCRIPTION OF THE GRENADINES,—*West Indies.*—
*Continued from former in Vol. I. "West India Directory."**

Union Island.—Union Island, (3 miles long and 2·2 wide,) about the middle of the Grenadines, and more westerly than the others, is the southernmost of those under the government of St. Vincent. Formerly three sugar estates were under cultivation here, which are now worked in corn and cotton to a slight extent. The island affords two anchorages, and a secure cove in the N.E. part of it.

Chatham Bay, on the West side, with 17 fathoms in it, is a fair anchorage for a large ship, taking care not to go far into the bay, as there is a shoal of 6 feet a little inside of 10 fathoms; but very small vessels may go close in up to the North end of the bay.

* Published for the Admiralty and sold by Potter, 31, Poultry.

Frigate Anchorage.—A temporary anchorage may be had to the S.W. of Frigate Island, in 8 fathoms, when a visit to the villages on the eastern side of the island is intended. But it is not recommended for a protracted stay. Small vessels lay very well close under the island in 2 or 3 fathoms.

Clifton Cove is a very secure smooth place for small vessels. It is close N.E. of a large house in the N.E. part of the island; the channel into it is close under a reef, which protects the anchorage.

Prune Island.—East of Union Island, one mile, is a small island called Prune Island, midway between which and Union Island is a shoal nearly dry. There are channels of 4 fathoms on each side that may be taken by a small vessel, but are not recommended for general use.

Mayero Group.—The next group of islands northward, may be considered to consist of Mayero Island, the Catholics Rocks, and the Tobago Cays.

Mayero Island, the largest, is a mile and a half long in a N.N.E. direction and 0·8' wide in its widest part. It is the property of P. St. Clair, a coloured man, and the people residing on it, 300 in number, are all Catholics (Negroes), and subsist by fishing and planting a few vegetables.

Principal Anchorage at Mayero.—A very good anchorage, in 6 to 7 fathoms, may be had on a bank extending off the West side of Mayero, 0·8 of a mile. The best berth with free room for leaving it with any wind is near its edge, with the middle of the island bearing E.N.E.; but as the wind is almost always between N.E. and S.E. (Trades), a vessel may anchor much closer in to avoid the swell, taking care, however, of a shoal of 3 feet, a cable and a half off the middle western point of Mayero; the N.W. point of Cannonan Island well open of N.W. point of Mayero, clears this ledge to the West; but with the points in line a vessel touches it.

Catholic Channel.—Catholic Island and Catholic Rocks lie about one mile N.W. of Mayero Island, separated by a channel of 6 fathoms, that may be taken with a fair wind if absolutely necessary. At two cables N.W. of the North Catholic Rocks is a shoal of 21 feet, which must be avoided by large ships.

Channel between Mayero and Catholic Island.—Between Mayero Island and the shingle bank two and a half cables East of Catholic Island, is a good channel, half a mile wide, with 5 fathoms least water. For vessels coming from the northward to the Mayero anchorage, this is a good channel to take, as it generally secures reaching the bay; otherwise pass round all the Catholics and haul in to the south-eastward. And as Mayero (when near it) has but little tide on its West side, a good berth under it may easily be obtained by working up, keeping it East of you, and not passing out to the main channel between Mayero and Union Islands should the tide be down; but if otherwise, standing across, and this will assist in reaching the anchorage.

On the East side of Mayero Island, close to it, entering from the

South, is a secure little anchorage for small vessels, between the reef and the shore.

Tobagos Anchorage.—Eastward of Mayero, a mile and a half, are the four small islands called Tobago Cays, enclosed within a long curved dry reef, called the Horseshoe Reef: good smooth anchorage for small class vessels may be found among these islands, perfectly secure. With good ground tackle this may be considered as safe a place for a vessel in a gale as could be found, as the reef, being just awash, forms a perfect breakwater.

The way to reach this anchorage is from the N.W. between Baline Rock and Mayero Island, borrowing on Mayero to avoid a rock of 6 feet lying S.S.W., two cables and a half from the Baline. Small vessels may pass between Baline Rock and the West end of the Horseshoe Reef, over 4 fathoms, or close under Baline Rock, weathering the shoal; but those of any size should take the main channel South of the rock.

A vessel may leave this anchorage by channels to the southward, but cannot well get to it by them.

There are two dry sand banks S.W. of the Tobago, and one on the Horseshoe Reef; there are several reefs between Tobago and Mayero.

This anchorage for trading would be invaluable, as it is fit for many purposes. Wharves for careening, &c., might be constructed there; but in its isolated condition it has little attraction.

Sandy Cay.—Next East of the Tobagos and Horseshoe Reef is Sandy Cay, encompassed by a dry reef, round which on either side is a channel from the N.E., between Egg Reef, and a smaller one to the N.W. of it. This channel might be taken should it become absolutely necessary from missing stays or other cause; otherwise strangers should avoid the whole of the reefs eastward of the Tobagos, in case of making a mistake, as the tides are strong.

World's End Reef.—The next and most eastern reef belonging to the group, is the World's End Reef, a dangerous one to be near in light winds under sail only, as the tides set strongly over it. It has probably obtained this name from fishermen having a long pull to get there from the cays.

Egg Reef Anchorage.—Between it and Sandy Cay is a good anchorage, Egg Reef sheltering it from the North. A vessel should anchor well up to the Egg.

Sail Rock.—Eastward of the World's End Reef, three miles and three quarters, is the Sail Rock, 203 feet high. There is no danger near it, and coming from the eastward a vessel may stand in for the rock when seen, and in doing so bottom will be found five miles from it.

First Main Channel through.—Coming in South of the Sail Rock, the widest channel is that between Petite Martinique and the Mayero Reefs, continuing to between Union and Carriacou. This has been alluded to in the directions for the Southern Grenadines. By the same entry a vessel may depart between Union and the Mayero reefs.

and cays. Northward of Prune Island, passing fairly between it and the reefs, &c., and between Union and Mayero also.

Second Large Channel.—But if wishing to make a more northerly course, or to get away through the cays, the channel between Cannonan Island and the Mayero Group may be taken, passing on the North side of a flattish rock, half way between Tobago Cays and Cannonan. Keep on the North side of that rock about four cables in passing, and six cables from the southernmost Dove Cay, which is the fair line through.

Half a mile S.W. of the Channel Rock is a shoal awash with a channel on each side of it; but as the main one North of the Channel Rock is so much better, it should be taken.

Cannonan Island is the next to the North. It is four miles long and one wide at its broadest end, and may be readily known from the peak on its North end. It is mostly owned by J. S. Magg, Esq., who resides on it in a patriarchal style, and manages it as a cattle and sheep farm principally, growing also cotton and corn. Most of the population (407 in number by a late census) are Protestants, and Mr. Magg is building his own church, out of a very fine grained and dense limestone; (like our lias,) quarried on the island. Of course the building does not proceed fast, as the people work but seldom at anything.

A large ship anchoring on the West side of this island, off Charles-town Bay, should keep the North points in line and come to in 17 fathoms in the middle of the curve of deep water. From the deep water edge it shallows rather suddenly, but small vessels may anchor within the rock close up to the landing.

Near the S.E. point within the reef is a secure little harbour, inside a sandy cay. It should be approached from the S.W. with smooth water. If the wind is fresh a vessel should not attempt to pass Friendship Point, in front of the open channel, or to enter by that channel. And as it could only be resorted to for a safe corner occasionally, a person with local experience would be the best guide for the place.

New Shoal.—W.N.W. of the N.W. point of Cannonan Island, is a bank having $6\frac{1}{2}$ fathoms least water on it (as found by us). First class ships should not go over this, as with the heavy swell here, and the doubt which must always exist whether the shallowest water is absolutely known, it would not be safe.

The North bay of Cannonan is not fit to be used as an anchorage.

Both the N.W. and S.W. points of Cannonan are bold, and may be passed at a cable's length. It is not advisable to go so near the N.W., as the peak checks the wind, and flaws give trouble; but this will not occur passing the S.W. point. A vessel might hold on for a temporary anchorage West of Dove Cays if required.

Petit Cannonan Island.—The next island to the northward, Petit Cannonan, is very small, being three cables long by two wide. Between it and Cannonan is a wide deep clear channel of 17 to 23 fathoms; and there is also another between it and the Savan Group, which lies E.N.E. three miles and three quarters from Petit Cannonan.

The best channels are on either side of Petit Cannonan, having plenty of room without dangers.

Savan Group.—Savan Islands are small, one only being more than a rock, three cables long and one wide, with a bright green appearance seen in the sun, from being covered with grass.

Savan Rock, 90 feet high, is a remarkable object, from having whitish sides, and being somewhat like the Sail Rock; but from its position at the South end of a group, it cannot be mistaken for that isolated rock.

On the West side of the larger Savan Island is a place for temporary anchorage for small vessels; safe, but much disturbed by the swell.

Petit Mustique is the next island, being two miles N.E. of Savan. There is a clear passage 1·4 of a mile wide between them.

There is a dry rock one cable off the S.E. point of Petit Mustique, and another off the S.W. point, with a channel between it and the island, and a little island, surrounded by a reef, at two cables from its N.W. end, called Petit Cay.

Mustique.—One mile North of Petit Mustique is the larger island of Mustique, with a fair population, two miles and a half long and one broad, on which there were two sugar estates, now abandoned. Some stock is raised here to supply St. Vincent. It is difficult to understand how the people here live; they do nothing except give a nominal day's labour to the estates by tending stock or clearing pasture for permission to locate on the island. The Great and Small Mustiques are separated by a channel of 7 fathoms, and half a mile wide, perfectly safe; but the reefs extend a cable off on either side. A vessel going through should not haul too close round the S.W. point of Mustique, as the ground shallows off it; and if going northerly or to an anchorage in Grand Bay Mustique, care must be taken to avoid the Montezuma Shoal, half a mile off the point North of Grand Bay.

For the anchorage of Grand Bay a vessel must either pass West of the shoal, and after going North, run in past the point North of Grand Bay, or she must tack short along the South part of the bay for the anchorage.

Cheltenham Anchorage.—There is also anchorage off Cheltenham. On the East side of Mustique are several islands and reefs, but there is no anchorage on that side.

A breaker is reported half a mile East of the South end of Mustique.

Tides and Currents.—The natural, or six hourly tide, is observed throughout the Grenadine Islands, but it is much influenced by local causes, and is in consequence exceedingly irregular. The establishment or high water of full and change, appears to be about 3h. whilst the first set of the flood stream, or tide setting to the West, is at 12h. This is what may be expected in open channels, through which the water can flow freely; but the regularity which would otherwise take place is quite deranged by the action of the general indraught which at times entirely overcomes the ebb stream. As a general rule, the

flood or tide setting to the westward is apparently longer and of more force than the other. But the direction of it is changed by every wind, or rather by the inclination of the Trades, although they do not diverge very much from East, and yet have much influence on the tide. The ebb mostly begins in shore first, and runs there the longest; whilst the flood and current combined are first felt in the centre of the channel, and this, when the current is strong, sometimes runs all day. If desirous of getting to windward, keep very close to the islands, taking advantage of the tide where it may be found favourable. The rise is not generally more than one foot, and it would be an extraordinary rise to reach two.

When the ebb stream sets round the points against the Trade winds, a heavy tumbling sea generally occurs. This is more particularly the case at the N.W. point of Cannonan, where at times sufficient swell will be found to affect a large vessel considerably.

Of the culture of these small islands little can be said, for they are not capable of much. Yet if the people on them were industrious, some amount for export might be raised. Since the American war the question of growing cotton in them has often been canvassed, and the Lieut.-Governor has been urging the proprietors to plant this staple. But it is generally felt by the owners of land and those who understand the matter, that it is quite impossible to grow cotton paying wages, even at the high price which may reasonably be expected for it should the scarcity continue. The Negro is too uncertain in his labour, and too much inclined to cheat in every contract, to render it likely that the owners of land could plant cotton, and it has been clearly proved that if more than fourpence per day is paid, the proprietor loses. With the cane cultivation it is different, as the labourer lives generally on the cane juice, and receives tenpence or a shilling for a task which may not occupy more than four hours, and yet, notwithstanding these favourable terms, all the sugar estates of the islands here alluded to are now abandoned.

Some stock is raised on these cays for the St. Vincent supply, and they seem better adapted for this purpose than any other. This, however, is ill done, the islands having but small pasture, the greater part being in bush. Poultry can be had at most of the cays.

Union has 477 people; Mayero, 260; Cannonan, 407; Mustique, 200 (by a late census, 14th of October, 1861). Nearly the whole are black, a few being coloured, and only three white. As may be supposed these people assist the revenue but little.

These cays are visited periodically by a clergyman of the Episcopal Church, who resides at Bequia, the largest and most important of the islands under the government of St. Vincent, which district includes all the cays; also by a paid magistrate, who resides likewise at Bequia. The Roman Catholic population of Mayero are attended to by the St. Vincent priest.

These islands, as before said, are granitic lumps emerging from a submarine table or plateau. Union Island is principally composed of greenstone, with its decomposition on the surface. Mayero, the same.

In Cannonan the Peak and Taffia and S.W. hills are formed of it, and in some places it is in conjunction with a brown clay (indurated.) In Cannonan, at one of the low points, is an excellent limestone, very close and dense; a capital building stone, in which I could see no fossils. This stratum seems to lie on the greenstone, but there is not sufficient bare to observe the contact. In these islands all the salient points and cliffs and highest peaks, are of crystalline rocks, having a black appearance, weatherworn; but of a blueish green cast when broken. They contain the minerals, hornblende and felspar principally. All over the islands loose stones of the same materials are found mixed in a clay and vegetable matter. The stickiness of the clay I attribute to the decomposition of the felspar.

The peaks in these islands which are the most pointed (and some in Union Island are peculiarly so), are always found to be of igneous rock, which, from its hardness, wears to a point; and in Union Island the upper 200 or 300 feet of one hill has evidently fallen, leaving it now square; and in the debris (large black rocks) at the base, the village is built. In all those islands here enumerated, the same brown clay rock is found, and in all cases it lies above the igneous rock where they are seen together. In some places it forms the cliff, but generally in a protected place, not being able to stand exposure. More of this latter rock is found in Mustique, where it reaches the tops of the hills, and here they are rounder. In this latter island, specimens of rose quartz and rock crystal are found, the first I have seen in the Grenadines.

As before said, these cays in all exposed situations show the igneous rock, other materials only lying in the valleys or where sheltered, and therefore the line of strike can rarely be determined, and the admixture of the loose stones, &c., renders the whole very confused.

JOHN PARSONS, *Master R.N., in charge of Survey.*

NAUTICAL DESCRIPTION OF PORT AUGUSTA,—*South Australia.*

Port Augusta is situated nearly at the head of the navigation of Spencer Gulf, important from being the only shipping port for the northern copper mines and pastoral districts of South Australia.

The northern part of Spencer Gulf leading to the port is an estuary about forty miles long at Point Lowly, and eight miles broad, gradually contracting to a quarter of a mile above the port.

The high range of mountains on the East side of the estuary, called Flinder Range, has some remarkable peaks, Mount Brown and Mount Remarkable being over 3,000 feet in height.

Vessels running for Port Lowly from the S.W. have sometimes mistaken a gap to the westward of Point Lowly for the entrance to Port Augusta Estuary, which does not show till close up to Point

Lowly. But Mount Brown can almost always be seen, and when it bears N.b.E. $\frac{1}{2}$ E., Point Lowly is directly in line.

Point Lowly is a long low point, and makes out with a high sandy beach on its southern side, the land gradually rising about half a mile to the westward.

Although Point Lowly is steep to, a berth of not less than half a mile should be given to it by a large vessel to avoid a bank of hard sand and rock N.N.E. $\frac{1}{2}$ E. 0·7 of a mile from the point.

Point Lowly Shoal is 2 cables in length North and South; and 1 cable East and West, the least water on it being $2\frac{1}{4}$ fathoms at low water springs.

A cairn of stones 9 feet high was erected on Point Lowly by the surveying party, the base being 15 feet 6 inches above high water in latitude 33° S., longitude not yet determined.

From the cairn on Point Lowly Mount Brown bears N. 21° 10' E. (true), and is thirty-one and a half miles distant.

Point Ward.—The shore of the East side of the estuary (Point Ward) is eight miles from Point Lowly, and is low and fringed with mangrove.

A long sand spit runs out from Point Ward to within three and a half miles of Point Lowly, leaving a channel with 13 fathoms water, on the West side of the estuary.

The deep water channel is confined to the vicinity of the West coast the whole way to Port Augusta, the East coast being low and fronted with extensive sand flats.

The coast is nearly straight from Point Lowly to the N.N.W for six miles, being the head of Backy Bay, formed of low whitish cliffs and stony beaches, with mangroves after the first three miles.

Backy Bay.—From the head of Backy Bay E. $\frac{1}{2}$ S. two miles is Backy Point, bold, black and rocky, approachable in 8 fathoms to a cable's length. The coast line is broken and rocky to Crag Point, which is one and a quarter miles N.b.E. $\frac{1}{2}$ E. of Backy Point.

Douglas Point is N. $\frac{3}{4}$ E., two and a half miles from Crag Point, and is rocky, with a low black cliff. The coast between Crag and Douglas Points forms two bays, with sand flats at low water drying out to the line of points, whilst the 3 fathom line is half a mile further out.

Douglas Hills are a group of detached grassy hills, some having deep, rocky ravines between them. There is a sheep station among the hills, (which are covered with grass and a few stunted bushes,) carrying about 2,500 sheep. The shepherd's stone hut and well can be seen from the sea about two thirds of a mile in shore, and one mile to the northward of Douglas Point. The well is 120 feet deep, and supplies about 240 gallons of very brackish water per day. The well is conspicuous, having a heap of white lime stone round it thrown up during its excavation. A cairn of stones was erected by the surveying party on the hill, about half a mile N.W. of the hut, which is 645 feet above high water mark.

Douglas Bank.—The middle of Douglas Bank is N.b.E. two and

two thirds miles from Douglas Point, with only 11 feet on it at low water. It is about half a mile long North and South, and one cable East and West. The shallowest water being on the West side which deepens suddenly to 6 and 8 fathoms, whilst the East side gradually deepens to 6 fathoms half a mile off.

Mount Gullet, the low flat hill on the East coast, bearing E.b.N. clears two cables to the southward in 5 fathoms, and the same hill E. $\frac{1}{2}$ S. clears 2 cables to the northward in 6 fathoms. Crag Point and Douglas Point in line S. $\frac{3}{4}$ W. just clears the West side in 7 fathoms, and Backy Point in line with Crag Point S.b.W. $\frac{1}{2}$ W; or Two Hummock Point extreme in line with the northern end of the Bluff Range N.N.W. $\frac{1}{2}$ W. clears half a mile to the eastward.

Douglas Bank leaves a clear channel to the westward 0.7 of a mile, and to the eastward more than a mile in width. From abreast Douglas Bank to Two Hummock Point, the coast feature is thick mangrove with low land behind.

Two Hummock Point is six miles N. $\frac{1}{2}$ W. from Douglas Point, and is low and with alternate rock and sand beach. With two scrub covered hummocks, one on the point and the other about half a mile to the northward, the latter is the highest and is 86 feet above high water. There is a third hummock about one and a half miles in shore of the other two. The sand dries nearly a half mile out at low water off Two Hummock Point, and a 2 fathom bank extends three-quarters of a mile to the South-eastward.

Middle Bank is N.b.E. $\frac{1}{2}$ E., one and a half miles from Two Hummock Point, and is nearly in the centre of the channel. It extends 0.8 of a mile N.N.W. and S.S.E., with an average breadth of 1 cable. The least water on it is 7 feet at low water springs.

Middle Bank leaves a clear channel to the westward of 0.7, and to the eastward of half a mile. The West channel is preferred and is the most direct.

The western or inshore hummock open North of the South hummock of Two Hummock Point, on a bearing of S.W. $\frac{3}{4}$ W. clears one cable to the southward in $4\frac{1}{2}$ fathoms, or the Mangrove Point, North of Two Hummock Point, in a line with the North side of a deep ravine in Bluff Range, W.N.W., just clears the South end in $3\frac{1}{2}$ fathoms.

Mount Brown in line with the extreme mangroves on North side Red Cliff Point bearing N.E., clears 1 cable to the northward in 4 fathoms.

There are no clearing marks to the westward, but in passing the water ought not to be shoaler than 8 fathoms.

From Two Hummock Point the coast trends N.W. for three miles to a low mangrove point, and then takes a bend westward for one mile, and forms a bay with low mangrove shores. The low water edge however continues N.W. for five and a half miles from Two Hummock Point, forming the West Sands, inside of which is Blanche Harbour with 1 or 2 fathoms water.

Blanche Harbour has two entrances, one to the northward between West Sands and the shore, and one to the eastward through the sands.

From Blanche Harbour the coast runs N. $\frac{1}{4}$ E. six and a half miles to Commissariat Point, the general aspect being a rough stoney beach fronted with sand at low water, and mangroves at high water. The land behind sloping up to the Bluff Range, which at Commissariat Point is only one and a half miles inshore.

Commissariat Point is the eastern extreme of the round portion of the Bluff, and is not made out till you are well to the northward or southward. From the Bluff it bears N.E., and is W. $\frac{1}{4}$ N. two miles from Point Paterson, on the opposite point of the estuary, which here narrows considerably.

The sand dries half a cable's length outside the mangroves at Commissariat Point, and there is a 2 fathoms' bank 2 cables beyond it. A similar bank extends from the spit forming the other side of the channel, and contracts the 3 fathom channel to 2 cables in width.

The Bluff is the eastern and highest part of a long flat-topped range which rises near Point Lowly, and continues to abreast Snapper Point, when it turns sharp off to the westward, leaving a detached ridge at the angle which makes out from the South-eastward in two peaks, called the Sisters. The S.E. Sister is 729 feet above high water mark.

A cairn of stones 8 feet high was erected on the Bluff by the surveying party, 939 feet above high water, but can hardly be distinguished from the scattered bushes near the summit, only a few hundred feet wide, the range then sloping gently to the westward.

Point Paterson is a low point with a sandy beach, and large clump of thick mangroves immediately to the northward. The sand flat dries nearly two miles off it to the South-eastward.

When in the main channel and the North end of the beach at Point Paterson bears E.b.N., the entrance to Port Paterson is open, and runs nearly straight for two miles to the North-eastward.

Port Paterson is an extensive sheet of water to the eastward of the long sand spit, which extends nearly three miles to the southward of Snapper Point.

The port carries 3 $\frac{1}{2}$ fathoms water at low water springs, over a space one mile in diameter, with a muddy bottom.

The approach to Port Paterson is two miles in length, and in two places the deep water is confined to a width of 1 cable, with a depth of not less than 4 fathoms. The best time to enter Port Paterson is at low water, as the banks show on each side, and if they are covered the different streams of tide fill the channel with eddies, and give the appearance of the whole being blocked up. There are no marks to lead up the entrance of Port Paterson.

An inner basin opens through a narrow passage on the northern side of Port Paterson. There is about 8 feet water at low water springs across the mouth of the entrance, but in the passage the water increases to 2 $\frac{1}{2}$ and 3 fathoms. The passage is winding about a quarter of a mile long and about 80 yards wide, opening into a circular basin at low water, half a mile in diameter, with a general depth of 2 $\frac{1}{2}$ fathoms.

The drawback to Port Paterson is the extent of sand and mud flat surrounding it on all sides, rendering communication with the shore difficult after half ebb. The adjacent coast too, is a swamp with the exception of the sandy beach to the northward of the inner basin, which is nearly half a mile from the low water mark. Only one vessel has ever been known to have used this port to discharge a cargo, and as it is not in the main stream of tide it may be filling up like Yatala Harbour.

Snapper Point, three miles N. $\frac{1}{2}$ E. from Commissariat Point, is a low mangrove point, extending out a mile from the high water beach. The estuary suddenly narrows here to 0·7 of a mile from mangrove to mangrove, and assumes more the appearance of a river, with dense mangrove flats on each side.

From Snapper Point northward to Curlew Point the channel inclines to the East coast. Snapper Point is one mile South of Curlew Point and Island.

Curlew Point.—Curlew Island is merely a large thick patch of mangroves, separated from the point by a narrow channel, dry at low water, and has a small sandy knoll at its North end which only covers at high water springs.

To the northward of Snapper Point the channel becomes so narrow and winding that a Pilot is necessary at present. The South Australian Government intend however, to mark the channel with buoys and beacons, when the navigation will be easy with a leading wind; without which no square-rigged vessel should come beyond Commissariat Point.

The wind from S.S.W. round to E.S.E. is a leading wind through all the reaches going up, and the wind from N.N.E. round to W.N.W. is a leading wind coming down.

To the northward of Snapper Point the channel shows at low water springs as the sands uncover, leaving a width of from a quarter of a mile to less than 1 cable. There are however some dangers which do not show at low water, the principal of which are—

Dangers.—The bank forming the narrows off Curlew Point, which runs out northward and North-westward of Curlew Island about 2 cables. It is very uneven with from 3 to 12 feet water on it, and leaves a $3\frac{1}{2}$ to 4 fathom channel on its northern side, half a cable in width and 2 cables in length.

A 10 feet bank runs half cable off the S.E. side of the sand islet knoll between Curlew and Orchard Points

A 7 feet patch of hard sand, covered with weeds, lies 2 cables S.W. of Orchard Point.

A much larger patch carrying the same depth lies 2 cables N.W. of the same point, right in mid-channel. At low water springs the depth right across is not more than 14 feet abreast this shoal, while there is no more than 13 feet at low water across the entrance of the narrow reach, between Brown point and the flag staff at Port Augusta.

S.b.W. $\frac{1}{2}$ W., 4 cables from the flag staff, the 9 feet bank shoals out

on the West side, leaving the 12 feet channel less than half a cable in width.

S.W. $\frac{1}{4}$ S. two cables from the flagstaff, is the 5 feet shelf on which the barque *Rangoon* grounded in 1861 sustaining serious damage. This bank is dangerous from being composed of hard sand and stones, and from ebb tide setting right on to it.

Port Augusta.—The township of Port Augusta is situated on the East bank of the estuary, about four miles above Curlew Point. The Collector of Custom's house stands on a low sandy point at the South end of the township, and has a flag staff in front of it. The township extends along the beach to the northward for about a quarter of a mile, as yet consisting of only a few wooden houses, and two substantial stone and brick stores.

At Port Augusta the bank is pretty steep; the mangroves have been cleared away in front of the township, and two wooden jetties run out to low water mark. Off the end of one, the coasting steamer, which runs to and from Port Adelaide twice a month, lies aground at low water.

The port reach is nearly 2 cables in width and nearly half a mile long at low water. There is plenty of room for eight or ten large vessels to swing at moorings, in from 18 to 20 feet water at low water springs.

In March, 1862, the number of inhabitants was sixty-three.

Supplies.—All sorts of dry goods can be obtained at the stores and fresh meat from Stirling, but vegetables are not to be had, the surrounding country not being fit for cultivation.

Water.—Fresh water cannot be obtained except from Woolundunga, a distance of 18 miles by dray. There are some wells at Stirling but they are very brackish. Fire wood can be obtained in small quantities. The Government intends laying down water pipes between Woolundunga and Port Augusta to supply the town and shipping.

Fish may be caught in great quantities with a hook and line, principally snapper. The best snapper ground is between Snapper and Curlew Points, and close off the N.W. edge of the bank forming the narrows at Curlew Point.

Exports, &c.—The trade of Port Augusta is chiefly in exports. Vessels coming up in October and November for the year's clip of wool, and taking away a great quantity of copper ore. The trade is fast increasing as may be seen from the value of the exports for the years 1859, 1860, and 1861 respectively, being £69,266, £134,111, and £168,387. The value of the imports direct from beyond the colony was £6,551 in 1861.

The residence of the sub-collector of customs on the point is also the shipping office, post office, court house, &c. That officer being the port master, post master, shipping master, and in fact the only Government officer.

The estuary is navigable for about three miles above the port, through a narrow channel which passes close under Flinders' Red Cliff,

about a mile above which it is dry at low water right across, but a boat can go several miles further up at high water.

In the form of a salt swamp flooded at high water springs the estuary runs some 25 miles to the northward of the port.

Position.—The flagstaff at Port Augusta is in latitude $32^{\circ} 29' 42''$ S.; the longitude is not yet determined. The variation in 1862 was $4^{\circ} 36'$ East. Time of high water full and change 8h. 30m., the rise of ordinary springs 12 feet.

Stirling.—Five miles E.S.E. of Port Augusta is the township of Stirling, where the brackish wells are. The Government is making a road across the salt swamp between the two townships. The population of Stirling in March, 1862, was 70.

Southward of Point Paterson the East coast bights in as far as Red Cliff Point. The whole coast is low and swampy, and fronted by extensive sand flats. The outer ones, called the East sands, forming the East side of Flinders Channel.

Red Cliff Point is six miles S.S.E. of Port Paterson, and is low and sandy with mangroves on its North side; the coast from this point trends E.S.E. six miles, into a mangrove swamp at the head of Yatala harbour.

One mile from Red Cliff Point is the Red Cliff, about two-thirds of a mile long, and 50 feet high. The land at the back is swampy.

Mount Grainger.—Three miles from the point and close to the coast is Mount Grainger, a round black-looking hill 249 feet high, and covered with bushes. Mount Grainger makes out well from the flatness of the surrounding country.

Yatala Harbour.—Mount Grainger marks the position of Yatala Harbour or Port Fergusson, which is now nothing more than a 1 to 2 fathom hole in the sands, about two miles in diameter, and ending in a creek which is barred at the mouth.

Small craft entering Yatala Harbour should bring the inshore hummock in line with the South part of Two Hummock Point, bearing $W. \frac{1}{2} S.$ till Mount Grainger bears N.E., then steer for it. To get off the jetty you must pass over as little as 6 feet water at low water springs. There is a strong tide rip off the entrance with southerly winds.

The sand and mud dry more than two-thirds of a mile off the jetty, and the tide seldom comes up to the end of it. Yatala Harbour appears to be fast filling up, comparing the soundings taken during former surveys with those obtained in April, 1862.

To the southward of Yatala Harbour the coast is straight to Ward Point, a low sandy beach, and the last three miles thick mangrove. The sand dries more than a mile off this coast, on which the only noticeable objects are Mounts Gullet and Mambray, the former 200 and the latter 100 feet high. Mount Gullet has a large base and round flattish top; Mount Mambray is very small and round. Both hills are covered with thick scrub.

Fairway Courses.—From half a mile off shore at Point Lowly the best course would be $N. \frac{1}{2} E.$ for about twelve miles according to tide.

This course would take you one mile clear of Backy Point, and two-thirds of a mile off Point Douglas, and past Douglas Bank leaving it to the Westward. Backy Point ought to be kept in sight or in line with Crag Point, bearing S.b.W. $\frac{1}{2}$ W., until the Northern extreme of Bluff Range comes on with Two Hummock Point, extreme bearing N.N.W. $\frac{1}{4}$ W. When this latter mark comes on the course can be altered to N.b.W. to pass Two Hummock Point. The course of N. $\frac{1}{4}$ E. from half a mile off Point Lowly passes only two cables outside Point Lowly Shoal, in 10 and 11 fathoms. From thence to Backy Point the bottom is uneven from 6 to 12 fathoms, but between that point and Point Douglas you would have 12 to 10 fathoms, and then shoals gradually to five fathoms, passing to the eastward of the bank.

The N.b.W. course should be kept till the North hummock of Two Hummock Point bears West, which will be a distance of three and a half miles nearly, then the course is N.W. $\frac{3}{4}$ N. to pass through Flinders Channel between the East and West sands, taking care not to come under 7 fathoms in the vicinity of Middle Bank. The sands are nearly one mile apart and generally show.

When Commissariat Point bears North, or Red Cliff is nearly in line with the foot of Mount Grainger, bearing S.E.b.E. $\frac{1}{2}$ E., alter course to N. $\frac{1}{4}$ E. to pass through Bluff Reach. At the point of altering course the mangroves on the West side ought to be distant about half a mile, gradually closing as you approach Commissariat Point, off which you should pass a quarter of a mile, until Point Paterson bears W. $\frac{1}{2}$ S., then steer N.b.W. $\frac{1}{2}$ W. through the first part of Snapper Reach: just before you round Commissariat Point the soundings decrease to $3\frac{1}{2}$ and 4 fathoms at low water.

In running through Snapper Reach after passing the last stoney point on the West coast, and abreast thick mangroves with South Sister bearing W.b.N., alter to N.E. $\frac{3}{4}$ N., passing little more than 1 cable's length off Snapper Point. After getting through Snapper Reach the course is curving the whole way, the reaches being very short.

If wishing to pass inshore to the westward of Douglas Bank, where you have the strongest tides and deepest water, when off Douglas Point in 9 or 10 fathoms, and steering N. $\frac{1}{4}$ E., alter course to N.b.W. for the South hummock, taking care to have Crag Point out of sight behind Douglas, while Mount Gullet is between the bearings of E.b.N. and E. $\frac{1}{2}$ S., and not coming into less than 9 fathoms. When Mount Gullet bears E. $\frac{1}{2}$ S., haul out from the land N.b.E. till the inshore hummock comes on with the South part of Two Hummock Point, W. $\frac{1}{2}$ S., when you can shape the course up Flinders Channel as before.

Anchorage.—There is anchorage in any part of the estuary, but southward of Douglas Bank the best anchorage is towards the East coast in about 6 fathoms, as the strength of the tide runs along the West coast in the deep water.

An anchorage in Backy Bay with Point Lowly bearing S. $\frac{1}{2}$ W., three miles has been recommended, but in winter when strong North and West winds are frequent, more shelter may be obtained with Backy Point bearing from N.W. to W.N.W., distant about one mile,

in 6 fathoms, sand, near the head of the bay, where a ship would be out of the tide.

In the strong S.S.E. winds which prevail during the summer months when Port Augusta is most visited, a vessel seeking anchorage for the night, or a tide, would do well when inside Point Lowly to haul to the eastward, and let go in 6 fathoms under the lee of Ward Spit.

Tides.—The tides in Port Augusta estuary are very peculiar.

At Port Augusta it is high water at full and change, at 8h. 30m., and at Point Lowly at 7h. The rise of ordinary springs at the first place 12 feet, and at the latter place 9 feet, but after a hot wind when the wind veers round to West and South, and blows strong, the tide at Port Augusta has been known to reach a height of 16 feet.

After the full and change of the moon, the time of high water gets gradually later till the time of neap tides, when it is high water between 10h. and 11h., both at Port Augusta and Point Lowly. Then a day occurs on which the tide ebbs or flows for twelve hours together, the whole tide often not ranging more than a few inches. After this the tides become regular again, but the time of high water changed to between 5h. and 6h., and gradually working up to the full and change times. From which it may be said generally that you have high water in the morning and evening, and low water in the middle of the day at Port Augusta.

The night tide is generally a foot or two higher than the morning tide. The stream sets fairly up and down the channel at from one and a half to two knots per hour, and changes with the rise and fall, except about the mouths of the small channels through East Sands, and to the southward of Douglas Bank where the flood sets across N.W. into the deep channel, the ebb setting out S.E.

Winds.—During the summer months strong South and S.S.E winds prevail; and in January, February, and March, they are often interrupted by hot winds which blow fiercely from the northward, sometimes for seven or eight days, raising the temperature to 120° in the shade.

The survey party during a hot wind in March, 1862, experienced a maximum temperature of 109° in the shade. During the first eight day of that month the thermometer stood over 90° constantly, and for three days over 100°.

The hot winds frequently terminate in a squall from the southward, or thunder storm from S.W., they blow under a cloudless sky and a thick red haze prevails.

Whirlwinds are common in the summer, but they usually confine themselves to the plain between Flinders Range and the Gulf, where several may be seen at once raising a pillar of dust to a great height.

Very little rain falls in the year, and the amount per annum is very uncertain. The rain fall observed at the port for the years 1859, 1860, and 1861, was respectively 2·038, 9·16, and 7·186 inches.

During the months of April and May some strong northerly winds were experienced, with a hard cold-looking sky. These winds al-

though coming from the same quarter as the hot winds did not raise the temperature above 75° or 80°.

During the winter months generally N.W. to S.W. winds prevail.

Pilots, &c.—It has been the custom hitherto for vessels bound to Port Augusta to proceed first to Port Adelaide, and there pick up a pilot for Spencer Gulf and Port Augusta.

The outward bound vessels frequently leave their pilots at Wedge Island, at the mouth of Spencer Gulf.

Tugs can be procured from Port Adelaide, to which place a mail goes overland once a week. The steamer trading to Port Augusta frequently tows vessels up or down through the estuary on her trips backwards and forwards.

JOHN HUTCHISON, *Commander, R.N.*
FREDERICK HOWARD, *Master, R.N.*

PRELIMINARY NOTICE OF THE ORGANIC AND INORGANIC OBJECTS
OBTAINED FROM 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.**

Sufficient time has not elapsed to enable me to make a detailed report on the various objects which the Lords Commissioners of the Admiralty have done me the honour to place in my hands for examination. I trust, however, to have the report prepared for the press in the course of this winter. On the present occasion I purpose giving a summary of the results of my investigations as far as they have been conducted.

The greatest depth at which specimens have been obtained is 1,750 fathoms. The soundings from this and less depths—up to 500 or 600 fathoms—consist essentially of the same kinds of microscopic organisms already made known by Bailey, Wallich, and others.

The marvellous profusion of *Foraminifera* and other minute structures occurring on the Atlantic sea-bed wherever it descends below the level of a few hundred fathoms, shows that over a vast portion of the submarine area between Ireland and the United States, there are being formed calcareous deposits analogous to common limestones. While nearly all the particles of these deposits are either the testaceous coverings of dead *Foraminifera* or the impalpable debris of their shells, it is evident that the surface of the Atlantic sea-bed is one vast sheet of the same organisms in a living state, whose office it is to clear the waters of the ocean of all the mineral and organic impurities which are ever flowing into them.

Much of the deep sea "ooze" procured during the survey bears a

* See Mr. Hoskyn's report in page 561 of this number.

striking resemblance to the roe of a fish, owing to its containing an immense profusion of *Globigerinae*. This circumstance led me to suspect that 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 *Globigerina* in oolite, I have been rewarded by discovering that it consists essentially of an allied monothalamous *Foraminifera*. Having carefully examined type specimens of Carboniferous, Permian, and Jurassic oolitic limestones, respectively from Bendarry 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 with, or allied to, *Orbulina universa*.

Although perforating mollusks are living at great depths, I do not think that there are any grounds for apprehending that they would bore into a telegraph cable. I am also inclined to believe that there is little chance of a cable getting injured if laid down on foraminiferous bottoms; as in such places vital and chemical actions appear to be going on so unceasingly and copiously, that a cable thus circumstanced could not but become covered up in the course of a few years with considerable foraminiferous accumulations.

The survey has been fortunate in bringing to light some other interesting facts in microscopic life. It has also made known some species of shells and other animals new to the British Fauna, besides extending our knowledge of the habitats of certain rare species.

Rising out of a deep seated area of *Globigerinous* deposits, and at the distance of 120 miles West of Slyne Head, in the county Galway, occurs a bank, which has been named the Porcupine Bank, consisting of siliceous sand and coarse gravel, the latter chiefly composed of sub-angular pieces of granular quartzite (? metamorphic), granite, chloritic quartz, &c.; along with which occur considerable quantities of the debris of *Nullipores*, shells, and other organisms. The larger pieces, some of which are three or four inches in diameter, have often attached to them fresh specimens of *Rotalia* and various genera of *Bryozoa*; occasionally they bear specimens of *Crania Norvegica*. A number of fishes was procured by the dredge on this bank in about eighty fathoms water. One a species of *Psetta*, allied to the "whiff"; another a species of *Sebastes*, allied to the Norwegian had-dock: both appear to be unrecorded as British species.* There were also brought up by the dredge from the depth of a hundred fathoms *Pilidium fulvum*, *Linatula subauriculata*, *Scimurella crispata*, *Leda pygmaea*, *Arca raridentata*, and other scarce shells; besides sponges, star-fishes, sea-urchins, &c. The same prolific bank yielded an abundance of a large hermit crab, specimens of which were tenanted one of the rarest British shells, *Buccinum ovum*.

There also came up in the dredge a specimen of *Litorina litorea*,

* Specimens of a pipe fish were captured on the surface of the Atlantic 200 miles West of Galway. It appears to be a species undescribed as British.

which, though insignificant in itself, may prove of considerable importance. The specimen is an adult one, and, though broken, it has a fresh appearance, and retains interiorly its characteristic *nacre*. How has this shell, which only lives between ordinary tide-marks, and feeds on the *Fucus* peculiar to this tract, got into eighty or ninety fathoms water, and at the distance of 120 miles from the shore? It may have been swallowed by a cod or some other fish, and carried thither; it may have got entangled in the roots of a seaweed, which afterwards floated out into deep water; it may have been transported to the spot where it was dredged by a strong current setting off from the land. The great accumulation of coarse gravel and pebbles on the bottom from which this shell was taken is a remarkable fact.

At the depth of 340 fathoms the sounding machine brought up *Globigerinoides* mud containing dead specimens of a *Pecten*, an *Arca*, and a *Pectunculus*, which appear to be new; also specimens of *Trochus milligranus* in the same condition. A perfectly fresh specimen of a new *Cochlodermis* was also brought up from the depth of a thousand fathoms, and at the distance of a hundred miles west of Cape Clear. This is perhaps the greatest depth at which a bivalve, evidently living there, has been obtained.

Too much credit cannot be awarded to Mr. Hoskyn and the officers of the *Porcupine* for the zeal which they displayed in collecting and preserving the various objects I have noticed. Their labours, it is well known, were frequently conducted under the most adverse circumstances, and during a singular succession of unfavourable weather. Nevertheless, the results of the survey, both as regards Natural History and Geology, are highly valuable.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*Weather at the Cape—Patent Slip—Lights and the "Valleyfield"—Chairman's Address—Affairs in General—Royal National Life Boat Institution—Wrecks upon Wrecks—the Electric Cable—Commodore Wilkes—Sir T. Maclear on Cape Lights—Opinion of the Club.*

The Cape washed away, did you say?

No, replied the Commodore; but they had such a washing there last summer as will not be forgotten for a long time, and strange to say, while they have had more than enough rainy inundations at that end of the colony, hardly a drop had fallen in the eastern province. An unprecedented drought has been causing as much distress there as the rains have done at the Cape. Wise men, like the Astronomer and others, who study the face of the heavens, say that the eastern part will catch it next year. I hear that there were parallel cases in 1822 and 1823. In the first of these years there were floods in the West,

and droughts in the East. This is the completion of some meteorological cycle, and will end in the same results.

Aye, sir, cycles, periods, all creation has its cycles, and why should not the weather. There are wise men here at that subject, and making some way into it; and I begin to think there is something in cycles myself.

Take my advice, Commodore, and let cycles and epicycles alone. Wait a little for Admiral Fitz Roy's promised weather book, and see what he says, returned Albert. Nothing more common than a zone of wet and stormy weather even in this country. But they are busy at the Cape, continued Albert. The patent slip in Table Bay has been completed, and the first ship hauled up on it, being the Norwegian barque *St. Olaf*. But the vessel, when being put on, was canted round and fastened on the cradle obliquely, breaking one of its arms. At high water on the following day she was floated off without sustaining the slightest injury; and the damage done to the cradle is now in course of repair. The machinery worked admirably, and the severe pressure to which the whole slip was subjected by the awkward position of the vessel, has only confirmed the opinion previously formed of its stability and efficiency.

Aye, those gridirons, observed the Commodore, are capital things: the people at Port Elizabeth are getting one, following the good example of Table Bay.

I am glad to find that the Table Bay breakwater and dock works are progressing admirably, and have withstood the late gales there with most satisfactory stability.

The report on that unfortunate loss of the *Valleyfield* in the last *Nautical* says,—“It was observed by persons on shore that the lights in the Green Point Lighthouse on the night of the wreck were extremely dull, and consequently appeared more distant than they really were: and that had a light existed on Robben Island, and been visible, the officers in charge could not have remained in ignorance of their real position.

No doubt, said the Commodore, a light on Robben Island being so far to windward with the N.W. gale, would have kept the *Valleyfield* from Green Point.

We have arrived, observed the Chairman, at that season of the year when the transitions between pheasants, politics, and grouse are easy at large gatherings of constituencies, or the celebration of some anniversary,—a kind of *reunion* at which John Bull gives full vent to his feelings on most of the great subjects which agitate the world. Now it was not for them to follow the intricacies of these important subjects, whether of international law, which is said to press heavily on trade,—on the late riotous proceedings, which by a special party have been endured, most unrighteously, he would say, with a religious tone,—on the internecine war of secession going on with as much bitterness as ever in America,—or on the great subject of Chinese interference, where the remains of the late French Admiral Protet—whose death was related in a recent *Nautical* [the September number, observed

the Secretary]—have been interred with all the honours due to his rank,—the proceedings in Japan, and the irritation produced by political matters in that extraordinary country. It was not for them to trouble themselves with such topics, although the observations of Mr. Roberts, at Liverpool, on Liberia would be worthy of their observation. Still, as sailors, said the Chairman, there were other things more in their way, and the late gales, which had unhappily attended those grouse meetings to which he had alluded, had been more than usually severe, strewing our coasts with wreck and the bodies of our merchant seamen. On the East and the West our shores have been the scenes of wreck, and in many cases the value of our life-boat establishments has been, like that of their hardy hands and the excellent boats themselves, well exemplified in saving the lives of their crews.

The Chairman then called on the Secretary to read the report of the proceedings of the National Lifeboat Institution. It stated that—

A reward of £9 was voted to the crew of the Dungeness lifeboat of the institution, for going off on the night of the 21st ult., and, after much difficulty, saving fourteen men belonging to the Portuguese barque *Cruz V.*, of Oporto. The ship had gone on shore off Dungeness, in blowing weather, after having experienced a heavy gale of wind. The ship's crew were found in a very excited state, and about to abandon their vessel, over which the sea was breaking heavily, in their own long boat, when the lifeboat fortunately arrived and rescued them from an apparent death, for their boat could not live, it was stated, in such a heavy sea. The lifeboat was reported by her coxswain, Thomas Mockridge, chief boatman of the coast guard, to have behaved remarkably well on the occasion. A communication was read from his Excellency the Portuguese ambassador, expressing his high satisfaction with the important services thus rendered to fourteen of his countrymen, and stating that he would not fail to report the same to his government.

A reward of £7 10s. was also voted to the crew of the Rhyl lifeboat of the institution, for putting off with the view of saving the crew of the schooner *Jameson*, of Liverpool, which was observed suddenly to founder in a heavy squall on the 13th ult. The schooner's crew immediately took to their own boat, and were fortunately picked up by the Point of Ayr lifeboat.

A reward of £8 was also given to the crew of a pilot-boat for putting off and rescuing, at considerable risk of life, the crew of three men belonging to the schooner *Dove*, of Leith, which, during a gale of wind and squally weather, had sunk off Newhaven. The crew at once clung to the rigging, from which perilous situation they were, after an hour of agony, saved by the pilot-boat.

The coxswain of the Bude Haven lifeboat of the society, reported that a lad had recently fallen into a canal at that place, and was under water for nearly ten minutes before he was got out, when he was found apparently dead. He was immediately treated in accordance with the rules of the National Lifeboat Institution for the restoration

of the apparently drowned, founded on those of the late Dr. Marshall Hall, and after about half an hour he was happily restored to life and is now doing very well.

It was reported that during the past month the institution had sent new lifeboats to Howth, Dublin, Blakeney, Norfolk, and to Guernsey. General Sir George Bowles, K.C.B., had presented to the society the cost of the Howth boat, and Miss Brightwell that for Blakeney.

It was also stated that the following legacies had during the past month been received by the Lifeboat Institution:—From the executors of the late W. Lupton, Esq., of Salford, £100; Dr. Turner West, of Hull, £100; and Mrs. Gedge, of Great Yarmouth, £100. That lady had also benevolently bequeathed to the institution one third of her residuary estate.

Considering the very expensive character of the operations of the National Lifeboat Institution, its expenditure must necessarily be always very large on the 123 lifeboat establishments; accordingly payments amounting to £1,550 were ordered to be made yesterday on some of its lifeboat stations which had recently been completed, and on the repairs, &c., of others. The Committee appealed with renewed confidence to the public for support, resting their appeal on the great fact that 740 shipwrecked creatures had been directly saved from a watery grave by the lifeboats of the institution during the last two years or so. These 740 people represent probably two or three thousand women and children, who would otherwise to-day be in a state of widowhood and orphanage. The proceedings then closed.

All these matters, said the Secretary, are happily well looked after, and those which belong to us will be duly recorded.

But it is painful to find, continued the Chairman, that these periodical gales cannot occur without being attended with so much loss of life and property.

In addition to the sad havoc which has been caused on the shores of the United Kingdom, a large catalogue of disasters has come in from the North coast of Europe. Up to the present time upwards of one hundred wrecks, and more than 500 casualties, attended with a great sacrifice of life, had been reported on Lloyd's books during the week. Several homeward bound ships, which have succeeded in reaching Falmouth and other western ports, report having experienced the most terrific weather in the chops of the Channel, and some of the vessels to escape foundering had to throw cargo overboard. Later telegrams speak of considerable damage amongst the colliers and other coasters navigating the North Sea. A large barque called the *Atlantic*, belonging to Weymouth, bound to Sunderland from Honfleur, was driven ashore at Thisted. The Dutch and Danish ports furnish a long list of disasters, the gale having raged on that line of coast with great fury, accompanied in some parts by thunder and lightning. Some of the cattle steamers had to put back with a considerable loss of their live cargoes. The timber laden ships appear to have been particularly unfortunats in weathering the gale, and a fleet

of vessels from the Baltic have had to put into Christiansand and other ports, all more or less damaged.

It appears, too, continued the Chairman, that the *Bencoolen* had been drifting about the Channel up to the 21st of October, when, at about three o'clock in the afternoon, she drove ashore near the break-water at Bude. The weather was fearful, and the vessel soon became a total wreck. The Captain, (Chambers), the first and second mates, and twenty-five of the crew perished. Only six were saved. The survivors are hearty in their praise of the conduct of Sir T. D. Acland, Bart., and W. Maskell, Esq., who gallantly assisted them to reach the shore on spars, and then entertained them in the most hospitable manner. The cargo was washing ashore for miles around the vicinity of the catastrophe.

Another large ship, the *Hindoo*, from Montreal, to Liverpool, with a cargo of petroleum, was overtaken in the Channel by a fearful gale, and after working up as far as the Bell Buoy the storm became so furious, and the ship was so disabled, that she almost became unmanageable, and drove ashore near Formby. Endeavours were now made to reach the land, when the ship was discovered to be on fire, and this with a cargo of petroleum on board. The fire soon got hold of the vessel, and the crew, seeing there was no chance of saving anything, attempted to gain the beach. After swimming through a sea of petroleum—for the cargo had broken up and was washing out of the ship—they, with the exception of five who were drowned, reached the land. Many of the crew were severely injured, and Captain Murphy, commander of the *Hindoo*, was much crushed by the drifting wreck, besides being nearly poisoned with petroleum. At ten o'clock to-day not a vestige of the ill-fated ship was visible; but that there had been a fire of petroleum there could be no mistake, for the stench from the vicinity of the wreck prevailed all over Liverpool. The *Hindoo* left Montreal on the 17th of September last, with a cargo of about 3,000 barrels of rock oil on board.

It is an event that will be long remembered at Liverpool, common as wrecks are at that emporium of British commerce.

But there is yet another subject continued the Chairman to which he would allude, as one coming within their province, and that was the revival of that very important scheme of laying a telegraph cable across the Atlantic. He, the Chairman, and he believed his friends whom he had the happiness to see around him, had always been of opinion that the sooner or later this noble project would be achieved. So thought others in spite of every obstacle, and among them the firm that had successfully laid down no less than thirty cables, all of which were stated to be at present in good working order. And so good an opinion did that firm entertain of the feasible nature of the project, that they had offered to subscribe twenty-five thousand pounds towards it. Much satisfaction was expressed at the Club, and hearty wishes for the success of the project.

One more word I will take leave to add, continued the Chairman. There are ugly reports abroad about Commodore Wilkes of *Trent*

notoriety, at Bermuda. What is he doing there?—it has been asked with good reason. Why has President Lincoln appointed Commodore Wilkes, late of the *San Jacinto*, before all other officers of the United States Navy, to command the very squadron which, by its station and its duties, comes more than any other into contact with British shipping? We do not think it was because he had forgotten the *Trent* affair; perhaps he thought that the officer who had lately had so severe a lesson was safer than an untrained fire-eater. But considering all things, surely it would have been better to have placed some officer of proved discretion between Bermuda and Charleston, and console the gallant Wilkes by sending him to blaze away at Vicksburg or Fort Morgan.

In these remarks of one of our daily prints he quite agreed. The Club coincided in these views, and although they knew well the value of their own Admiral in that part of the world, trusted that the same excellent feeling would prevail there as was shown by the American officers at the first unsuccessful attempt to lay down the Atlantic cable.

We were referring to Cape affairs observed Albert when our worthy Chairman opened proceedings, and in reference to the Robben Island light, which subject the loss of the *Valleyfield* has brought forward. Our Astronomer there has drawn up a statement which is worth preserving among our papers. It is entitled Table Bay, and its Lights, and runs thus:—

Royal Observatory, June 25th, 1862.

Sirs,—A very able letter in your issue of to-day, signed "Non-Nauticus," leads me to record certain facts which will show that the defects of the Table Bay lights have attracted the attention of competent judges, and men of weight too, from time to time, for a considerable period, more especially with regard to the advantage of a light on Robben Island.

It is right to record also the step which exonerates the Executive Government, as represented by Sir George Grey, from the charge of neglect when the subject was brought to his Excellency's notice in a tangible shape.

A light on Robben Island was advocated by Admiral Dacres, by Commodore Talbot, and by Commodore Trotter, by Lieut. Dayman, when Admiralty Surveyor at the Cape, by Mr. Skead, the present Admiralty Surveyor, by Captain Wilson, when acting Port Captain, and by Admiral Washington, the present head of the Hydrographical Department of the Admiralty. Lieut. Dayman would have preferred planting the tower on the Whale Rock, if the engineering could be managed.

I trust that the names I have mentioned are sufficient. The many who have spoken, but not written, on the subject, (chiefly nautical men) are "legion."

Lastly, in consequence of a strong recommendation from the Acting Port-Captain Wilson, dated November 24th, 1858, stating the casualties that occurred owing to the defective state of the lights, and recommending one to be planted on Robben Island, the Governor appointed

a commission to investigate and report. Accordingly the existing lights were examined, Robben Island was examined, and a site thereon selected.

The report, dated 5th March, 1859, recommended a light to be established on the selected site, and that no alteration should be made in the Green Point light, but with respect to the Mouille Point light a much stronger one was recommended, and until the change could be effected a certain alteration was needed without delay.

His Excellency the Governor was pleased to direct the following reply:—

Colonial Office, 18th March, 1859.

“Gentlemen,—I have the honor, by command of His Excellency the Governor, to acknowledge the receipt of your report, dated the 5th instant, upon the subject of the proposed alteration of the Mouille Point light, and the establishment of a light on Robben Island.

“His Excellency directs me to convey to you the expression of his thanks for the very valuable information contained in that communication, and to assure you that no time will be lost in carrying your suggestions into effect.—I have, &c.,

W. DE SMIDT, *Acting Col. Sec.*

On this unmistakable authority, Lieutenant Bailey, Royal Engineers, was requested to measure the elevation of the site above a beach mark, which he performed, I believe, on the 1st of April; and shortly after (I am not aware of the date) Mr. Tucker, the Colonial Civil Engineer, delivered in a plan of the tower, and £5,000 were placed on the estimates to defray the expense; but here the matter *stopped*, because the Parliament did not pass the vote, viz., did not grant the money. Perhaps from the same cause, the Mouille Point light remains, as it then was, a dangerous discredit to Table Bay.

In England Sir George Grey learned the fate of the improvements he patronized.

The *Bernicia* struck on Robben Island exactly opposite to the selected site for the intended beacon. It would be needless to mention what has happened since. The deplorable results of both are stereotyped in the hearts of every one who has a spark of humanity.

Irrespective of its use as a harbour guide, a light on Robben Island would serve as a *leader* for all vessels advancing from seaward. A vessel from the eastward bound for Table Bay in the dark, could hold on the brilliant Cape Point light (giving Slankop a wide berth) until the Island light came into view; then, by keeping the latter light on a given bearing, until the Green Point light appeared, the position of the vessel could be known at any moment by means of cross bearings; and for entering the harbour, the opposite lights would be a certain guide.

In particular conditions of the atmosphere, even in strong moonlight, it is impossible to estimate correctly the distance from the shore. Where there is sand, it is blended with a hazy horizon. If, as during North-West gales, the sea is rough, there is a haze floating

over the foam, through which the lights appear diminished with respect to brilliancy, consequently they appear further off; but a light on the opposite side corrects the judgment.

In conclusion I would remark that while we are constructing a breakwater for the security of vessels at anchor, we should not be unmindful of the security of vessels entering or leaving the bay.

Gentlemen, yours, &c.,

THOS. MACLEAR.

To the Editors of the Advertiser and Mail.

It was then agreed that good and ample reason had been shown of the advantage which a light on Robben Island would be to ships by giving them the means of knowing their position so far to windward in N.W. gales as would enable them to use due precaution in shaping their course and reducing sail for their berth, and that the fact of the breakwater enabling ships to resort to the bay on such occasions would invest the said light with additional importance.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 558.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	[Remarks, &c. Bearings Magnetic.]
25. Pulicat	Coromandel coast	13° 25' N., 80° 19' 7" E.	F.	56	7	Est. —. <i>Red. (a.)</i>
26. Gibraltar	Works of new mole.	.....	..	..	..	Est. 1857. Red to South; White to West; Green to North.
27. Soder Skar Rock	Borgo, Finland	60° 6' 7" N., 25° 25' 5" E.	Ff.	124	16	Est. 15th September, 1862.
Stenskar Is.	Beacon	50° 44' 2" N., 26° 28' E.	..	..	..	Newly completed.
29. Hango Island	Gulf Finland	59° 46' N., 22° 58' 1" E.	Ff	112	15	Est. 15th September, 1862.
29. Mouse	Thames	.....	R.	..	..	Green. Altered 1st Sept. from F. white.
Newhaven	Sussex	Eastern pier	F.	18	3	Est. 1862. Red.
30. Scarweather Sand	Bristol Channel	Light-vessel	R.	38	10	Est. 1st October, 1862. <i>Red. (b.)</i>
31. Sta Catalina de Lequetio	Spain, N. cst.	43° 23' 4" N., 2° 33' 5" W.	F.	148	10	Est. 15th November, 1862. <i>(c.)</i>
Luarca, Point Blanca	Ditto	43° 34' 5" N., 0° 32' 9" W.	F.	177	7	Est. 15th November, 1862.
32. Mazarron	Spain, S. cst.	37° 33' 3" N., 1° 17' 3" W.	F.	200	7	Est. 15th November, 1862.
Hormiga Grande	Ditto	37° 38' 5" N., 0° 38' 1" W.	F.	75	10	Est. 15th November, 1862. <i>(d.)</i>
33. Estacio	Ditto	37° 45' N., 0° 42' 6" W.	F.	62	6	Est. 15th November, 1862. <i>Red. (e.)</i>
Vinaroz	Ditto	40° 24' 3" N., 0° 28' 4" E.	F.	26	6	Est. 15th November, 1862. <i>Red.</i>

F. Fixed. Ff. Fixed and Flushing. R. Revolving. I. Intermitting. Est. Established.

(a.) 25.—The light is intended to guide vessels clear of the dangerous parts of the Pulicat Shoals, before the Madras light has been sighted, which can be seen from a distance of 18 to 25 miles. In the absence of directions in the notice for avoiding them, mariners are reminded that the Madras light should not be brought to the southward of S.S.W. $\frac{1}{4}$ W., and that when Pulicat light bears W. $\frac{1}{4}$ N., a vessel will be to the northward of the shoals.

(b.) 30.—The light-vessel lies in 14 fathoms low water springs, with Tears Point just open of Slades Bluff bearing N.W. $\frac{1}{4}$ N.; Constantinople Cottages in line with the entrance of Port Taiback N.E.b.E. easterly; Mumbles light N. $\frac{3}{4}$ E, distant 7.3 miles; West Scarweather buoy N.E.b.E., distant 1.8 miles; Nash high lighthouse S.E. $\frac{1}{4}$ E., 14.4 miles; and Helwicks light-vessel N.W. $\frac{1}{4}$ W., 18.2 miles.

In order to render the Scarweather light-vessel more readily distinguishable in the day time from that of the Helwicks, a half globe will shortly be shown above the usual globe, at the mast-head.

(c.) 31.—The tower is 43 feet high, slightly conical, of a light colour, and surmounted by a green lantern. It stands on the extremity of the bluff point, S.E. from Cape Machichaco lighthouse, and N.N.W. $\frac{1}{4}$ W., distant nearly 1 $\frac{1}{2}$ miles from the mouth of Port Lequeitio.

(d.) 32.—The passage inside the Hormigas should be approached nearer Cape Palos than the islets. A bank with 11 feet water over it lies S.W.b.W. $\frac{1}{4}$ W., distant half a mile from La Hormiga Chica; and another bank with 8 feet over it lies N.E.b.E. $\frac{1}{4}$ E., distant one mile from La Hormiga Grande.

(e.) 33.—The tower is 46 feet high, slightly conical, dark gray, surmounted by a white lantern, and rises from the centre of the keeper's dwelling. It stands on the beach called La Manga, on the East side of the narrow neck of land which separates the Mar Menor from the Mediterranean, N.b.W. $\frac{1}{4}$ W. distant 7 $\frac{1}{2}$ miles from the lighthouse on Hormiga Grande; and N.b.W. $\frac{1}{4}$ W. 1 $\frac{1}{2}$ miles from the centre of Isle Grosa.

The object of the light is to indicate the position of the anchorage at Estacio, at 4 or 5 cables S.W. of it, in 2 or 2 $\frac{1}{2}$ fathoms water, weed.

LONGITUDE OF DAMASCUS,—By *Electric Telegraph*.

The following is an abstract of observations at Beirut and Damascus in August, 1862, by Messrs. Hull and Christian, Masters R N., under the direction of Commander A. L. Mansell, of H.M.S. *Firefly*, to determine the meridian distance between Hassan Cove, Beirut, and the northern minaret, Mâdinet el-Arûs, of the Great Moske, Damascus, by means of the electric telegraph.

His Excellency Kabuli Effendi having kindly placed the telegraph at the disposal of Commander Mansell, at noon of Friday, August 29th, the following telegrams were sent and received:—

<i>Beirut Signals' Time.</i>			<i>Damascus Signals' Time.</i>		
<i>Beirut.</i>	<i>Damascus.</i>		<i>Damascus.</i>	<i>Beirut.</i>	
<i>h. m. s.</i>	<i>h. m. s.</i>		<i>h. m. s.</i>	<i>h. m. s.</i>	
9 58 40	12 31 32		12 43 20	10 10 29.2	
9 59 0	12 31 51.6		12 43 40	10 10 49.2	
9 59 20	12 32 11.6		12 44 0	10 11 9.2	
9 59 40	12 32 31.6		12 44 20	10 11 29.2	
10 0 0	12 32 51.6		12 44 40	10 11 49.2	

	<i>h. m. s.</i>		<i>h. m. s.</i>
Beirut	10 0 0	-	Damascus
Damascus	12 32 51·6		Beirut
	<hr/>		<hr/>
	2 32 51·6		2 32 50·8

Mean Comparison, or the Damascus chronometer fast on the Beirut one 2*h.* 32*m.* 51·2*s.*

These observations give 0·4*s.* as the time of transmission, this being greater than was expected, the length of the wire being only about sixty-five (nautic) miles. Other sets were taken,—the results, however, were precisely the same.

Sights for time were obtained on the same day both at Beirut and Damascus, and the following result determined:—

	<i>h. m. s.</i>
Chronometer, Arnold 2149, fast on Beirut mean time 20th August, 1862	9 28 43·74
Compared with French $\frac{210}{3083}$ at Damascus	2 32 51·20
$\frac{210}{3083}$ French fast on Beirut mean time	12 1 34·94
Do. Do. Damascus	11 58 17·58
Meridian Distance	3 17·36
Longitude of Hassan Cove, Beirut*	2 21 56·26
Longitude of Mâdinet el-Arûs, Damascus	2 25 18·62
Longitude in space	36° 18' 24" E.

Observations for latitude by stars North and South of the zenith were also made; the results of which, combined with those obtained in October, 1860, place the Mâdinet el-Arûs in latitude 33° 30' 30" N.

From the three experiments made on this occasion to determine meridian distances by means of the electric telegraph, it appears that the time of transmission is not in fair proportion to the length of the wire. Thus, from Alexandria to Suez, length of wire about 180 miles, it was 0·5*s.* From Alexandria to Malta, length of wire being about 1,350 miles, it was only 1·15*s.*; at the same time some observations on the second day (April 15th) gave 1·85*s.*; and one set on the same day, indications being faint, gave as much as 2·6*s.* Lastly, the results obtained between Beirut and Damascus, length of wire being about sixty-five miles, give 0·4*s.*

A. L. MANSELL, *Commander.*

ANCHORING IN SIMONS BAY.

It has frequently happened that vessels running into Simons Bay in strong South-Easters, and passing inside the Roman Rocks, have

* Assuming Alexandria lighthouse to be in long. 29° 51' 40" E.

dragged their anchors, or parted their cables when coming to in the anchorage.

These accidents happen from vessels being obliged to let go their anchors before they have time to round to, head to wind, and are nearly sure to occur to very long ships under the above circumstances.

Vessels running into Simons Bay before strong South-Easters, should therefore pass *outside* the Roman Rocks, which will give them time to round to before anchoring, and also to enable them to judge more accurately of the position of the ships at anchor, which it is very difficult to do when passing *inside* the Roman Rocks.

They should come to generally with both anchors, outside the ships at anchor, and even very small vessels, unless well acquainted with the place, should not attempt to go inside the ships, moorings for men-of-war being laid down all over the inner part of the bay.

Strangers should also bear in mind that these South-Easters are extremely local, so that vessels may round the Cape and run some distance into False Bay with moderate winds, while it is blowing most furiously in Simons Bay. No precaution therefore for making the ship as snug as possible before anchoring should be omitted.

The bottom is exceedingly good holding ground, and anchors never start after having once fixed themselves, although they sometimes fail to hold when first let go.

JOHN WILLIAM REED,
*Master in command of "Rifleman" and in charge of
China Sea Survey.*

July 18th 1862

Mr. Reed has also made the following suggestions for a few more soundings off the Cape of Good Hope:—

Since the light has been placed on the Cape of Good Hope vessels run boldly for it at night.

It would greatly facilitate rounding the Cape at night, if a few more soundings were taken outside the Anvil and Bellows Rocks, so that vessels could be assured by a bearing of the light, and the depth of the water, of their distances from these dangers. This is the more necessary, as vessels bound for Simons Bay are very likely (in dread of being back-strapped by a southerly or South-easterly wind,) to imagine they are further off than they really are, and hug too closely round those rocks, or, from fear of the rocks, to stand off unnecessarily far, and during the prevalence of the South-Easters, to find the wind blowing a gale by the morning.

We had to round the Cape at night under such circumstances. A scant South to South-easterly wind which threatened every moment to freshen up, and which did increase to a gale by the morning, made us feel very anxious to be able to keep away into False Bay; and we found the few soundings which appear on the chart very useful in enabling us, with a bearing of the light, to fix our position with tolerable certainty, and to round the rocks at a reasonable distance.

SYDNEY PILOT VESSELS,—*Australia.*

The Government of New South Wales has given notice that after the 13th of June, 1862, a two-masted pilot schooner will cruise off the heads of Port Jackson, both by day and night.

The vessel is marked "No. 1" on the bow and main sail, and will exhibit the usual white and red flag by day, and a bright light at the foremast head between sunset and sunrise, and a flash light in the waist every quarter of an hour.

In a few months a second vessel, marked "No. 2," will be placed on the station under the same regulations.

NORTH ENTRANCE TO MORETON BAY, MIDDLE CHANNEL,
Queensland.

The Queensland Government has given the following notice:—

Two Kerosene lights are now exhibited on the North end of Moreton Island, for the purpose of assisting vessels to pass through the Middle Channel into Moreton Bay at night.

One light is placed a little to the eastward of the Small Yellow Patch, and shows a fixed white light from about N. $\frac{1}{4}$ E. to W.b.S. This light in a line with the lighthouse leads in through the Middle Channel, in not less than 16 feet water, at low water spring tides. The line of lights passing at two cables' length northward of the inner Middle Channel buoy.

Vessels coming from the northward will be to the westward of Hutchinson Shoal and Flinders Rocks while this light is kept open.

Vessels from the southward will open the light shortly after rounding the North point of Moreton Island.

The light is visible at a distance of at least seven or eight miles.

The second light is placed on Comboyuro Point, showing red to seaward* *i.e.*, from about N.b.E. $\frac{1}{4}$ E. eastward. Vessels will be clear of the East banks while the red light is kept open. It is obscured between N.b.E. $\frac{1}{4}$ E. and N.N.W., where it again shows out as a bright white fixed light, and remains visible from thence to the W.S.W. of Comboyuro Point.

The following directions are to be observed by vessels entering at night:—

Steer with the light at Small Yellow Patch on with lighthouse, until the bright white light on Comboyuro Point opens out (the red light on Comboyuro Point having been shut out just before entering the Middle Channel). Then haul up and steer South, until the Yellow Patch light is shut out, when haul up S.b.E. $\frac{1}{4}$ E. for Yule Roads.

When the Yellow Patch light is shut out, a vessel is just abreast the spit of the bank between Freeman and the Middle Channel.

* The red light at present is rather indistinct and cannot be seen at any distance. A lighter red glass will shortly be substituted for that now in use.

Due allowance must of course be made after hauling up to the southward for the proportionate speed of the vessel and the rate of the tide, which runs N.N.E. and S.S.W. from 2 to 3 knots.

G. P. HEATH, *Lieut. R.N.*,
Port Master and Marine Surveyor.

August 7th, 1862.

BRISBANE RIVER BAR.

Buoys marking the channel to be dredged are now placed in two parallel lines 300 feet apart, running N. 13° W., and S. 13° E. The easternmost line, commencing at a distance of about two cables northward of the lightship, and passing at rather more than half a cable's length eastward of the North beacon.

Vessels, and especially steamers, crossing the bar, are hereby cautioned against running foul of these buoys, and are reminded that at present the deepest water on the bar lies to the eastward of the line in question.

G. P. HEATH, *Lieut. R.N.*,
Port Master.

August 15th, 1862.

DEEP WATER ENTRANCE OF KAIPARA HARBOUR, *New Zealand*—
Middle West Channel.

We find the following on entering this harbour in the *Shipping Gazette* of the 22nd of August:—

Report of Captain W. H. Yule, ship "City of Manchester," dated Kaipara, May 29th.

"Arrived off the heads of Kaipara from Auckland on the 12th inst., after a passage of seven days. Could not see any distinguishing or leading marks on the heads, as per chart. Brought the North Head to bear N.E. (magnetic), and steered in boldly for the Head on the same bearing, when a fine, open, broad channel presented itself to my view, bearing a N.E. course right through, carrying seven fathoms at half ebb, wind N.W. I consider Kaipara a safe place to enter in any weather. From reports in Auckland and elsewhere I expected to have had great difficulty with my ship, coupled with danger, which made me take a pilot with me from Auckland to take the ship through the Heads, which I should not have otherwise done. I would advise every shipmaster who may chance to come this way to make the land a little to the North of the Heads, say eight or ten miles. By doing so the Heads cannot be mistaken, and no difficulty or danger need be apprehended. As you sail along the land, say five miles off, and bring the North Head to bear N.E. (magnetic), steer boldly in, and a fine open channel will burst on your view, about 1½ mile wide, as near as I could judge. I cannot see why Kaipara should have such a mighty bad name, as ships of the largest tonnage can enter at any time of tide. It has the advantage of all the other ports on the West coast, which are bar harbours, whereas Kaipara has no difficulty such as that to surmount; and, should it be my lot to be on a lee shore in

this locality, I should make directly for Kaipara, having so much confidence in it myself."

Referring to our chart of the harbour of Kaipara, No. 2,614, we find the channel alluded to by Captain Yule through the "outer limit of breakers," and a note on the chart giving the bearings adopted by him, with the following information:—

"The barque *Galatea* in August, 1856, passed through a clear and strait channel to sea on this line of bearing, carrying seven fathoms at high water." The bearing is the "Middle Green Patch on the North Sand Head, N.E. $\frac{1}{2}$ N." There are however no soundings on the chart.

The information, however, is important, as confirming that of the *Galatea*, so that at high water (slack) there seems to be a fair channel with deeper water in it than in either of the others.

SIGNAL STATIONS IN THE HOOGLY.

Act No. 1 of 1862, passed by the Lieutenant-Governor of Bengal in Council. (Received the Assent of the Governor-General on the 14th April, 1862)

An Act to enforce the hoisting of signals of the names of vessels passing signal stations established on the River Hooghly, and the branches thereof.

1. The Master of every inward or outward bound vessel, on arriving within signal distance of any signal station established within the limits of the River Hooghly, or within the limits of any channel which may be made subject to the provisions of Act XXII. of 1855, shall, on the requisition of the Pilot who may be in charge, signify the name of the vessel by hoisting the number by which she is known, or by adopting such other means to this end as may be practicable and usual, and shall keep the signal flying until it be answered from the signal station.

2. Any Master who shall refuse or neglect to conform to the above rule shall be liable on conviction, for each instance of refusal or neglect, to a fine not exceeding one thousand rupees.

3. Every Pilot shall require the number of the vessel of which he is in charge to be duly signalled as provided under Section 1 of this Act. When, on a requisition from the Pilot to that effect, the Master not employed in the service of government shall refuse to hoist the number of a vessel, or to adopt such other means of making her name known as may be practicable and usual, the Pilot in charge of such vessel may, on arrival at the first place of safe anchorage, anchor, and refuse to proceed on his course until the requisition shall have been complied with.

4.—Any Pilot in charge who may be proved guilty of neglect to obey or of connivance with the Master in disobeying the provisions of this Act, shall be liable to a penalty not exceeding 500 rupees for each instance of neglect or connivance, and in addition shall be liable to dismissal from his appointment.

ANNEXATION OF PALMYRA ISLAND TO THE SANDWICH ISLANDS.

The following appears in a Sandwich Island paper:—

By a notice which was in the last *Government Gazette* it appears that Palmyra Island, located nearly 1,000 miles distant from this group, has been taken possession of and formally annexed to this kingdom.

This may all be perfectly legal and strictly in accordance with the law of nations, but our authorities, before they proceed any further, and appoint a governor, with tax collectors, judges, or other officers for their newly acquired territory, should investigate the title to the claim which is now set up. It appears that formal possession was taken of Palmyra Island, in October, 1859, for the United States Government, by Dr. G. P. Judd, the Agent of the American Guano Company, who visited the island in the brig *Josephine*. A notice to that effect was left on the island, with the American flag.

York Island was also taken possession of in the same way, and by the same parties. We believe the United States Guano Company also claim the same islands, and that a proclamation was issued to that effect from the State Department at Washington in favour of one of these claimants. It may be argued that right of possession can only hold good so long as the territory claimed is occupied on behalf of the nation claiming it. This is an open question, how far that argument can uphold or destroy the claim. The Hawaiian Government several years ago took possession of several islands to the N.W. of this group, and since the proclamation was made, there has been no pretension to occupancy, and the islands may remain untenanted for the next fifty years. Now, cannot the American, British, or French Governments lay claim to and occupy them, should either government wish to make a naval depot there? It appears to us that they would have the same right to occupy Bird Island that we have to occupy Palmyra. Captain Bent, in his letter to the Minister of the Interior, makes the following report concerning this island, and no doubt for some purposes it may be worth claiming possession; but if we are to set up a prior claim to the American Government, and are going to hold it *vi et armis*, under the motto that "might makes right," our Secretary of War had better call for a larger appropriation for his department, and order half a dozen *Monitors*. Nothing like being prepared for any emergency.

"By correct observation I found the island to be in lat. 5° 50' N., long. 161° 53' W. The island is about ten miles in length and six miles in breadth. The eastern end rises about twenty feet above the level of the sea. The landing is on the west end, and a vessel can lie in perfect safety in three fathoms water. The trees on the island are cocoanut, puhala, and a species of the koa. All kinds of vegetables will grow on the island; I planted some beans, corn, and water-melons. I erected a dwelling-house on the island, and also a curing-house for *biche de mer*. I left on the island one white man and four Hawaiians, who are engaged in curing the *biche de mer*."

WRECK CHART OF THE BRITISH ISLES FOR 1861

Compiled from the Board of Trade Register.

SHOWING ALSO THE PRESENT
LIFE BOAT STATIONS

- *Signifies Total loss by Stranding or Foundering*
- x *Partial loss by Stranding, Damaging or Leakage*
- *Sailing Vessels in Collision with Total Loss*
- ⊖ *with partial Loss.*
- ⊕ *Collision of Sailing with Steam Vessels with Total Loss*
- ⊙ *partial Loss*
- ⊚ *Steam Vessels in Collision with partial Loss*
- ⊛ *Doitto Total Loss*
- ⊜ *Represents a Life Boat.*

Scale of Nautic Miles

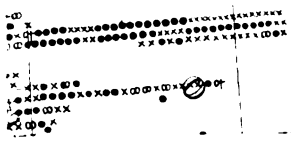
10 0 50 100

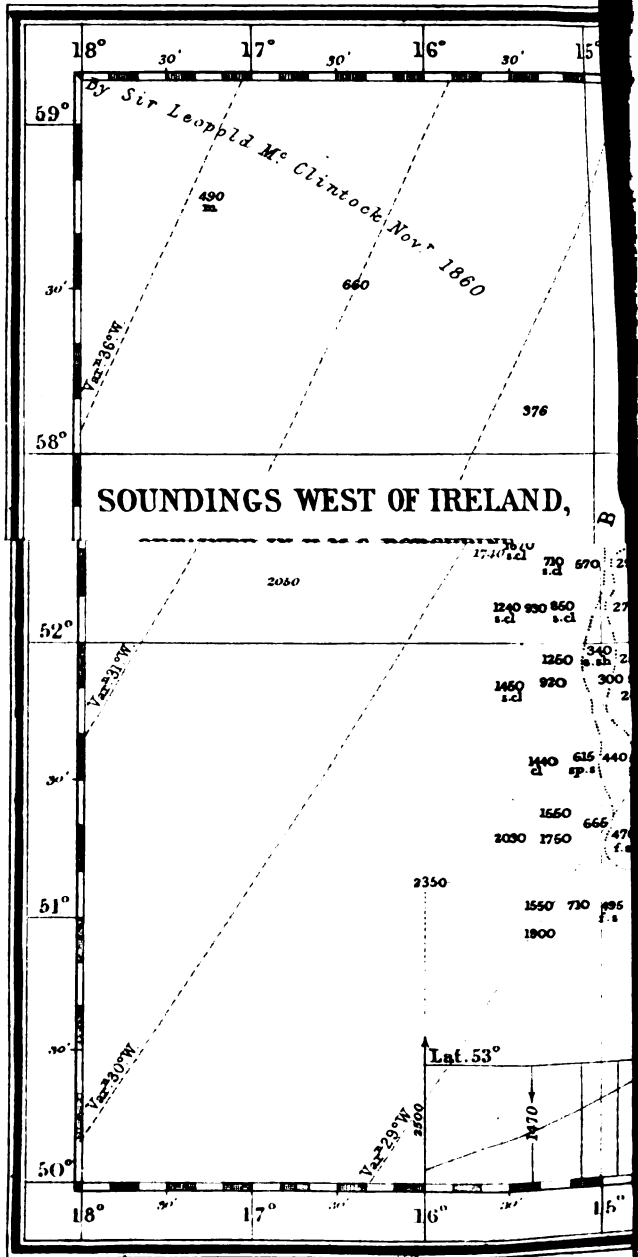
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THE
NAUTICAL MAGAZINE

AND

Naval Chronicle.

DECEMBER, 1862.

THE RELATIVE STRENGTH OF THE TRADE-WINDS IN THE ATLANTIC.—*Ry Lieutenant J. C. Brito de Capello, of the Portuguese Royal Navy.*

The last edition of Maury's *Sailing Directions* and the important publications of the Meteorological Institute of Utrecht have thrown much light on the Trade winds of the Atlantic. It is proposed in this essay to show their relative intensity from the routes of American ships, published in the third of Maury's *Monographs*, also from those of Dutch ships in the Utrecht papers, and also from some Portuguese ships. The strength of the wind is inferred from the rate of sailing per hour of all the ships during the two epochs, when the N.E. and S.E. Trade winds attain their extreme range; that is in the months of February and March, and August and September.

It is true that generally speaking the rate obtained at the two periods selected may not be critically accurate in respect of the strength of the wind if we take two consecutive days. This rate will depend on the variableness of the wind and the different boards the ships are obliged to make. Nevertheless, in the central districts of the Trades, where the direction of the wind is nearly constant and simultaneously favourable to the route, the rate obtained at the two periods will be a sufficient measure of the strength of the wind, setting aside the effect of currents, &c. In the zones of calms and light airs, for instance, the distance sailed by the ship is much less than that gone over in the course of twenty-four hours. Nevertheless, we may here also obtain the strength of the wind from hourly progress shown by the journals themselves without the result obtained from two epochs.

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In all cases the direction of the wind as respects the course must be considered. It becomes necessary to reduce all these to one single condition: for instance, to the most favourable point of sailing for all ships, that is with the wind free, say from nine to ten points. These corrections I have effected by means of coefficients, thus approximating to a correct rate. The value of these coefficients is calculated on the hypothesis that the rate of a ship is very nearly 0·7 of the rate she would attain under the same condition of wind when going free; that the rate with the wind aft, and also when within a point of it, is 0·8 of that when going free; that with the wind at twelve or fourteen points it is 0·9 of that going free.

Such a proceeding is undoubtedly empirical: but the mean results appear to me a very close approximation to the truth, considering the nature of the inquiry. Again, as the various regions in the Atlantic at the two periods are represented by the deduced rate of similar routes from the same corrections, and from the same nations, the relative results are not sensibly altered, and are, in fact, the relative numbers belonging to the two different epochs which are under consideration.

We have for these two epochs 1,548 tracks,—796 Dutch, 662 American, and 90 Portuguese.

In order to find the mean hourly rate of sailing for each zone of 5° of latitude throughout the different longitudes, we have added together the numbers which represent the tracks every day in the same zones of American and Dutch ships following similar routes. Having taken their mean and found the hourly rate of sailing, we have applied to this last the coefficients to reduce them to the rate with the wind free.

Where the American and Dutch routes differ in the courses sailed by each, their coefficients differ also, and these have been first applied to obtain the figures for each zone, and the average calculated afterwards.

The N.E. Trade.

For the N.E. Trade at the two epochs under consideration we have 803 routes; viz., 424 Dutch and 379 American.

The region of the N.E. Trade is divided into four portions. 1. The eastern and most frequented by ships going South and passing to the East of the Cape Verds. 2. The mean route of ships going South, passing West of those islands. 3. The central part of routes to the southward for ships from Europe and America. 4. The part containing the westernmost American home return routes.

February and March.

For the first of the above portions we have twenty tracks,—fifteen Dutch and five Americans. We apply to the hourly rates the coefficient 0·9 (as divisor) to correct them for the wind free, this being generally twelve to fourteen points. The mean rate thus found from the parallel of 30° N. to 5° N. is 6·1 miles.

For the second portion we have seventy-one tracks,—fifty-four Dutch and seventeen Americans. The coefficient 0·9 is used as far as the parallel of 15° N. for the same reason. The mean rate between the same parallels of 5° and 30° N. is 6·3 miles.

From the combination of 165 tracks of Dutch ships and 97 Americans, we obtain the mean result of the central portion. Here we have used the divisor 0·8 for all the Dutch tracks, the navigation being generally with the wind at seven points nearly. The American numbers are not altered. The mean rate between the parallels of 5° N. and 25° N. is 6·5 miles.

Finally, in the westernmost portion the strength of the wind is deduced from forty-four tracks of American ships, navigating with the wind free, from 32° to 33° West of Greenwich from the equator to 25° N. Here there are no corrections, and the mean rate is 6·7 miles.

The mean rate in the whole region of the Trades during the months of February and March is 6·4 miles free.

August and September.

During the months of August and September the N.E. Trade is weakest, and is in its most northern position of the whole year. Notwithstanding this, the mean strength of it on the African side appears to be greater than that at the epoch of February and March.

For the two months we extend our inquiry only as far as the parallel of 15° N. on the eastern side, and as far as the parallel of 10° N. on the western side. To the South of these parallels is the zone of calms and the S.W. monsoon.

This region is again divided into the same four portions, the only difference consisting in the central portions, which are redivided, the average rate of Dutch ships and American being more apart than in the months of February and March.

In the first portion (East of the Cape Verd Isles) the average wind blows a little stronger than at the epoch already mentioned. The strength of the wind is deduced from fourteen tracks of the Dutch and four Americans. The average rate between the parallels of 15° and 35° N. is 6·3,—0·2 miles superior to the corresponding one of February and March. The divisor 0·9 has been applied, the direction of the wind being nearly the same as at the other epoch.

In the tracks West of the Cape Verd Islands the average track of 130 Dutch and 25 American ships is over 6·5 miles: the divisor is again the same 0·9, and the rate is 0·2, exceeding the same in February and March.

In the central and western portion a great difference in the intensity of the wind is observed in comparison with that of February and March. Sixty-nine Dutch ships homeward give the mean of 5·6 miles in the three sections where the N.E. Trade prevails, having the divisor 0·8 applied, the coefficient of the wind at seven points.

Some degrees further to the West, 129 American ships going southward give the mean of 5·1 miles, with the coefficient of 0·8 in

the first section, 0·9 in the second; the third section is not altered, the wind being free.

The tracks of thirty-five American ships from the southward for their own ports leave no doubt of the relative weakness of the wind in parts more and more to the westward. In these parts the further West the wind is the more free. The mean rate between the parallels of 10° and 30° N. is about 4·8 miles.

The mean rate, running free, in the whole region of the N.E. Trade during August and September is then 5·7 miles, 0·7 less than in February and March.

Very great differences may be observed during the two epochs in the central and western regions. While in February and March the rates in the two central and western portions exceed respectively 0·1 and 0·3 miles the general mean rate in the months of August and September, we find the contrary,—the two central and western ones are less than the mean general rate of 0·4 and 0·9 respectively.

This last result is well worthy of observation, because it is contrary to the general belief that the wind gains in strength more and more throughout the year in proportion as the distance from the African coast is increased. (See the comparative charts.)

The S.E. Trade.

The strength of the S.E. Trade, properly called, is represented at the two adopted epochs from 655 ships,—417 Dutch and 238 American. For the region of the S.W. monsoon in the Gulf of Guinea and the sea along the African coast to the parallel of 15° S. we have the average rate of 90 Portuguese ships. In these last tracks, the wind being generally foul, and under the influence of the current, the hourly rates are deduced direct from the journals.

We have divided the whole extent of ocean from the zone of calms as far as the southern limit of the S.E. Trade into three regions:—

1. The northernmost and easternmost, or simply the easternmost, where the S.W. monsoon almost entirely prevails, and the S.W. wind of the gulf and near the coasts, is limited by the African shore and the line *BAD* (see plates). Herein the strength of the wind, as above-mentioned, is obtained from Portuguese ships.

2. The region we call western is comprised between the coast of Brazil and the lines *BAC*. The strength of the wind here is obtained from Dutch and American ships going southward.

3. The remaining region, which may be called central and southward, or simply central, is bounded by the southern limit of the Trade, and the lines *CAD*. Here the strength of the wind is obtained from Dutch and American ships coming from the East Indies.

The limits of these three regions expand and contract according to the seasons.

August and September.

In this space the S.E. Trade extends to the parallels of 10° to 15° N., and changing its first direction, and converting itself even into a

S.W. monsoon to the northward of the equator, from 30° to 35° W. of Greenwich near the African coast.

Let us commence with the eastern part. We have here the mean hourly rate of progress of fifty-one Portuguese ships, to which we have applied the above coefficients to bring them to our condition. The results are shown by the figures in each of the five compartments along the coast. It is in the course of these two months that the S.W. winds of the gulf are the strongest of the whole year.

It must nevertheless be observed that the ships from which we have obtained our results are not generally good sailers, being old; but as some compensation for this, the rates obtained were more correct, being collated from journals on board and from day to day.

The strength of the wind in the central region is represented in these two months by 124 tracks with the wind aft,—eighty-five Dutch and thirty-nine Americans.

The mean track of the two groups is from 3° or 5° E. of Greenwich, in 25° S., to the equator, in 33° or 21° W. of Greenwich. The tracks spread more and more in proportion as they approach the equator. The mean rate of the Dutch between 25° S. and the equator is 5.7 miles with the wind aft, or 7.1 free. In the westernmost part the American ships appear to have the wind strongest, although the difference in the figures may be attributed to the superiority in sailing of these ships, or perhaps to some difference in their having the wind in some sections, the wind drawing more to starboard. These tracks continue only to 5° S. The other sections belong to the western division. The mean rate of sailing of the American ships is nearly 6.2 miles,—perhaps 7.7 free.

In the western region South of the equator we have for the two months 232 ships,—146 Dutch and 86 Americans. These are divided into two groups, following the example of Messrs. Maury and Andrew. The eastern one is formed of 162 ships,—123 Dutch, and 39 Americans. The mean track of these crosses the equator between 21° and 22° W. and in 20° S. is in 29° W. The western group includes 70 ships,—47 American and 29 Dutch; the mean track of which crosses the equator between 27° and 28° W., and the parallel of 20° S. in 33° W. The routes of both are nearly the same, and have the correction of seven points. The mean rate of the eastern is 6.0 miles, or 7.5 corrected; and that of the seventy ships to the westward 5.9 miles or 7.4 miles corrected. The difference of 0.1 mile which the western one shows arises perhaps from some of their boards made to double Cape St. Roque and Cape St. Augustine. It is properly in the second section, opposite the most salient part of the coast of Brazil, that the rate of the western ships is less than that of the eastern. (See the charts.)

To the northward of the equator we have only two average northerly routes as far as the parallel of 5° N. The westernmost is deduced from thirty-nine ships (American); the average rate in this solitary section is 6.0 miles, or 7.5 miles corrected. The eastern one comprises eighty-five Dutch tracks, giving a mean of 5.0 miles, or

6.2 miles corrected. In the second section, in consequence of the uncertainty of the lay, the resulting mean is rejected.

The mean corrected hourly rate of the whole western region, reckoning the American tracks to the northward, is 7.3 miles.

February and March.

The divisions are the same as for the former epoch. The three regions determined are in the same relative positions, excepting that they are a little moved to the southward. (See chart.)

The western and central regions both reach the equator, and the eastern one as far as the parallel of 5° N. on the meridian of 12° W. The southern limits are 5° further South than those of August and September.

The hourly rates are found from similar tracks and from ships of the same nations, and consequently the figures undergo the same modifications; that is to say, the same coefficients are applied in similar sections, and hence results are obtained perfectly fit for comparison between the same epochs.

The strength of the wind in the eastern region is represented by the mean hourly rate of thirty-nine Portuguese ships. The strength of the wind in the gulf is considerably lessened, whilst that about the coast to the South of the equator is, on the contrary, augmented.

The mean strength of it in the whole eastern region corresponds to the average rate, corrected, of 4.9 miles.

In the central region we have the same Dutch and American tracks. The average rate of 110 Dutch ships from 30° S. to the equator is 5.4 miles, or 6.8 corrected. The difference between the rates of these two sets in these two months is 0.7 miles, 0.1 mile more than that of August and September.

In the western region there are the same number of Dutch and American tracks.

The easternmost, composed of fifty-six Dutch ships and fifteen Americans, gives the average rate of 5.7 miles, or 7.1 scarcely, corrected, from the equator to 20° S.

The tracks further West of fifty-one American and twenty Dutch ships give the average rate of 5.8 or 7.2 miles corrected. It may also be observed that the western rates are inferior to the eastern only off Capes St. Roque and St. Augustine. This anomaly may be accounted for in the same manner as for the former epoch.

The strength of the wind for the whole western region is represented by the corrected average of 7.0 miles, taking into account the value of 6.0 miles rate of the first section of American tracks to the northward.

The difference in the strength of the wind in the whole region of the S.W. monsoon in the S.E. Trades for the two epochs, is scarcely 0.1 mile in the average corrected rates. (See plates).

By not taking the S.W. monsoon into the calculation we can compare the strength of the S.E. Trade, properly so called, for the two epochs in consideration. In the months of August and September

the average rate of the S.E. Trade, proper, is equal to 7.1 miles, corrected; while in the months of February and March it is 6.9 miles, less by 0.2 mile.

This slight difference in the strength of the S.E. Trade, although the region in which it prevails is subject to great changes from one epoch to the other, appears to be well marked.

Whatever may be the amount of confidence in the coefficients employed in this investigation, as they enter into the identical tracks of the ships of the same nation, it is certain that the relative value of the corrected rates obtained cannot be materially altered, and consequently the same may be said of the relative force of the wind.

The N.E. Trade undergoes in the two epochs considerable change of strength. The difference between the strength of it at the two epochs amounts to 0.7 mile in the wind corresponding to 5.7 corrected rate. (See comparative plates.)

With respect to the two Trades, the greatest difference between their intensities is observed at the epochs of August and September,—that is when the S.E. Trade appears to attain its greatest strength, and the N.E. has its least.

Again, as to the S.E. Trade proper, this difference amounts in August and September to 1.4 miles; that is to say, the strength of the S.E. Trade surpasses that of the N.E. by an amount capable of adding 1.4 miles to the corrected rate of 5.7 miles.

If, at this same epoch, we compare the N.E. Trade with the S.E. Trade along with the S.W. monsoon, the difference is only 0.7 mile. (See the comparative charts.)

During the months of February and March there is an excess in the N.E. Trade over its antagonist, the S.E. with its S.W. monsoon of the gulf; but there results, on the contrary, an excess of 0.5 mile in the rate of the N.E. Trade when comparing it only with the S.E. proper.

The charts show the mean direction of the winds and their deviations, according to the Dutch, of the Meteorological Institute of Utrecht, Maury's wind charts, Admiral Cubaune's and the tracks of the Portuguese ships in the Gulf of Guinea, and they show those regions where the wind, on an average, blows harder, or with an intensity beyond a certain number of miles an hour, corrected.

The limits of these different districts are found by constructing the curves of progress for each set of routes; on these are shown sections of rates determined (6.5, 7.0, 7.5 miles). These sections transferred to their places give the parabolic and other figures shown in the charts.

The portion of the N.E. Trade where the wind is over 6.5 miles, corrected, assumes a figure, formed in the months of August and September, showing the greatest intensity is between the meridians of 20° and 25° W.

The central lines bear figures indicating the zones where the wind blows the strongest in the whole extent of the regions under consideration. The lines inclining to the equator include several de-

grees, and even change their direction from one epoch to the other. The extent of these lines is greater in the N.E. than the S.E. Trade.

Comparative Tables of the Strength of the N.E. Trade during the Months of February and March with those of August and September.

N.E. Trade, February and March.

Regions.		West.	Central.	West of Cape Verds.	East of Cape Verds.
Number of Ships.		American 44	Americ. 105 Dutch.. 97	Dutch .. 54 American 17	Dutch .. 15 American 5
			Total 202	Total 71	Total 20
Number of Miles, Corrected.	Lat. 25°	...	...	5·7	6·9
		5·2	5·1	6·8	6·2
	20°	6·6	6·7	7·0	6·7
		7·7	7·4	6·8	6·6
	10°	8·3	6·7	5·7	4·3
		5·9	...	...	...
	0°	6·7	6·5	6·3	6·1
Average ..		6·7	6·5	6·3	6·1
General Average					6·4

N.E. Trade, August and September.

Regions.		Western.	Central.		West of Cape Verds.	East of Cape Verds.
Number of Ships.		American 35	Amer. 129	Dutch 67	Dutch . 180 Americ. 25	American 4 Dutch .. 14
					155	18
Number of Miles, Corrected.	Lat. 30°	...	...	...	5·4	6·1
		3·8	4·4	4·1	6·8	6·2
	25°	4·4	5·0	6·2	7·4	6·7
		6·0	6·0	6·4	6·5	6·2
	15°	4·9	...	...	...	...
		10°	4·8	5·1	5·6	6·5	6·3
Average ..		4·8	5·1	5·6	6·5	6·3
General Average					5·7	

Comparative Table of the Strength of the S.E. Trade and S.W. Monsoon in the Months of August and September and February and March.

<i>Regions, &c.</i>		<i>August and Sept. Correctd. Rates.</i>	<i>February and Mar. Correctd. Rates.</i>
Eastern and Northern Regions.	S.W. monsoon North of equator	5·4	...
	S.W. monsoon of Gulf of Guinea	6·0	4·7
	S.W. mons. of coasts of Angola, Congo, &c.	4·5	4·8
	Entire region of B A D	5·3	4·9
Central and Southern Regions.	Dutch ships' tracks	7·1	6·8
	American ships' tracks	7·7	7·5
	Entire central region	7·4	7·1
Western Region.	Eastern side	7·3	7·1
	Western side	7·6	7·0
	Entire western region	7·5	7·0
General Averages		6·4	6·3

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

(Continued from page 577.)

There was a young moon, which shed her pale silvery light over the landscape, casting a deeper gloom over objects in shade, but the path the goal of our ambition, with its flags, stood out in bold relief against the bright clear sky. Our road descended into a deep gully, having a thick wood on either hand. This we knew had been our enemy's lurking place all day, and it had an ugly look. *Facilis descensus Avernii*, I thought to myself, but the die was cast, and cautioning the men to preserve the strictest silence, we descended into the ravine, the tramp, tramp of the feet being the only sounds audible. Fortunately there was no enemy near enough to hear them, or we should not have got off so easily. The ascent on the other side was very steep, and we halted once to take breath, and otherwise prepare for the assault.

Moving on again as silently as possible, the Maories were seen standing in groups in the road above, evidently unconscious of our

proximity. About thirty yards from the pah, on the left hand side of the road, we came to a high furze hedge surrounding a house and garden; from this enclosure the enemy, who had by this time discovered us, opened fire, and two men fell, shot through the legs; three cheers were instantly given, a volley fired, and the whole party rushed at the pah, entering simultaneously with some of the natives, who evidently were not prepared for so sudden a movement. Panic stricken they retreated to their trenches, and not having time to reload, cut at the men with their tomahawks, inflicting very severe wounds on the legs. This was the expiring effort. The men discharged their muskets as fast as they could into the trenches, and the officers their revolvers, raking them fore and aft, so that it was almost impossible any one could escape alive. Amongst those who were made certain of, was a man who had deserted from the 58th regiment, a notorious scoundrel, whom the Government had been anxious to get hold of. He was shot by Wm. Clarke, a supernumerary marine, belonging to the *Iris*, who came to me immediately and said, "I've killed a white man, sir." I replied, "Nonsense, there are no white men here." But it turned out afterwards to be true. * * *

When all resistance had ceased, and I had time to look round, and receive Dr. Patrick's report that there were only four men wounded, I could scarcely believe our good fortune. To find myself in possession of a place, which although not completed, a few hours' delay would have rendered impracticable without the aid of artillery, and with so few casualties, seemed marvellous. But there was no time for musing upon what was at all events a reality. I had to decide, and quickly too, upon what was to be done next, for during our short halt upon the hill, while closing up for the assault, Mr. Hyde arrived almost breathless, with a message from Lieut. Col. Murray, to the effect that he was returning to the town, and recommended me to do the same; so that I knew I was totally unsupported, and if the natives who had taken to flight, although they far outnumbered us, had plucked up courage enough to come back, without speedy assistance I might have found myself caught in a trap, from which it would be exceedingly difficult to escape, without at all events serious loss. Then there was the rocket party left in the road, with the tube and all the gear exposed to the risk of being cut off; the wounded also, unable to move without assistance. To crown all, the men were by this time pretty well done up, having been without food since noon, and full five miles from the ship, which was left with only the boys to look after her, in one of the most exposed anchorages in the world.

Against these considerations, which passed rapidly in review before me, was to be weighed the chance only of assistance being sent by the Colonel commanding the forces, when he received intelligence of my success, (supposing my messenger arrived safe, which seemed more than doubtful). I therefore determined most reluctantly, but the event proved with sound discretion, to leave the pah at once and without attempting to loot it, which would have occasioned the disorganization of my brave little band, to return to the Omata blockhouse.

Reforming then my party, who flushed with success were very unwilling to fall in, and with an intense feeling of regret at a step which rendered our victory fruitless, I cast a last look at the slain Maorics, and carrying our wounded, we descended the hill, crossed the ravine unmolested, picked up the rocket tube, and got back safe to this advanced post, where the commandant, Captain Burton, promptly complied with a demand for some refreshment for my now thoroughly exhausted men. * * * Spring carts arrived in due time for the wounded, but I looked in vain for any evidence that advantage was going to be taken of our success. It was impossible to wait here longer, and at nine o'clock I started to return on board. Before we had gone far I met Mr. Parris, who very kindly lent me his horse, and the friendly Maories, who had been armed and were patrolling the road, gathered together, and cheered vociferously as we passed by.

The town was in a state of great excitement on our arrival, every one had turned out wild with joy, and when my men appeared with the captured flags flying, it seemed to know no bounds. * * * The Governor's reception of me was also most gratifying, our unlooked for success, his Excellency said, had been the means of saving us from what would have been otherwise considered a disgraceful defeat by the natives, and he could never thank me sufficiently. * * * Having seen the wounded men placed in the military hospital, the surf boats were launched, and we were all on board again by midnight.

March 29th.—At 8h. a.m., I dressed the mast heads with the trophies captured yesterday; one flag of white bunting is very handsome, it is divided longitudinally into three sections, the centre contains representations in blue of Mounts Egmont and Tongariro, on the upper section is a bloody heart, and on the lower the initials M.N. in large Roman capitals, supposed to mean Maori Nation. The second flag in size has a large gold star in it. The third is a long red fighting pendant. Reliable information of the whole numbers opposed to us has been obtained to-day. The two Hapus or tribes, "Nga Mahanga and Patukai," mustered 130 men, four or five other Hapus under Hori Kingi, the head of all the Taranakis, had together 200, and the Ngati-ruanuis 130, altogether 460 fighting men. Their loss is not known yet, and in all probability will not be allowed to transpire, but the Governor tells me that it is certain ten of the principal chiefs have fallen. Our loss amounts to fifteen killed and wounded.

March 30th.—At 8 o'clock this morning, Mr. Watson, the harbour master, came on board with Captain Brown, of the volunteer cavalry, who was the bearer of a requisition from the Governor for me to proceed off the "Warea Pah," about twenty-two miles South of Taranaki, whither the natives are supposed to have retreated after their defeat, and if possible to destroy it. Accordingly soon after 4h. the ship was under way, Mr. Watson remaining on board to pilot her. There was a fresh breeze from the southward, and it was past eight o'clock before we stopped off the place. I expected to find a heavy ground swell after the late bad weather, but certainly was not prepared to see such

a tremendous surf as was breaking off it, and for a considerable distance out.

The pah or paha, for there appeared to be two, one with a tall flag staff, which Captain Brown informed me was the war pah, are situated close to the beach. A small stream flows into the sea hard by, but there did not appear to be water enough to float a canoe in it. As for getting a boat ashore it would have been the height of imprudence to make the attempt. Even if one of the Taranaki surf boats succeeded in getting safe through the breakers, she would inevitably have had her bottom knocked to pieces by the stones on the beach of this literally iron bound coast.

While occupied reconnoitring as close in as possible to the breakers, the natives, evidently divining our intentions, came out and discharged their muskets at the ship. This was tantalizing, although as a mark of defiance it was only ludicrous: no flag was hoisted on the staff. I soon found it would be impossible to shell the place under way, so notwithstanding the bottom was everywhere foul, the anchor was let go in 9 fathoms, about three quarters of a mile from the beach, and 2,000 yards from the paha, more or less.

A few minutes after nine the first shot was fired from the sixty-eight pounder, and it dropped close to the target. A twenty-four pounder rocket followed, but it fell short. The second however went right into the pah, and from the cloud of smoke that arose directly, I thought the place had been set on fire. Shell after shell from both guns and tubes followed, establishing free ventilation, and providing chimnies at the smallest possible expence to the rebel proprietors. The broadside guns were directed to fire at the flag staff, and I offered a handsome reward to the captain of the gun who should succeed in knocking it over. In this however they all failed, owing to the heavy swell, although I am bound to say excellent practice was made.

The natives had all disappeared after the first shot was fired, and finding the rockets were unsuccessful in creating a blaze, as the ship's position was very critical, the sea breaking occasionally outside her, I got the anchor up with some difficulty at 11h. 30m., and steamed towards another pah, which had a flag hoisted when we passed by it in the morning. The inhabitants had however very wisely hauled it down, and Mokatunu looked such a miserable place, not worth throwing away our shell upon, that I returned to Taranaki, passing between the two outer Sugar-loaves.

The *Airedale* s.s. anchored just before us, with more reinforcements for Col. Gold, there was a great crowd assembled on the beach to see them land, and when I came ashore to report the day's proceedings to the Governor, a hearty cheer greeted me. The Taranaki beach—

“Paled in the flood with men, with wives, with boys,
Whose shouts and claps out-voiced the deep-mouth sea.”

King Henry 5th.

His Excellency received me most cordially, and expressed his intention to return to Auckland in the *Niger* to-morrow, his presence,

here being no longer needed, if indeed it were considered desirable for him to remain by the Taranaki people, which after the contemptuous manner all his suggestions have been treated by ——— I should think it would not! It seems incredible that in spite of all His Excellency's remonstrances, six and thirty hours should have been allowed to elapse before a force was sent out, only to visit, not to occupy the pah I captured; thus throwing away all the advantage gained, and allowing the natives time to remove their dead, an opportunity of which they were not slow to avail themselves.

It is some satisfaction however for me to reflect, that my advance, made entirely on my own responsibility, was the means under Providence of enabling a party of volunteers to escape, who were shut up in a house, their ammunition expended, and surrounded by natives, who would inevitably have succeeded in cutting them off. The complete defeat of the rebels enabled them however to return to town safely, as well as the Rev. Mr. Brown and his family, about whose safety the whole community had been most anxious.

Saturday, March 31st.—A large funeral party had been told off to-day to follow poor Millard's (marine) remains to the grave, (he was killed at Waireka on Wednesday,) but the wind freshened, and the weather looked so threatening that it was impossible to land, and I was on the point of standing out to sea, when the wind shifted to South-West, and the Governor, who had quite given up all idea of leaving to-day, came off. At 6h. 30m. p.m. we got away under steam and sail, and the following evening at 6h. p.m., anchored about two miles below Onehunga.

During the passage, the Governor made a proposal to me that requires very serious consideration, viz., whether I would lay my ship up, either here or at Nelson, and take the field with the whole of the ship's company at Taranaki. Anxious as I am to meet His Excellency's wishes, I cannot but hesitate before placing myself under Colonel Gold, whose policy, a purely defensive one, differs widely from that I should have adopted; indeed, I feel convinced, that had my advice been listened to, this rebellion, which now bids fair to spread throughout the colony, would have been stamped out at once.

Tuesday, April 3rd.—At noon to-day, I presented the Governor as Her Majesty's representative, with the largest of the flags captured in the pah, the first that has been ever taken from the Maories in a fair hand to hand encounter, and the event seems to have made a sensation. A great concourse of people, nearly the whole population of Auckland, assembled on the lawn, in front of Government House, to witness the spectacle. The volunteer rifles turned out, headed by the band of the 65th regiment. As all hands were employed coaling, the ship's company were represented by my coxswain, whose gallantry had been most conspicuous during the assault, and six Auckland boys, who brought the flag over from Onehunga, and whose selection for such a service must have given great satisfaction to the Auckland people. A good account of the proceedings appeared in the *New Zealander*, which I append as a memento worth keeping.

“ We stated in our extra of Monday, that the rebel banner, captured in the pah of Waireka, by Captain Cracroft and his gallant ‘Nigers,’ was to be presented to His Excellency the Governor. That presentation took place yesterday morning; and, in order that every possible honour might accompany the interesting ceremony, the three companies of Auckland Volunteer Rifles, having paraded in the Albert Barrack Square at 10 a.m., marched from thence in about half an hour afterwards, preceded by the band of the 65th regiment, playing those heart-stirring strains—the ‘Red, White, and Blue’—and accompanied and followed by a large concourse of the citizens, as well as of natives resident in the town and neighbourhood.

“ Having arrived in front of Government House, the rifles were drawn up in line, presenting a most soldierly and satisfactory appearance. The band was then marched off, in order to play in the tars of the *Niger*, and the rebel flag which they had so nobly won. The flag floated from a very handsome standard prepared for the occasion, and was of itself an object of no little interest. Its devices were a representation of Mount Egmont and the Sugar Loaves (not of Tongariro and Ruapehu, as erroneously stated in the first account of the Taranaki papers); a bloody heart on its upper section, and the initials ‘M.N.’ (Maori Nation) on the lower. The banner altogether is a handsome one, but evidently from the head piece, if not the handy work, of a European.

“ Having arrived in front of the principal entrance to Government House, the ‘Nigers’ halted and grounded the flag. Captain Cracroft, of the *Niger*, and Commander Campion, Lieut. O’Grady, Mr. Fawckner, and other officers of the *Elk*, together with Colonel Mould and the few Military and Commissariat Officers remaining in garrison, His Excellency and suite, advanced to the front of the esplanade to meet them, when Captain Cracroft, who was greeted with the most enthusiastic cheers, spoke to the following effect:—

“ ‘I have the honour to present to your excellency, as the representative of her Majesty, on the part of the ship’s company of the *Niger*, a flag taken from the Maori pah captured on Wednesday last, and hope it may be accepted as a token of their respect—(great cheering). It would have been more satisfactory to me if the gallant band who were engaged in this sharp and decisive affair and won this trophy could have accompanied it; but they are too much occupied in preparing the ship for sea. I hope, however, your Excellency will allow these boys to represent them. They are Auckland boys, [six in number] and I trust the Auckland men round me, will have reason, some day, to be proud of them; that, should the opportunity offer, they may emulate the gallant deeds their shipmates have performed, and also distinguish themselves in the defence of their Queen and Country.’

“ This speech was received with loud and prolonged cheers; after which His Excellency, who was greeted in the most cordial manner, replied:—

“ ‘My Friends,—I accept the trophy you offer me with pleasure,

and rejoice in the opportunity to convey to your gallant Captain and noble crew, the thanks of the Government and people of this colony, for the daring service they performed in capturing this flag—storming the pah in which it was hoisted (an emblem of rebellion), and inflicting a severe and merited punishment on those who invaded our territory and murdered our unarmed and helpless settlers.

“I shall have an inscription placed on the staff commemorating the manner in which the flag was captured and by whom it was done. Wherever I go I shall display it with pride and pleasure:—pride, that you should have conferred so flattering a mark of goodwill upon me; and pleasure, because I shall have in it a lasting memorial of your gallantry and my happy relations with you.”

“*Our Present Attitude.*—The past has been a week of unusual excitement in our ordinarily tranquil city. War has been the standard topic of the day; and so wild and incessant have been the alarms that, without much metaphor Auckland might almost have been considered to be in a state of siege. Let us give a sketch of the week’s events:—

“On Monday last, we had the pleasure to present our readers with a graphic and authentic narrative of the signal and sanguinary defeat of the insurgent natives, by a handful of the seamen and marines of H.M. ship *Niger*, under the able and fearless leading of Captain Cracroft. No such action has ever yet been fought since the Maori ventured to set himself in array and measure his strength with that of England’s sons. It was sharp, swift, and decided; fought under very discouraging circumstances, the advance taking place at the moment that retreat was recommended. Had that advice been adopted, the confidence of the Maori would have been a thousand fold increased. Happily it was rejected, and though the attack was unsupported, such was the conduct displayed, such the impetuosity of the onset, that whenever a second edition of ‘The Story of New Zealand’ may appear, the deeds of Captain Cracroft and his dauntless ‘Nigers’ will not only constitute the brightest of its incidents, but find a glorious and imperishable record amidst those acts of heroic daring for which the British Navy has ever been pre-eminently distinguished. At Taranaki, this victory of the British tars produced an instantaneous and magical effect; whilst here, in Auckland, it raised public enthusiasm to fever heat, imparting confidence where doubt, if not mistrust, prevailed.

“On Tuesday, as will be seen in our other pages, the rebel standard taken from the captured pah, was presented in due form, by the victor to His Excellency the Governor, and amidst the greatest enthusiasm of the assembled throng—Captain Cracroft, in the most complimentary manner to Auckland, selecting six young boys of Auckland birth, who had entered the *Niger* here, to represent their brave ship-mates.”

Thursday, April 5th.—We have succeeded in getting fifty tons of English coal across from Auckland, but the price, seventy shillings delivered alongside, is enormous. However the ship must be kept

efficient, and her services are urgently required, for it is reported that the Waikatoes a large and influential tribe in this neighbourhood, who can muster 5,000 fighting men, have given unmistakable signs of hostility, and such is the general state of alarm, that even those who are supposed to be the best informed on native affairs, imagine that a crisis is at hand, while the outsettlers in the vicinity of Drury, Mauku, and the Waiuku, are sending their cattle in preparatory to seeking a refuge themselves near the capital. The consequence of all this is, that the Governor, instead of renewing his request to me to land at Taranaki, now wishes me to go and withdraw all my men who are already ashore there, and return here as fast as possible to protect Auckland on this side.

Accordingly this morning, at 7 o'clock, I got away once more, taking another cargo of provisions and stores, and military passengers, and a fine young man Harris Ford, son of one of the settlers who had been so cruelly murdered by the natives at Omata, on the 27th of March. We had a good bar, and steaming all the way with scarcely any help from the sails, anchored about half-past seven on the morning of Good Friday, April 6th.

Affairs here seem to be going from bad to worse, confusion worse confounded, a miniature Balaclava! There seems to be only one object steadily kept in view, and that is to avoid the natives, who are becoming more daring in consequence of our Fabian policy. Scarcely a day passes that some unfortunate settler does not hear of the destruction of his property, and no one is permitted to venture without an escort beyond the range of Marsland Hill, and the two stockades at Omata and Bellblock; while the natives roam over the country committing every kind of depredation, destroying the homesteads, slaughtering the cattle, filling the wells up with the carcasses of dead sheep and pigs, and similar pastimes. How long is this to last?

Colonel Gold did not appear at all anxious to detain my men, so no obstacles were thrown in the way of their departure. Fortunately also the steamer *Tasmanian Maid*, which has been diverted from her legitimate occupation at Nelson, and chartered by the Government to keep up the communication with the Waitara, a service for which she is well qualified, owing to her light draught of water, arrived in the forenoon, and I got the party from her, who had been doing duty on board as a guard. The greater part of the day was employed in landing the stores and provisions. The weather was brilliant, and the sea so calm, that our own boats were able to assist, and took the beach without any difficulty. By sunset every thing was in readiness, the anchor up, and we steamed away for the Manukau.

April 8th, Easter day.—Off the Whau. I had calculated upon arriving at the anchorage below Onehunga yesterday, in good time, but a derangement in the machinery, which is beginning to complain sadly, delayed us two hours and a half in the middle watch, and that cost us the tide; for instead of being over the bar by ten o'clock, we did not cross it till past one, and off Paratutai the ebb was running a perfect sluice, full seven knots, and it was only by hard stoking, burning an

immense quantity of coal, that we were enabled to run over it. The consequence was that it was past four o'clock before we arrived here, and as it was impossible to get further for want of water, I let go the anchor and got rid of my passengers, among whom were Mr. M'Lean the native secretary, and Colonel Sillery, the Deputy Quartermaster General, who was recalled from the camp at Waitera, his presence being urgently required in Auckland.

Tuesday, April 10th.—During my absence, intelligence has been received from the Waikato, that a great meeting of the tribes was to be held in that district last Wednesday, to discuss the question whether they should espouse the quarrel of William King, declaring war against, or observing neutrality towards the Europeans;—and even the oldest friends and warmest admirers of the natives look with serious misgivings at the ominous aspect of affairs. Under these circumstances the defence of Auckland completely engrosses the attention of the Government, and well it may, for never was a war which promises ere long to become internecine rushed into by a Government more ill prepared. Fortunately at this juncture, when the capital is completely denuded of regulars, the *Elk* brig of twelve guns arrived on her way to England, and is of course detained.

The protection of the Manukau is entirely confided to me, and yesterday afternoon, under the harbour-master's superintendence, the ship was moved at high water slack and moored head and stern about a cable's length from the White Bluff, and a mile below the village of Onehunga. Her head pointed for the settlement at Otahuhu, and the 68-pounder forward commanding the Great South Road. The small bower was laid out on the port quarter, and stream anchor with four lengths of cable on the starboard quarter to steady her, with two shackles out hove well taut on each of the bowers. The stern-fasts are secured to the towing bollards; but it must blow very hard to start them; and so, if Captain Wing's report of the tenacity of the holding ground prove true, the ship may be said to be in a very secure berth indeed; but barely in her own depth at low water.

And now that I have a little breathing time, I cannot avoid jotting down a few reflections on the prospects of the struggle into which not only the colony but England has been drawn apparently so unprepared.

How true is the saying of the "Wise Man" that "The beginning of strife is as when one letteth out water!"—Prov. xvii., 14. Our present quarrel with these miserable natives is a practical illustration of it. Here upon the original question of the ownership of three hundred acres of land, many valuable lives, a million or two of money, and the prosperity of this magnificent country, as far at least as the present generation is concerned, may depend. The issue cannot be doubtful; at the same time I must express my conviction that this struggle might with ordinary prudence have been avoided without any sacrifice of dignity on our part. The acquisition of the land at the Waitara immediately, was not a state necessity. Admitting the conduct of the natives to be bad and disloyal in the extreme, and that

Wirimu Kingi is, as represented by the settlers at Taranaki, a great scoundrel, surely something more than his interference with the government surveyors might have been required before declaring him a rebel and proclaiming "martial law." There must be a dividing line between disloyalty and rebellion: have the natives overstepped it?

Before pushing things to extremities, did the government of New Plymouth use every means at its disposal to prevent a breach of the peace? Were no means left untried to prevent an outbreak, which, if it continue for any time unchecked, must surely prove ruinous to themselves, the inhabitants of Taranaki, and in the end disastrous to the colony? Was the Riot Act ever read! Is it true that before military occupation was taken of the Waitara an appeal was made to the Governor, by one of the settlers, showing that William Kingi, being the Chief of the Waitara, it was no mere assumption on his part to claim to have a voice in the disposal of the land, beseeching his Excellency to order a public investigation, and earnestly imploring him not to employ any military force in the settlement of the dispute? Is it also true that the only investigation that was made into the title of the property was made by a public officer who had a direct personal interest in the opening of the land? These are serious questions which I fear cannot receive satisfactory replies.

Again, what shall be said in extenuation of the fact that the instrument or authority for the declaration of martial law was decided upon by the Governor in Council and sent down to Taranaki long before* any natives had ventured,—perhaps the thought had never entered into their heads,—to take up arms against the government, and was actually put into force when no offence had been committed by the natives beyond the unarmed obstruction to the work of the surveyor. This hasty proceeding has been condemned by all reflecting men, for the progress of New Zealand has been long acknowledged to depend in no small degree on the mutual forbearance of the races who occupy it.

But again, is not every Maori, by the Treaty of Waitangi, considered a member of the British nation, entitled to be protected by the same law as his English fellow subjects? And if so, has he not the right of trial by one of the Queen's Courts before being pronounced a traitor and rebel? But Wirimi Kingi has never been before any public tribunal, and thus a simple police case has been allowed to swell to extraordinary dimensions, bids fair to wrap the whole colony in flames, to last an unlimited period, and in which her Majesty's representative occupies the unenviable positions of prosecutor, judge, and jury!

The fact is, the spring of these extraordinary proceedings lies deeper; land jobbing is at the bottom of it. To secure the ministerial support of a section of the community, it is considered necessary to obtain land at all hazards. I have already alluded in this journal (at page 461) to what appeared to me grave objections against the Go-

* On the 25th of January.

vernment monopolizing the sale of native land ; but little thought how soon the consequences of this vicious system would become developed. And now the lamentable spectacle is presented to the world of a Governor, in his capacity of land buyer, for the sake of a few acres of ground at Waitara, waging war against subjects of the Crown, with the force which is at his disposal as Governor and Commander-in-Chief ; and this in violation of the first principles of jurisprudence : for it is not lawful for the executive government to use force in a purely civil question without the authority of a competent judicial tribunal.

Verily the famous words of Oxenstein will apply even in this hemisphere ; and we need not go far to "learn with how little wisdom the world is governed !"

[The quotation from the *New Zealander* is preserved here not only as of *historical* importance ; but also as recording with the interesting narrative of Captain Cracroft, a proceeding which forms an important portion of the whole subject. We are glad to find that the gallant behaviour above recorded of this excellent officer has been recognized, by conferring on him the honorary distinction of C.B.—Ed.]

(*To be continued.*)

SAILING DIRECTIONS BETWEEN SINGAPORE STRAITS AND CAPE ST. JAMES during the N.E. Monsoon,—By A. J. Loftus, Master Ship "Kensington."

Ships from Singapore to Saigon in December, January and February,* should not leave the entrance of the Straits in strong N.E. winds, but anchor under the Water Islands in 9 or 10 fathoms. In those months gales often occur at new and full moon, weather thick, and rain lasting two to three days. The current outside then accelerates to the S.S.E. $\frac{1}{2}$ E. from two and a half to three miles an hour. A ship leaving the Straits then instead of fetching St. Barb Island would fall bodily to leeward and have to work up the West coast of Borneo. Fine weather follows, the wind backing round to N. and N.W., the currents in the offing decrease in strength to about a mile and a quarter per hour.

Leave the Water Islands with the first of the ebb-tide, and keep clean full ; stand over to the North and eastward to go through the passage between Subi or Low Island and the great Natuna ; a passage that may without much difficulty be made, in these months especially,

* Vessels bound to Saigon during April and May, should not attempt the Eastern route, but keep in with the Malay coast above Pulo Timoane, crossing the entrance of the Gulf of Siam and inside Pulo Condore.

December, January and February are the best months for ships proceeding to China by the Palawan passage.

at full or change, when the wind after a few hours' calm, frequently hauls westward with squalls and rain, and then works round to the S.W. and S., blowing moderately for about 26 hours.

By taking advantage of these slants, Subi may be easily weathered, and the intricate channels between it and the N.W. coast of Borneo avoided. After fetching Low Island in long. $178^{\circ} 48' E.$, if the wind continues easterly, take the starboard tack to the northward, passing West of Low Island, keeping not less than three miles from its South-western side, to avoid shoal water as far as two miles from its shore.

Continue northward and give Haycock Island a berth of three or four miles, as the coral shoal about the island extends fully three miles seaward on its S.W. side. Large ships should not pass East of this island at night, as this part is unknown and has hidden dangers.

The Diana Shoal is said to be larger than is marked on the chart, and is also about three miles too far West.. It appears to be growing up and bears nearly N. $\frac{1}{4}$ W. from the body of Low Island. After passing this island and Haycock there will be no difficulty in working up to the S.E. point of the great Natuna, as the island shelters vessels approaching it from the S.W. against the strong N.E. currents of the monsoon.

The Great Natuna is about forty miles long and twenty-four miles broad East and West. Several large mountains are on its northern end, the highest named Mount Ranay is nearly 2,000 feet high; its North-eastern side slopes abruptly to the sea, whilst part of the base forms Cape Senubing, which in clear weather may be seen from the deck of a large ship fifty miles off. The island is partly inhabited by Malays and natives of Borneo, who traffic amongst the adjacent islands and the Borneo coast.

On the southern shore at night in fine weather, the wind is off the land, which should not be approached nearer than two or three miles without a good breeze, as the water is deep close in shore and no good anchorage.

This and some of the neighbouring islands are correctly laid down on the "first sheet of the China Sea," published in 1859.

Elephant Rock off its S.W. end may be passed within a mile and a half on either side, it is seventy feet high, and may be seen fourteen miles off when clear.

The passage between the Great and South Natuna Islands is about fifty miles wide, the depth from 45 to 53 fathoms, soft bottom in some places; this capacious channel is perfectly free from hidden dangers.

Subi or Flat Island, the northernmost of the South Natuna Group, is about twelve miles long, very low drowned land, slightly elevated at its northern end and nearly surrounded by shoal water: there are detached reefs and shoals off its E. and S.E. sides, and some small islets and foul ground off its southern extreme.

Serai or West Island is three and a half miles long, high and rugged, bearing from Sirhassan W.b.N. $\frac{1}{4}$ N. twenty-six miles.

Sirhassan or High Island is the next largest in the group, being

nearly ten miles long East and West; high and bold to approach, in clear weather, seen from twenty to twenty-five miles off. N.E. from from its East end are five small islands, the eastern a small rocky islet with a few trees upon it; they are bold with deep water between them. The large East island laid down near the position of these islets on Horsburgh's charts does not exist.

Pulo Panjang or Long Island, the southernmost of the Flat Island group, is about four miles long, bearing from Sirhassan N.N.W. ten miles, it is like the rest surrounded by shoal water, with dangerous reefs between it and Flat Island.

Pulo Panjang and Sirhassan form the northern and southern boundary of the Koti Passage, a very good one, about ten miles wide, with depths from 20 to 25 fathoms, hard sand. There is another good channel on the South side of Sirhassan, not so wide as the former, but quite safe when the South side of that island is kept aboard, instead of edging to the shoals on the southern side of the channel, bearing South about eight miles from the latter island. The currents among these islands are more regular, and not so in the Api Passage, where they set in various directions, but with great velocity to the S.W., from sixteen to nineteen hours at a time. This passage requires caution and perseverance when working through it, as the Borneo Coast in from 10 to 11 fathoms must be kept to avoid the current and profit by the land winds.

For large ships any of the other passages are preferable to this. From here all along the North coast of Borneo, heavy S.E. squalls are frequent; sometimes heavy for two hours with rain, gradually subsiding with the wind drawing eastward. When black clouds are rising rapidly there will be little rain, but sail should be taken in immediately as they give little or no warning.

Vessels from the Straits fetching about West Island with a northerly wind should take the Koti Passage keeping well clear of Pulo Panjang to avoid a dangerous reef of rocks southward of Flat Island: the Sirhassan shore may be safely approached on the northern side.

When benighted before getting through the passage, keep a good look out for a small island off its eastern end. The passage cleared, make the best of your way to long. 112° East, easily done, as the winds are invariably from N. to N.N.W. amongst these Islands and as far as the meridian of Cape Siroc, when the wind generally hauls round to the North-eastward. Then get on the starboard tack and with a full sail stand over to the Cochin China coast to make Cape Thiwan. Little or no current will be experienced when on the meridian of 112° East, and when passing along the western side of the shoals until lat. 7° is gained. From here until the mouths of the Cambodia rivers bear East about seventy miles distant, strong currents are found setting to the S.W., governed considerably by the prevailing winds, for when strong gales blow in the early part of this monsoon, the South-westerly current is stronger, and often runs at the rate of three knots. The tides are regular and set pretty strong in shore on the Cochin China coast during both monsoons.

In the latter part of March and April an easterly wind is often found to the eastward of the Anambas Islands, that takes a ship to the Brothers, W. b. S., about twenty-four miles from Pulo Condore, and afterwards she may work up to Cape St. James inside that island, keeping close into the Cambodia coast which is very low, and can seldom be seen at night.

After opening out the mouths of the Cambodia rivers, the strong ebbs will be found setting to windward, greatly assisting ships on the inshore tack; but they should not stand near the mouths of these rivers during the flood tide, and on no account shoal the water to less than 12 fathoms in the night. The land may be seen from the deck at a distance of about ten miles on a fine clear day. The lead should never be neglected when standing towards this low land.

In May the best passages to Saigon are made by keeping the Malay coast aboard, and crossing the mouth of the Gulf of Siam. In this month expect squalls, calms and rain; the current will also begin to set gently to the N.E.

N.E. and N.N.E. gales often blow in the latitude of Pulo Sapata, and between it and the Cochinchina coast, in December, January, February, and sometimes March; they continue for two or three days with a heavy sea and strong current. A gradual rise in the barometer is a sure indication of one of these gales: whilst at their height the mercury fluctuates about $\frac{1}{100}$ of an inch during the twenty-four hours, and commences falling before the gale is over, the sky being generally thick and hazy throughout.

After sighting the land, should you gain the meridian of Cape St. James in one of these gales, bear up for Pulo Condore and run into the Great Bay where good shelter and anchorage may be found; otherwise you will be drifted to leeward of that island, and require several days to beat back to regain your former position. The harbour of Pulo Condore is situated between the West end of the principal island and Little Condore, with better shelter from easterly winds than the Great Bay.

Making the Land about Cape St. James.—Ships from the South in the N.E. monsoon should make the land well to windward of the port, or they will be set quickly to leeward of Cape St. James, and too near the Bassok Bank, by the flood tide and the sea current setting about S.W.b.W. along the coast. But a strong set in the opposite direction may be expected with the ebb tide, which at the full and change of the moon begins to run out of the river about midnight.

At about ninety miles from the coast, the wind in settled weather usually hauls to E.N.E. and E. about four o'clock in the afternoon, continuing all night fresh and puffy. This is the time to stand inshore, and although as far to leeward as the meridian of Cape St. James, with the ebb tide under the lee, you will be to windward of Cape Thiwan in the morning. Cape Thiwan is high and may be seen forty miles off; it is the termination of a chain of hills which, stretching northward, end in a long slope to seaward, forming a sort of break-water, where ships occasionally anchor on either side in 7 to 8 fathoms:

it bears from Cape St. James E.b.N. $\frac{3}{4}$ N. about thirteen miles, and is generally the first land made, in coming from the southward. Never shoal the water to less than 15 fathoms when making this part of the coast in the night time. When off Thiwan Cape St. James will be seen, resembling two islands of moderate height; the coast between these Capes is low and fronted with a low sandy beach, shoal water extending about five miles from the shore. Take care in sailing down this part of the coast, not to bring the southernmost point of Cape St. James northward of W.N.W., and not to shoal the water under 10 fathoms.

When the extreme point of Cape St. James bears N.W. $\frac{1}{2}$ N. steer for it, keeping the small rocky islet lying off its S.E. side at a distance of $1\frac{1}{2}$ miles whilst rounding the pitch of the Cape, as there is hard ground and shoal water within a mile of it. The coral bank South from the pitch of the Cape will then be left to the westward two and a half miles.

Cape St. James' in lat. $10^{\circ} 17'$ N. and long. $10^{\circ} 5'$ E. is the first high land seen coming from the South-westward, the coast from it to the Gulf of Siam being very low drowned land. The mountain forming the cape at its southern part has a low gap, a high one on its northern, making it appear like three islands at a distance of thirty-two miles, but on approaching it the connection is perceived. The coast is bold, and its western side may be passed at half a mile with safety. There is a fine bay on its western side about a mile wide, at the head of which is a valley and a small village called by the natives Vang-Tau; a grove of cocoanut trees fronts the beach, and good water may be obtained from wells at the village easy of access: water also will be found at another village in the Gagnary River, a short distance from the point A. There is anchorage in the bay in 6 to 7 fathoms, soft mud and good holding ground. The French authorities are erecting a lighthouse on the summit of the hill forming the South end of the cape.

Caution.—Masters of vessels anchoring off the mouth of this bay must be careful not to drop their anchor on a sunken wreck in 7 fathoms of water; the following are bearings for it:—the extreme S.W. point of the bay bearing S.E.b.E., and the N.W. point of the bay bearing N.E.b.E.

Winds at Cape St. James.—In December, January, February and March the monsoon is steady and strong, with dry hot weather; then gradually abates in strength until it ceases. The land and sea breezes then become steady, generally blowing from E.N.E., and sometimes from N.E. during the night, and drawing round to the eastward in the morning: the sea breeze then generally sets in from S.E. towards noon, or early in the afternoon. When passing to leeward of this high land, look to the small sails as the strong puffs from it greatly endanger light masts; heavy gusts suddenly from the valley are also experienced while crossing the mouth of Vang-Tau Bay.

Tides.—It is high water at the cape on full and change days at 11h. Springs run strong, and the ebbs last longer.

From the pitch of the cape the flood sets to the Bassok Bank, almost direct to the mouth of the river: the ebb takes the opposite direction.

A coral patch is South from the cape, distant four miles, and when there is a strong breeze and heavy sea from the southward, it breaks with low water of springs

Channel and Banks, Saigon River.—The channel from the mouth of the river to the cape forming an elbow, is ten miles long, and two and a half broad; but as the mouth is approached it gradually narrows to three quarters of a mile. It is bounded on South and West by the Bassok Bank, and on the North by small detached sand banks, separated by narrow channels, while the cape land forms its southern boundary. The bottom is soft mud, and the general depths are from 7 to 12 fathoms. Ships may anchor in any part of the channel.

The Bassok Bank is very extensive, formed of sand, with a few feet on it at low water. There are always a great number of fishing stakes on this bank, and a few on the extreme point of it to the North and West of the point A.: these should not be depended on for marks, being occasionally shifted by the natives.

When beating across this channel the lead should be kept constantly going, and the water not shoaled to less than seven fathoms on either side, the banks being steep to in many places: with a hard bottom the ship is on the edge of the bank.

Directions and Marks for the Entrance of the River.—The entrance of the river cannot be made out when distant, the land being very low and covered with brushwood.

The best mark is a remarkable small clump of trees of moderate height, on the point B. [See chart] at the mouth of the river; best seen from Vang-Tau Bay in a North-westerly direction.*

Having rounded the cape at a moderate distance, either with the flood or ebb, keep mid-channel and steer for the point A. until it bears East three quarters of a mile distant, then steer N.W. $\frac{1}{4}$ N. till the trees on point B. are brought to bear W. $\frac{1}{4}$ N.. or the French frigate *Didon* W. $\frac{1}{2}$ N.; at the same time the point A. must be brought to bear S.E.b.E.

Then steer W.b.N. for the entrance of the river. Take care to make these courses good, attending carefully to the lead. Having arrived at the mouth of the river bring up close to the North bank in 9 fathoms of water.

There is a coral bank in the bend opposite the point P., it is about half a mile long and a cable and a half broad. It is coated with a mixture of hard clay and mud, and has about 14 feet water on its outer edge. It slopes gradually from the shore, and has 6 feet water on it close to the bushes.

The channel between it and the point P. is about a cable across, with soft bottom, with 3 to 8 fathoms in it.

* Should the frigate *Didon* be moored in her proper position at Canjio, the trees and her hull will be seen close together, forming an excellent mark for the entrance of the river.

A painted tree on the point P., bearing W. $\frac{3}{4}$ N., distance 1 cable, marks the position of a small detached but dangerous shoal of 9 to 12 feet rock, in some parts of it at low water; another similar to it is just 70 fathoms N.b.W. from the tree, with 20 feet on it at low water.

Large ships unable to work through the East reach when proceeding up the river in the N.E. monsoon, should bring up with the port anchor near the point M., keeping clear of the bight, as ships lie very unsteady there, sometimes yawing and shearing into the bushes. When the next flood makes commence kedging, hugging the points and giving chain quickly when setting into the bights, as the water always deepens in there. After rounding the point O, sheer in to that side of the river, and keep half a ship's length from it until clear of the coral bank.

In dropping past these dangers with the flood, the port anchor should be used and kept nibbling on the bottom. The ship will then obey her helm quickly, and be readily sheered in shore. It is sometimes necessary to carry out a line to the bushes when passing the point P., to prevent getting too near the bank.

Danger Bank commences three quarters of a mile from the point T., and extends about three and a half miles along the right bank of the river, and reaches nearly into the middle of it, much divided by numerous small circuitous channels into the main stream. It is composed of sand and rock, the latter prevailing at its South end; it is also pyramidal and coated with mud and clay. Several ships have been much injured on this bank, and have experienced great difficulty in getting off it. When beating up or down this reach, tack about mid river, and never shoal the water anything under 6 fathoms.*

Caution.—Should the frigate *Didon* be at her station off Canjio, large vessels should not pass on her South side, there being no room between her and a hard bank of sand, extending some distance from the South bank of the river. The best anchorage is midway between the frigate and the North bank, in 9 fathoms, soft bottom. By proceeding further into the river much deeper water will be found, making sometimes very awkward for a large ship to get the anchor in the strength of the N.E. monsoon.

Frigate Didon (Guard Ship).—Her station is off Canjio, but she is sometimes lying at the cape. All vessels arriving must be brought to an anchor where she is, their small arms and ammunition of whatever kind and quantity must be packed up, numbered, and taken on board of her, and the manifest, port clearance, list of passengers, and the ship's draught of water must also be shown to her commanding officer; after which a receipt and pass to proceed up the river will be granted. Printed port regulations may be obtained on board, and also pilots for the river, if necessary. Rate of pilotage 3 dollars per foot.

Canjio is a small fishing village, situate on the right bank of the

* The ship *Kensington*, of Singapore, drawing 20 feet water, with a pilot on board, grounded and remained on the bank three days; she was got off with much difficulty after discharging upwards of 4,000 bags of Rice, &c.

The position and the channel she was towed through is marked on the chart.
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river, not far from its mouth, but is nearly deserted on account of the numerous pirates in the river. Sometimes a few fish, ducks, pigs, eggs, and a small supply of vegetables may be bought there, at moderate prices. The native boats are numerous here, and sail very fast, with two and sometimes three triangular sails made of matting, and if wanted, may be hired for a small sum to go to Saigon or elsewhere.

(To be concluded in our next.)

The chart alluded to is preparing in the Hydrographic Office, Admiralty.

A TRIP TO TANANARIVO:—*Madagascar.*

The following narrative has no other object than a record as impartial as possible of the transactions which took place in my visit to Madagascar. I have selected from my journal the events which may be of service to those who may be required to visit the Hovas after me,—and I have only related what I have seen.

Setting out from Paris on the 26th of November, 1861, and taking the English packet from Marseilles that would meet that of the Red Sea, I reached Isle Reunion one month exactly from the day of my departure from Paris. Three days were employed there in providing myself with various articles, and especially with medicine, so necessary for a stay in Madagascar; and on the 31st of December I departed for Tamatave, in the schooner *Pearl*, Captain Offret.

After a passage of three days with those warm delicious breezes, so pleasant within the tropics, we arrived at the anchorage of Tamatave at night.

As soon as day returned, we received on board the *Pearl* a visit from several Hova officials, who, according to custom, came to inquire the object of our visit to Tamatave. At eight o'clock the *Pearl* saluted the shore with twenty-one guns, and the fort, which we had looked for in vain among the trees by which it was concealed, soon afterwards revealed its position to us by returning the same number, with a quick but irregular interval between each discharge.

I had announced my intended visit to the commandant of the fort at ten o'clock, and landing at that hour with Captain Offret, was received at the beach by a deputation from the merchants, who received me most cordially, congratulated me on my arrival, and offered to accompany me on my visit. I had scarcely been a few moments in conversation with these gentlemen and some French residents at Tamatave, who had visited me on board the schooner, when a guard of thirty native soldiers and several officers of the fort came to escort me.

After some congratulations and hearty shaking of hands, I was placed in a *takon*, an elbow chair fixed on two shafts, which four negroes placed on their shoulders, palanquin fashion. Each person who accompanied me, including the officer commanding the piquet, was soon provided in the same manner, and we set out for the battery at

Tamatave, although it is a mere enclosure. Arriving half way, a second piquet came to relieve the first, which no doubt had not been considered sufficiently imposing, and we proceeded onward at a moderate pace to the music of an English march, the band, like their officers, keeping some distance behind instead of at the head of the soldiers.

We soon arrived at the fort, where we found all the troops under arms. A military band of most complete kind struck up the air of *la Reine Hortense*, immediately followed by *God Save the Queen*, which air Radama had adopted as the national air, and preserves it as such to this day.

The governor or chief in command of the fort, named Rainifringa, surrounded by his officers, attended me under the timbers of a ship which served him as his official residence. They were all most elaborately got up, each dress as finished as the owner's means would admit,—a subaltern officer wearing the epaulettes of an English colonel, while his chief had only those of a French sub-lieutenant. Moreover it is the fashion here to change the dress frequently in the course of the day, and to appear successively in scarlet, blue, or in velvet, according to caprice and the fancy of the wearer. In fact, it is impossible to tell the rank of an officer from his dress.

The Commandant Rainifringa took me by the hand and conducted me to the principal apartment, where there was a table with bottles of ale, vermorette, and champagne, the three favorite beverages of the aristocratic Hova. Of course we drank the Emperor's health with that of Radama, my happy arrival, and the principal persons present, and at each toast it was necessary to stand up and wait before lifting the glass to the lips the termination of a certain air played by the band.

After having thus enjoyed a most courteous reception for the space of an hour, we returned in the same manner as we had come, when suddenly soldiers, drummers, and musicians, broke their ranks and scampered off in all directions, as if a shell had exploded among them. Our bearers did not long remain, for soon shaking us more than usual, they let us fall to the ground, and joined in the general run for *saute qui peut*. It was not until the officers had succeeded in reforming the cortege by a considerable amount of shouting and using the flat of their swords that we ascertained the cause of the disorder. For the sake of adding to the honour and dignity of the affair, we had adopted ordinary time in our march; but as the soil of Tamatave is composed of a fine sand, in which the foot sinks to the ankle, and as we were under a scorching noon day sun, the bare feet of the soldiers and bearers were literally undergoing a burning process. No discipline could withstand so cruel a torment, and it is therefore not to detract from that of the troops of Tamatave that I relate this incident, but to show how much we Europeans on our part must have suffered from this promenade under a burning sun.

The soldiers who escorted me were singularly dressed. Of course they had no shoes: the head was no better covered, nor could they

boast a single shirt,—of pantaloons and coats they had none: the dark naked chest was ornamented with white belt across for the pouch, and the bayonet belt a piece of cotton, called *lamba*, round the waist, descended half down the leg, and a second piece, similar to the first, was passed behind under the pouch: it served in place of a mantle or covering: their arms consisted of a musquet with flint lock and a sword about 1·5 metres long: they carried the former at support arms on the left hand, and the sword up and down the body by the right hand, so that thus having the two hands employed, they could not manage their arms except on a firm footing, and till they had stuck their swords in the ground before them.

Of the different persons for whom I had brought with me letters of introduction, two only were at Tamatave: the others were at Tananarivo, either for the sake of passing the winter, being less injurious than the coast, or on account of their private affairs. The first of these was P. Bobillier, the principal of the Catholic mission at Tamatave; the second was M. Clement Laborde, a young man of twenty-eight years of age, son of the French consul at Tananarivo, malgache by his mother's side, and having been educated at Paris. I found in him the native interpreter that I wanted, as well acquainted with the language of the country as he was with European customs, capable of informing me on everything I wished to know, and delighted at the idea of going to see his father. I had only to secure his services, which were mine during the time I was in the country.

I do not know whether Tamatave is the best anchorage on the coast of Madagascar. But as it is the nearest of those which communicate with the province of Emirna, and the landing of cattle goes on there easily, it has become the centre of commerce with neighbouring places. Sixty merchants, French, English, and creole, reside there, and through their hands passes the whole foreign trade of the Hovas. They answer their purpose for the sale of their oxen, which come from the western shore of the island, for which they obtain dollars in exchange, cotton cloths and coloured fabrics of fixed dimensions, wine, liqueurs, uniforms and ornamental dresses of all kinds, common cloths, some furniture, jewellery, musical instruments, &c.

Besides cattle, of which twelve or fifteen thousand head are embarked annually for Mauritius and Reunion, at sixty to seventy francs per head, the country exports building woods, and a large quantity of ebony work, wax, caoutchouc, gum copal, and abundance of rice; the exportation of produce is not yet so much as it might be if the ships were not obliged to embark their cargoes at different parts of the coast, on account of the development of commerce not having yet extended to Tamatave, because the merchants have there their small coasters, destined to centralize their produce at one point.

Of these sixty merchants one third are French, or trade with Reunion, and the rest in connection with Mauritius. The value of the trade with France and England is nearly included in the foregoing.

Two missionaries of the Society of Jesus, and two sisters of St. Joseph de Cluny, reside at Tamatave: but we have neither schools nor

chapels there: a house which M. Nemours de Lastelle has kindly lent to the mission serves as chapel.

The day after my arrival being Sunday, I assisted at mass at the head of a guard of seamen from the *Pearl*; and in the afternoon received the return visit from the Governor Rainifringa, attended by all his officers. It was a repetition of ceremony when I visited him at the battery. The same number of bottles of beer and champagne were dispatched, the same healths drank, and we concluded by parting on such capital terms, that shortly after his departure I received an invitation to dine with him on the following day, and at the same time two magnificent bullocks as *supper* sent to me in the King's name. This patriarchal custom is observed throughout Africa: when a stranger of distinction passes a town and demands hospitality for a night, the chief of the town, after coming to see him, presents him, according to his means, something for his supper: it may be sometimes a miserable half starved fowl, or some few grains of corn; but it must always be accepted and even form the supper if he is for staying at all; for it is the pledge of hospitality offered to you, and from thence the chief of the town is responsible for your safety.

The dinner to which Rainifringa invited me, occasioned my surprise as much from the abundance of dishes as from the European style in which they were served up, while the spices and the rice gave them a local character. The guests were numerous, and some who were evidently long residents in the country soon broke through the coldness of formal ceremony, and the feast was well got through. After dinner there was a dance, at which the wives and daughters of the officers were not backward, and after going through all kinds of dancing, from a kind of promenading to open the ball, to the most finished productions of Paris, country dances, waltzes, polkas, and mazourkas were all performed in their turn, and when I was retiring, as a preliminary to my going, it was necessary to drink the health of Radama the Second in presence of the soldiers, who had been under arms all the evening.

The days following were occupied in hastening my preparations for departure, in making acquaintance with the principal merchants, who initiated me into some acquaintance with the country, its commerce, their desire of being protected from the arbitrary authority of the Hovas, and the necessity of establishing custom houses at the ports, &c. The missionaries, too, on their part would have a church, a school; but they have not the first sous for purchasing the ground on which it is to stand, while there are various places that do not suit them. The Sisters only without being better off than the others ask for nothing, and follow in silence their attentions on the sick and poor: for in Madagascar, as elsewhere, there are those offcasts from trade who abandon their pursuits with the most futile pretext, and come to live or rather to die in a country, the resources as well as the dangers of which are totally unknown to them.

Ease is by no means the order of the day at Tamatave, even among those who have the means of obtaining it. Every merchant has a

store for his merchandize as well as a residence for himself, the latter like the former being composed of planks arched from about two feet above the ground, divided into two rooms, one serving as a parlour for meals, &c., and the other for sleeping in: no ceiling so as to have more air, and thatched with branches of founts.

The temperature is generally so high that doors and windows would be useless, if it were not necessary to close them at night for fear of being robbed. During the time I passed at Tamatave it appeared to me that all the luxury consisted in that of the table. The glass, the porcelain, the silver, the wines, the abundance of viands, even the cookery, are all good, but with all this luxury in the way of common every day things they have scarcely any whatever. As to amusements they have none; after eating comes the repose, unless matters of business happen to prevent it. Every merchant has his boat, but there is scarcely a horse to be found in the town. Excepting only that one goes on foot to see a neighbour, all communication and all the would-be promenading is done with the palanquin, the *takon* as called in the country.

The road from Tamatave to Tananarivo follows the shore as far as Andovorande, about twenty leagues southward, and then directly West to cross the mountains. The first part of it may be done with the use of canoes by the lakes which lie along the shore, and which are only separated from each other by slender tongues of land, called by the natives *pangalane*, over which they carry the canoe on their shoulders. I preferred making all my journey on shore, a course which perhaps is more healthy in winter, and certainly more rapid for the numerous suite which I had, and for all of which it would have been difficult to have found the means of transport.

In fact, although I was the only European, I was accompanied by M. Clement Laborde and by Rasolo, a hova officer, who had been placed at my disposal at Tamatave for the whole journey. For each of us three a *takon* was necessary and six bearers, their cooks, and domestics with important articles. In fact, the bearers of baggage and provisions complete for a month, wine, biscuits, conserves, medicine, &c., formed a distinct convoy, under the charge of subaltern officers, to whom was given the title of aides-de-camp.

The palanquin bearers (*takon*) are called *maremites*, in Malgache *filanza*, as well as the carriers of packets; but the former are men carefully chosen, and requiring great experience in their business, either from their power of making sure and rapid progress when the roads are in good condition, or from being sure footed in passages of difficulty. The packet carriers have no need of any special quality, their charge never surpassing twenty kilos, and they divide into two to suspend it at the ends of a bamboo five feet long, which they carry balanced on the shoulder. When a charge exceeds that weight and cannot be divided like a mail, it is fixed in the middle of a bamboo, and then two carriers are required for it. These different carriers not being paid until the end of the journey, and being selected with great care, it is seldom that accidents happen. Nevertheless when

they happen to be too heavily laden, they sometimes make no scruple of casting their lading among the nettles, and disappearing, even when about to arrive at the end of their journey, and to have earned the payment of fifteen days of labour and fatigue. Hence it becomes prudent always to divide the packages at their departure, so that each one bears a complete assortment of what may be most necessary on the journey. A *maremite*, whatever may be the work he is required to perform, is paid generally two and a half dollars for the journey from Tamatave to Tananarivo, a journey which generally requires fifteen days for its performance. He lives on a litre and a half of rice for the day, requiring nothing more. But if he should be required to travel speedily, and to do the journey as I did in ten days, it becomes necessary to stimulate the exertions of the *maremites* by giving them fresh food, as manioc and bananas, which are added to their rations, and to wet their evening repast with *betzabetza*, the Malgache beer, made from the fermented juice of the cane, and the astringent bark of the Simarouba, or the country rum; two detestable beverages, but of which the Malgaches are passionately fond.

On the morning of the 9th of January, all our arrangements for departure being made, the baggage party took the lead with the aides-de-camps who had charge of them, and having breakfasted and paid a last visit to the Commandant of the battery, we set out, accompanied by a number of contractors and M. P. Bobillier, who was desirous of escorting me to the furthest limits of the Tamatave territory. These gentlemen, who had rendered me every assistance in my journey hitherto, before our parting were bent on drinking success to my voyage, and they did so most heartily, for more than one of them assured me afterwards that they much feared the pernicious effects of the season on my health.

In less than an hour and a half we reached Ivondro, a good sized town, the residents being principally contractors, who communicate easily with the interior by means of the river, which here forms a lake, that answers the purpose of a port for the place. With some of their canoes a short time was necessary only to reach the landing of Ambodisiny. And here resuming our land journey, we passed successively the town of this name, also Abalatambako, and halted for the night at Tranomaro, where we took up our quarters in the king's house, built and maintained in many towns for the benefit of travellers. But as these abodes are not larger than an ordinary house, and as the road is much frequented, it often happens that a traveller in possession believing that he will pass a night there, well sheltered from wind and rain, finds himself obliged to give up his comforts to another traveller, who may happen to be his superior in rank; for here the right of prior occupation is entirely forfeited to rank, and it has often happened to me in my proceedings here to do the same; for as the king's guest all his houses were at my service, and the chiefs of the towns warned of my arrival an hour beforehand, never failed to have the house ready if it were even preoccupied, and place it in readiness for me, with fresh mats, &c.

At break of day we were *en route*, and after passing the towns of Tampolo and Amparerana, we halted for three hours for breakfast, at Andranakoditra, and started again in rain so that we might sleep at Vavone. This last town is but a continuation of the true village on the opposite bank of a canal, forming a communication between two lakes parallel to the coast. The northernmost of these two lakes is called Rassoa-be, and has a communication with one to the northward named Rassoa-masseye. That which is to the South of Vavone bears the name of Ambenaimoiche and communicates with the sea.

The road which we had taken passed over an undulating country, sparsely wooded, and passes rather near the sea, so that the surf is heard. The journey would have been very pleasant if I had not been obliged to hold an umbrella in one hand and my portmanteau in another. The bad weather, however, in no way affected the speed of our bearers, who being as lightly dressed as possible with their *sadik*, cared little about having their persons wet with the warm rain, which getting through my clothes penetrated me to the very bone.

On the 11th we set out under the appearance of a fine day. We had a promise of arriving at Andevorante early, and our bearers accelerated their paces so that we might have more time to look about. Two hours after we started we crossed the lake Ambenaimoiche, opposite the town of Andapakameramane, and at nine and a half we entered Andevorante, a large town situated near the mouth of the river Yark, on a tongue of sand between the sea and a marshy creek of the river. This point serves as a collecting place for the produce of the interior, arriving there by water, and thence sent on to Tamatave by the lakes along the coast, there being always a certain number of agents there, who carry on a smart trade with the merchants of Tamatave.

The difficulty which I anticipated of finding a sufficient number of canoes for the transport of my party, induced me to go on and pass the rest of the day at Andevorante. So I gave leave of absence until the following morning to my people, after distributing some small pay among them, as well as some fresh provisions. Very soon the sound of music was heard, dancing was commenced, the *betzabetza* flowed freely, and without further ceremony the most decided friendship was established between the natives and their new friends.

As for myself, from my arrival I had chosen for my domicile an old house of M. Lastelle, now belonging to Mlle. Juliette Fiche. I had believed that it was not inhabited until I was assured of the contrary, when I learnt that a son of the proprietor, according to established custom of the country, had considered himself obliged to retire at my presence to make room for me. This young man is the same whom Madame Pfeffer had given in her narrative the name of the Parisian *Malgache*. In this circumstance the sad presentiment of that celebrated traveller had not deceived her, as far at least as I have been able to judge from so short a visit.

Our host, a large well-made mulatto, is to-day 32 years old. Brought up in France where he concluded his course of study by a

term of two years at the *Ecole Centrale des Arts et Metiers*, he still retained sufficient of what he had learnt to render good service to his country. But from being cheerful, active and enterprising, as he had been for some years, lately he had become morose, downhearted and reserved, and apathy had overshadowed his intelligence, he had at heart the veritable worm which devoured him, and thus a fine generous disposition was gone. Unhappily, such in general is the end of mulattoes, who on returning to their country, go back to their idle way of life, which does not fail to undermine their vigour, and nip in the bud the intellectual riches which they have gained in our European schools.

I was for making some acquaintance with my host; he had already breakfasted on my arrival, and it was with some difficulty I got him to promise that he would dine with me. In the course of the day he sent me the usual visitor's present, and in return I sent him some bottles of wine and beer from my stock.

Although it was not till some time afterwards that I had the pleasure of knowing Madame Juliette, it may be useful to premise a few words to rectify a rather uncharitable impression which Madame Pfeiffer has made of that lady under the name of Mademoiselle Julie.

She is the daughter of the celebrated Fische, chief of Ivondro, who had long opposed the usurpation of the coast provinces by Radama the first. Brought up at Bourbon he was perfectly acquainted with French. With a lively disposition he was gifted with a remarkable aptitude for business; and without a doubt M. de Lastelle was indebted to her for much of the influence which he had obtained over the old Queen Ranavalana, and the important extent to which his agricultural pursuits had reached during the latter years of her life. Madame Juliette has moreover a warm heart; she delights in doing a kindness and performs the part of hospitality with all that frankness which is found in the colonies: in fact, she has received from the French Government a medal for her attentions to our shipwrecked countrymen. Madame Ida Pfeiffer was doubtless deceiving herself, when she was pleased to suppose for her readers that Mademoiselle Juliette was a European, thrown on Madagascar by heaven knows what romantic adventure.* Her mistake has left a blot on the page of her narrative: besides this the celebrated voyager seems not to be particularly charitable, and more than one host who has sheltered her, with the best he can produce for her comfort, has had left him for thanks nothing more than a few bitter lines of remembrance in the narrative of her travels.

The people of Madagascar (Malgaches as they are called,) devour their beef hide and all. They even fancy that this morsel is most strengthening, and those who are particular eat it fried in grease as a choice morsel. I have endeavoured in vain once or twice to do the same with this indigestive leather, but never succeeded with a single piece. But my people never fail when opportunity offers, to

* Our author appears here to have mistaken Madame Pfeiffer's statement.—ED-
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preserve the skin of their rations, to eat it on the following morning before setting out, saying that their stomachs thus prepared, would enable them to work till noon with no other nourishment. However, this might be without knowing whether it might arise from their morning meal of hide, or from their excesses the night before, that caused their failure, my bearers changed into pagayeurs to ascend the river Jark, acquitted themselves so badly, that they took five and a half hours to make a passage which ordinarily takes but four at most, and we arrived at Maromby at ten in the morning.

The banks of the river Jark at first are low and swampy as we pass them; then they become a little higher, but generally formed of a compact ground which the current wears away by degrees, and the bank falls into its bed. Half way between Andevorante and Maromby the route leaves the principal channel, near the town of Boiboizo, and in the dry season travellers disembark there for the capital, and enter a tributary stream, which is not navigable in winter further than Maromby, for immediately above the landing at this town there is a block up with branches and trunks of trees that seems to remain permanent.

(To be continued.)

OBSERVATIONS ON THE PROPOSED TELEGRAPH COMMUNICATION
BETWEEN IRELAND AND NEWFOUNDLAND,—By *Professor*
William King.

Having under examination the objects obtained from the Irish-Atlantic sea bed by H.M.S. *Porcupine*, of which a "Preliminary Notice" by myself appeared in the last number of the *Nautical Magazine*, my attention has been, at the same time, directed to the nature of the deep sea soundings on the West coast of Ireland with reference to the establishment of a telegraphic connection between this country and Newfoundland.

Before proceeding further, I feel it necessary to state that previously to entering on a consideration of the latter subject, I held no particular view in favour of any one place for the eastern terminus of the cable. Indeed, I confess to having entertained considerable doubt as to the practicability of successfully carrying a cable across the Atlantic at all.

I also wish it to be understood, that I am not writing against any place whatever, for I feel convinced that it will be requisite ultimately to lay down two or more telegraph cables, and probably from different parts of the coast. It becomes my duty, however, on the present occasion to show that Galway presents, in many points of view, claims which particularly recommend it for selection as one of the stations.

Looking at Mr. Hoskyn's valuable "Report on the Deep Sea Soundings to the Westward of Ireland," and the chart which accom-

panies it, published in the *Nautical Magazine* of the present month, it will be seen that from the isles of Arran, at the entrance of Galway Bay, there runs out, due West, for the distance of 160 miles, or more, a gently undulating sea bottom or terrace, having, in no place, an inclination surpassing that of an ordinary beach. Throughout the entire extent of this terrace, the depth of water averages about 100 fathoms, and rarely exceeds 200 fathoms. Near its western termination the terrace is more elevated than elsewhere, except its shore side, giving rise to a flatly rounded bank, which in its highest or shallowest part is little more than 80 fathoms below the surface of the ocean. This elevation, which Mr. Hoskyn has named the "Porcupine Bank," appears to extend from the parallel of Cashla Bay on the South, to that of Innis Bofin, off Connemara, on the North.

At the westernmost edge of the terrace, about fifteen or twenty miles from the shallowest part of the Porcupine Bank, there is, compared with the inclination abovementioned, a rapid descent into deep water, which, however, is not so in reality, being only about 700 fathoms in ten miles. The greatest depth attained in the part alluded to is 1,500 fathoms. Guided by the maps appended to Maury's *Physical Geography of the Sea* (plate xi.) and to Wallich's *North Atlantic Sea-bed*, there are grounds for believing that on the parallel of Galway the last mentioned sounding is continued down to what is termed the "telegraph plateau,"—a vast submarine plain stretching thence all the way to the Banks of Newfoundland with a pretty uniform depth of about 1,760 fathoms or two miles.

If the telegraph cable were laid down on the route I have sketched, commencing East of Cashla Bay, which is about ten miles due West of the town of Galway, and traversing the terrace just described, there is good reason to believe that it would rest on a bottom singularly free from impediments. For the first 160 miles, the bottom consists of calcareous mud, and the finest sand, charged chiefly with polythalamous Foraminifera. In the shallow portion of the terrace, forming the Porcupine Bank, the bottom consists of fine and coarsish gravel, with an abundance of shells of various kinds. On the slope which descends to the "telegraph plateau," the bottom consists essentially of monothalamous Foraminifera: and I have no doubt that the same minute organisms, and their debris, occur spread over the entire plateau, forming a deposit so soft and oozy that a cable would readily sink into it.

With regard to the bottom near the landing places, I can only speak of that on the Galway coast. Between the North Isle of Arran and the Skirds, there is "foul ground" lying immediately off the proposed landing place. The rocks, judging from those on the adjacent land, are evidently rounded hummocks of syenite and granite, with surfaces worn down by the action of geologically-ancient field ice and other glacial agents, such as now prevail in Greenland, and in Alpine regions. Instead of being dangerous to a cable, provided it has the ordinary protective covering, these submarine rocks would prob-

ably prove advantageous; inasmuch as they would prevent trawling and line-fishing, as well as the anchoring of ships, where they prevail.

It is quite possible, in laying down the cable, to avoid the Porcupine Bank, which, as I have already stated, does not extend South of the parallel of Cashla Bay; but if it should be carried over the bank, no fears need be entertained of the effects of the heavy seas, which characterize an Atlantic storm; because, as shown in my "Preliminary Notice," the smallest stones, occurring on its surface, exhibit appearances of being as little disturbed, as if they were at the bottom of a lake. On the other hand, a buoy might be permanently placed on the bank in proximity to the cable to indicate where the latter could be found in case of accident: by this means, the repairing of injuries (which I cannot but conceive would be of very rare occurrence) sustained on this side of the Atlantic would be materially expedited.

I may, in passing, remark that the Porcupine Bank is an important feature in favour of making Galway an Atlantic packet station. In being the most westerly land-fall on the coast of Ireland, it will enable steamers during a fog, or cloudy weather, to obtain, by soundings, an early intimation of their approach to land:—while, both on the north, and on the south, no such advantage exists; because the outer edge of the hundred-fathoms terrace, of which the bank is an outlier, trends rapidly towards the land, approaching it to within only a distance of from twenty-five to fifty miles.

If now we refer to the Atlantic sea bed off the coast of Kerry, it will be found to present features of a different character. Beginning at the coast, say, near Valentia, the bottom slopes down somewhat suddenly to a depth of 525 fathoms: it next rises again, apparently at the same angle, till it reaches a level, varying from 195 to 230 fathoms below the surface of the ocean, and where it forms a submarine ridge about twenty-five miles in width, 140 miles from land, and terminating southward on the parallel of Cape Clear. This ridge, which is evidently a tongue or southern extension of the *deepest* portion of the terrace lying off Galway, declines rapidly, that is, on its western side, to a depth of from 1,500 to 1,700 fathoms. Further out, the bottom sinks to 2,040 fathoms. Now, if we refer to Maury's map, it will be seen that the last mentioned sounding, by proceeding to the South, makes that part of the sea bed, where it was obtained, a portion of the great three-miles-deep submarine valley, which runs down to the Cape Verd Islands on the coast of Africa, and which, according to the authority cited, actually attains nearly its maximum depth, viz., 2,675 fathoms, somewhere off the South coast of Kerry. Unfortunately the soundings on the North of the parallel of Valentia and near the meridian we are now in, are not sufficiently known; but, from the rise of the bottom, as indicated by the two last mentioned soundings, it is to be suspected that the three-mile-deep valley gradually rises up to the two-miles-deep "telegraph plateau," somewhere on the parallel of Loop Head in Clare. It may possibly ex-

tend much further North; but, even in this case, it cannot but have lost its distinctive character, and become reduced to a mere trough in the telegraph plateau.

It will now be seen that a telegraph cable, running from any part of Kerry, must of necessity cross two valleys,—the easternmost one, upwards of half a mile in depth, and the westernmost, about three miles,—before it reaches the telegraph plateau. Nothing is known of the western side of the deepest valley; but its eastern side appears to be precipitous, and, it is to be feared, rocky. The specimen of *Discina*, a shell which lives fixed to stones, rocks, and other objects, mentioned in my "Preliminary Notice," as having been taken on the East side of the valley, at the depth of 1,240 fathoms, may be regarded as supporting this apprehension. The difficulties attending this route, however, may very possibly be overcome by carefully selecting the course where unfavourable circumstances least prevail, and allowing sufficient length of cable to be payed out, so that it may rest on every portion—not only elevations but depressions—of the inequalities of the sea-bed.

In conclusion, I may remark that it appears to me, that the conditions most favourable for a telegraph cable, between this country and Newfoundland, are a gentle, undulating in-shore bottom, extending far into the Atlantic before obtaining any great depth, and its outer edge passing down to the deep telegraph plateau by a not over rapid fall. These conditions can be found no where on the coast of Ireland except off Galway, where also occurs the Porcupine Bank, the advantages to be derived from which have already been stated.

Belmont, near Galway, November 15th, 1862.

Supplementary Note.

Mr. Hoskyn preserved specimens of deep-sea soundings in bottles containing spirit, by which means they have been prevented from drying, and have retained their original consistency. Orbulo-globigerinous mud, thus preserved, has quite the appearance of a thickish batter paste. To what depth below its surface the deposit continues in a pasty condition has not yet been ascertained. The "Bulldog machine," so successfully used on board H.M.S. *Porcupine*, brought up large quantities of it; we may therefore conclude that the deposit was penetrated to the depth of a few inches. Further, if we take into consideration the enormous vertical pressure of the ocean in deep places, it is difficult to conceive otherwise than that water should be forced to a considerable depth into the permeable mud forming the two-miles-deep "telegraph plateau." Under these conditions, we may fairly assume that, at least, its surface mass is highly charged with water, and consequently so soft and oozy that a body like a telegraph cable could not remain long on it without being covered up.

The mud, consisting as it does of living and dead specimens of Foraminifera, and their comminuted debris, is clearly an organic deposit. The rate at which it is formed will therefore depend on the

rate of reproduction of these organisms,—all other circumstances being favorable. Although little is known regarding the subject just mentioned, 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. It is well known that many of the lower groups of animals are enormously reproductive. Numerous cases might be adduced; but it will be sufficient for my purpose simply to notice a group in which calcareous matter is an abundant constituent. Darwin, on the authority of Lieutenant Wellstead, R.N., cites the case of a ship stationed in the Persian Gulf, the bottom of which became encrusted with a layer of coral two feet thick in twenty months. He likewise notices some experiments made by Dr. Allan on the coast of Madagascar, from which it was ascertained that portions of coral, weighing ten pounds, increased four feet in height and several feet in length during the short space of six or seven months (*Vide Darwin's Coral Reefs*, pages 87 and 88). These cases may be accepted as good analogical proof in favour of the belief that Foraminifera—the lowest group of animals known—multiply to a surprising extent.

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., bi-carbonate of lime—common to the water which 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. 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 per centages above given are deduced from analyses made by Bibra of waters from the Pacific, Atlantic, and German Oceans.

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.

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 its deep-sea bed, are appropriating this calcareous matter as rapidly as it is supplied. They evidently play the same important part in our seas as the coral-forming zoophytes in warmer latitudes; and, although the latter are labouring in shallower depths, and building up the more striking atolls and fringing reefs, the latter are nevertheless working quite as efficiently in the abysses of the Atlantic, and forming an enormously

wide-spread calcareous deposit. Ages on ages will be consumed before this deposit can attain the thickness of some of our masses of limestone; but assuredly it will be materially increased during the short span of a human life.

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 the lapse of a few years, become sufficiently covered up to be protected from any ordinary danger.

PRELIMINARY NOTICE OF THE ORGANIC AND INORGANIC OBJECTS OBTAINED FROM 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.*

Sufficient time has not elapsed to enable me to make a detailed report on the various objects which the Lords Commissioners of the Admiralty have done me the honour to place in my hands for examination. I trust, however, to have the report prepared for the press in the course of this winter. On the present occasion I purpose giving a summary of the results of my investigations as far as they have been conducted.

The greatest depth at which specimens have been obtained is 1,750 fathoms. The soundings from this and less depths—up to 500 or 600 fathoms—consist essentially of the same kinds of microscopic organisms already made known by Bailey, Huxley, Wallich, and others.

The marvellous profusion of *Foraminifera* and other minute structures, occurring on the bottom of the Atlantic, shows that over a vast portion of the submarine area (averaging about two miles in depth), known as the "telegraph plateau," which apparently stretches uninterruptedly from the mid-west coast of Ireland to Cape Race in Newfoundland, there are being formed calcareous deposits analogous to common limestones. While nearly all the particles of these deposits bear either the testaceous coverings of dead *Foraminifera* or the finely levigated debris of their shells, it is evident that the surface of the deep Atlantic sea-bed is one vast sheet of the same organisms in a living state, whose office it is to clear the waters of the ocean of all the mineral and organic impurities which are ever flowing into them.

Dried specimens of deep sea "ooze" procured from 1,500 to 1,750 fathoms off the west coast of Ireland bear a striking resemblance to the roe of a fish, owing to their containing myriads of *Globigerina* and *Orbulina*. This circumstance led me to suspect that roe-stone or oolitic limestone, instead of being, as is generally conceived, a concre-

* [The important additions made to this notice since it appeared in our last, have induced us to repeat it here.—ED.]

tionary 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 with, or allied to, *Orbulina universa*.

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. It is now evident, however, that the great bulk of our limestones is organic in its origin,—formed immediately by vital action, like orbulo-globigerinous mud and coral reefs, or derived from the disintegration of shells and other invertebrata. Beds of limestone are often spread over several hundred square miles in area, and one or two thousand feet in thickness. What lessons do they teach us when considered in connexion with the orbulo-globigerinous mud of the Atlantic! Animal life is ceaselessly abstracting lime from the ocean. This calcareous matter is derived, by mechanical and chemical processes, from limestone rocks, which, too, were formed by the vital action of successive generations of ancient invertebrata. The organic and inorganic changes, involved in these processes, have been repeated over and over again during the long lapse of time, forming the sum of geological periods: but, looking into the far past which geology discloses to our view, we *must* conceive a period when limestones did not exist,—when life was not created!

It has been seen *how* calcareous rocks have been formed;—the next question for solution is—from *what* have they originated? Shall we say—from primordial or azoic rocks formed previously to the Laurentian period? But no such rocks—is there any evidence for believing—could contain carbonate of lime, if they resembled our granites: they would contain *silicate* of lime averaging about eight per cent. In this case, may not the calcium of the carbonate of lime, forming limestones, have been originally the calcium of the silicate of lime of ante-Laurentian igneous rocks? In North Wales there occur argillaceous and siliceous aqueous deposits (nearly the oldest known to the geologist), collectively measuring from *five to six or more miles* in thickness. They have all the appearance of having been derived, by mechanical and chemical agencies, from the silica and silicate of alumina of previously existing quartzose, felspathic, and other rocks allied to granites. Now there is required for the elaboration of the enormously thick and ancient sedimentary deposits of North Wales, the abrasion and removal of vast masses of previously existing igneous or other rocks. Is it not a fair inference, then, that the silicate of lime (though fractional in quantity compared with its associated constituents) of the latter rock-masses, became converted into, and was sufficient to produce, the carbonate

of lime forming the limestones of our globe? Hypothetically, it may be assumed that the change was effected by atmospheric carbonic acid, aided by concurrent mechanical agencies.

Although perforating mollusks are living at great depths, I do not think that there are any grounds for apprehending that they would bore into a telegraph cable. I am also inclined to believe that there is little chance of a cable getting injured if laid down on foraminiferous bottoms; as in such places, vital and chemical actions appear to be going on so unceasingly and copiously, that a cable thus circumstanced could not but become covered in the course of a few years with organic accumulations.

The survey has been fortunate in bringing to light some interesting facts in microscopic life. It has also made known some species of shells and other animals new to the British Fauna; besides extending our knowledge of the habitats of certain rare species.

Rising not over-suddenly out of the "telegraph plateau" to within 85 fathoms of the surface of the ocean, at the distance of 120 miles from the south coast of Galway, and forming the *most westerly* "land-fall" on the Irish coast, occurs the newly discovered "Porcupine Bank." It consists of siliceous sand and coarsish gravel, the latter chiefly composed of sub-angular pieces of granular quartzite (? metamorphic), granite, chloritic quartz, &c.; along with which occur considerable quantities of the debris of Nullipores, shells, and other organisms. The larger rock-pieces, some of which are three or four inches in diameter, have often adhering to them fresh specimens of *Truncatulina* and various genera of *Bryozoa*; occasionally they bear specimens of *Crania anomala*: in most cases, the living objects are attached only to the sides, or upper surface of the stones, which shows that the water at the comparatively inconsiderable depth where they live is not much affected by storms and other disturbing agents. A number of fishes was procured by the dredge on this bank in about eighty fathoms water: one a species of *Psetta*, allied to the "whiff;" another a species of *Sebastes*, allied to the Norwegian haddock: both appear to be unrecorded as British.* There were also brought up by the dredge from the depth of a hundred fathoms *Pilidium fulvum*, *Limatula subauriculata*, *Scissurella crispata*, *Leda pygmaea*, *Arca raridentata*, and other shells, numbering in all nearly fifty species; besides sponges, star-fishes, sea-urchins, &c. The same prolific bank yielded in abundance a large hermit crab, specimens of which were tenanted one of the rarest British shells, *Buccinum ovum*. There also came up in the dredge a specimen of *Litorina litorea*, which, notwithstanding its insignificance, requires to be mentioned. The specimen is an adult one; and, though broken, it has a fresh appearance, and retains interiorly its characteristic polish. How has this shell, which only lives between ordinary tide-marks, and feeds on the *Fucus* peculiar to this tract, got into eighty or ninety fathoms

* Specimens of a pipe fish were captured on the surface of the Atlantic 200 miles West of Galway. It appears to be a species undescribed as British.

water, and at the distance of 120 miles from the shore? It may have been swallowed by a cod or some other fish, and carried thither; it may have got entangled in the roots of a seaweed, which afterwards floated out into deep water; or it may have been taken out there by some vessel, and swept overboard.

At the depth of 340 fathoms the sounding machine brought up *orbulo-globigerinus* mud containing (? fossil) specimens of a *Pecten*, an *Arca*, and a *Pectunculus*, which appear to be new to the British seas; also specimens of *Trochus millegranus* in the same condition. A perfectly fresh specimen of a *Cochloidesma*, hitherto unrecorded as British, was brought up from the depth of a thousand fathoms, and at the distance of a hundred miles west of Cape Clear. But the most unexpected fact in this record of deep-sea life is my finding a slightly broken, yet fresh, specimen of the upper valve of a *Discina (Orbicula)* in mud from 1,240 fathoms, taken in N. lat. $52^{\circ} 8'$, W. long. $15^{\circ} 30'$, on the eastern side of the great three-miles-deep submarine valley which runs from the Cape Verd Islands, on the coast of Africa, up to Kerry, or further north, where it rises into the two-miles-deep "telegraph plateau."* Fragments of a branching coral (*Caryophyllia*) and a large-spined sea-urchin have also occurred to me from other parts of the *Irish-Atlantic sea bed*.

Too much credit cannot be awarded to Mr. Hoskyn and the officers of the *Porcupine* for the zeal which they displayed in collecting and preserving the various objects I have noticed. Their labours, it is well known, were frequently conducted under the most adverse circumstances, and during a singular succession of unfavourable weather. Nevertheless, the results of the survey, both as regards Geology and Natural History, are highly valuable.

Belmont, near Galway,

VOYAGE OF H.M.S. "CYCLOPS:"—THE RED SEA.
Captain W. J. S. Pullen.

(Continued from page 546.)

As I had decided on running the first series of lines along the Arabian shore, and into Jeddah, for the purpose of coaling from a supply that had been landed there from a damaged ship, it soon became known from the Vice Consul, consequently a day or two before I started an application was made for M. Eveillard for a passage to Jeddah for himself and family, consisting of wife and daughter, with a female servant, and Janissary.

To this request I assented pointing out at the same time that the passage would not be so rapid as they might wish, as the duties of the

* Vide *Maury's Physical Geography of the Sea*, plate xi.

ship in sounding would occupy more time than otherwise. That however was no consideration, in fact whatever time we might be, it would most certainly be much better, especially for the ladies, than voyaging in a buggalow, the only other available means for reaching their destination. Accordingly after embarking them, together with Mr. Page, the British Vice-Consul of Jeddah, I left Suez on the morning of the 24th of May.

Steaming down the gulf soundings were occasionally got. When drawing out well clear of Suez Roads, fairly into the gulf, clear from any local cause to affect the wind, it came from the North, whence it was to be expected at this season of the year, in fact, according to Moresby, all the year round. It commenced light from N.E., and increased to a fresh and steady breeze from N.N.E., appearing to increase as we drew down the gulf, strongest in the night, when the next morning a fierce and fiery breeze.

In the forenoon we ran into Toor* Harbour, getting smooth water under the shelter of the northern reef, and anchored in four fathoms, a muddy bottom, or rather soft fine sand of a dark colour, with end of the reef S. 49° W., ruined fort N. 50° E., and South point of bay S. 9° E.

Toor Harbour is the only anchorage in the gulf that can really be called a harbour, of course excepting Suez, and, although small, is a snug and sheltered place against the strong North and N.W. winds. Horsburg places it in latitude 28° 16' N. and 33° 41' E. Our stay here was so short, only for the night, that only the variation was got making it 5° 46' W., and a few elevations of the highest peaks, by which I reduce Mount Agrib considerably, making its elevation 6,000 feet instead of 10,000, as given in Moresby's chart. This last measurement differs too from what I made it going up, 650 less, yet I give the last observations the preference, and settle it at 6,000 feet.

From Toor, proceeding out by the passage entered, namely South of the northern shoal, steered across for the high land of Zeitee, with a strong N.W. wind, and anchored under the lee of the Island of Mulkreman. Small though it be, it forms a very snug shelter with northerly winds, and fair holding ground, although a hard bottom. It is more extensive than Toor, affording, from its situation being on the western side, better shelter from the westerly gales, which are said to prevail in the gulf in winter.

From this anchorage a good view was obtained of the Islands Ushruffee, with the break on the shoals North and East of them. And judging from appearances, I imagine that there is room for a little correction in the chart of the position of these patches. The variation was got on shore here, which we find increasing as we get to the southward; 6° 6' W. was what Mr. Mayes, the master, made it; and being sick and confined to my bed, I directed him to endeavour the next day, in passing into and through Jubal Strait, to steer as near these shoals as safe, to take a line of soundings, and endeavour to rectify their position.

* Tur of the chart.

Leaving on the morning of the 27th with a strong N.W. wind, the ship passed East of the shoal patches distinctly visible from the break, a line of soundings was run, and such observations were made by the master as shewing a discrepancy in the chart, but the better to explain the result, &c., Mr. Mayes' remarks are here given in his own words.

"The island and anchorage near Petroleum Point, described in Horsburg, vol 1, page 340, is known to the Arabs by the name of Mulkreman. The *Cyclops* anchored at this place on the 26th of May, with the S.E. extreme of the spit of Mulkreman N. 27° E. true, and the N.E. extreme of the nearest Ushruffee Island S. 65° E. true, in seven fathoms water, coral bottom, fair holding ground, and well sheltered." "To proceed into this anchorage it is only necessary to avoid the shoal water, which shows itself very plainly, extending a short distance all round the Island of Mulkreman. Petroleum Point stretches out into a low sandy spit, just above water, to within thirty yards of this island.

"Proceeding from this anchorage on the morning of the 27th of May, to examine the shoals about Ushruffee Islands, blowing strong from N.W.. From one-third of a mile North of Ushruffee N. reef, the Island of Mulkreman bore N. 83° W. true; from one mile East of Ushruffee N. reef, the peak of Jubal bore S. 29° 30' E., true. These bearings shew that the reef round the N. Island of Ushruffee extends more to the N.E. than is represented in the chart.

"The detached shoal lying to the eastward of the Ushruffee Isle is described by the pilot as very steep on its eastern side; it breaks on its North and South extremes. Running along to the eastward of it, at the distance of about two-thirds of a mile, the soundings were nineteen, and no bottom at twenty fathoms. A line from the peak of Jubal N. 29° 30' W. true, passes over the shoal; and a line from the same point N. 24° 30' W. true, passes a little East of the shoal. These bearings show that the shoal does not extend further into the Straits of Jubal than the chart indicates. There is however some discrepancy in its position in latitude. There is no visible shoal to the northward of a line N. 85° E. true, from the N. extreme of the large Ushruffee; and the South extreme of the reef lies with the South end of the southernmost of the two large Ushruffee islands, S. 38° W. true.

"Passing the shoals once under unfavourable conditions of weather, and relying on compass bearings, scarcely affords sufficient grounds to speak positively about their position.

WILLIAM MAYES, *Master.*"

By the above remarks it is evident that there is something wrong in the position of these reefs and islands, which I trust yet to have an opportunity of placing in their proper position.

After passing through Jubal Strait under sail only, the southern part of Shadwan was rounded at about two o'clock, when, connecting again, we steamed to the northward along the western shores of the island, and at 3h. p.m., anchored in six fathoms of water, under its N.W. point. The extreme of this point, the termination of a low

sandy tongue, bore N. 61° W., and the southern extreme of the northern part of the island, or where the white chalky-looking stratum commences to show itself, N. 50° E. true. This point is more to the northward than the centre of the island, and from it to the southward there is an abrupt dip, breaking into lower and irregular ridges, when rising again on the southern part of the island it attains an elevation of 1,290 feet above the sea level. Out of this white stratum many specimens of shells were got, similar to those now found on the shore, also several scales of talc, &c.

Leaving the next morning with a moderate wind from N.N.W., ran to the southward, and landed on the extreme of island to southward to get observations for time and variation, the ship standing off and on the mean while, when late in the afternoon a steamer was observed coming down the gulf, which on communicating with proved to be the *Ganges* mail steamer, on her way to Bombay.

Finding among the letters received no further orders from their Lordships of the Admiralty as to any particular line of soundings to be run out, I determined on carrying out my ideas as previously expressed, and commence from Shadwan across Jubal Strait, thence down the eastern shore of the Red Sea, outside all the shoals, to Jeddah; across to Ras Roway, up the western shores to as far as Cosire, and as I had got a line from there up to Suez, should commence a centre one from about the centre of Jubal Strait, thence down the middle of the sea to Perim, and on to Aden.

Being too late to commence our work of sounding to night, I steamed the ship back to the anchorage under the N.W. point of the island, for the night. The result of the day's observations on the southern part of the island places it 5m. 53.58s. to the eastward of Suez, or in arc $1^{\circ} 28' 23.8''$. Taking therefore Suez as $32^{\circ} 31' 29''$ E. (Mansell's), we have $33^{\circ} 59' 52.8''$ E. for longitude of the southern part of Shadwan. The variation was $6^{\circ} 17' W.$

Early on the morning of the 29th, after rounding the southern point of the Island of Shadwan, I got the first cast of the lead about one-eighth of a mile from its S.E. point, in 313 fathoms, on a soft muddy bottom, or should rather say, a very fine sandy bottom. Steering thence across Jubal Strait the soundings were successively 450, 542, 644 and 444 fathoms, all soft bottoms, and at distance of from three to six miles apart, the latter cast being about a mile and a half off the Cape or Ras Mahommed, the southern extreme of the Sinaiatic peninsula. The course was now northerly, towards the direction of the narrow entrance of the Gulf of Akaba, but getting only one cast of 592 fathoms on that line, five and a half miles from that of Ras Mahommed, I kept for the Arabian shore, so to get a good position for the head of the line down the sea I intended running on this side. After having run a distance of eleven miles, and got two casts of 594 and 544 fathoms, darkness was drawing in, and with the Island of Tirahn so close, and offering anchorage, I made for it, and anchored in seven fathoms of water, on a rocky bottom, under its most eastern point, not more than a cable's length off shore.

Finding our tubes required sweeping, I did not get away from this till Monday afternoon, when steering off on a S. 12° E. true course for about five miles, I got the first cast of 265 fathoms, hard bottom, for the head of the line I proposed running down this eastern shore.

A course was now shaped to pass outside all the outer clusters of reefs on this shore towards Jeddah, and to sound at intervals of distance from fifteen to twenty miles, except when there was reason to expect a depth of less than 100 fathoms; and such was only the case on two occasions, in the vicinity of Naboogier and Ahwhendear Islands. About nine miles W.S.W. true of the former, fifty-seven fathoms sand and shells, was got, and near about the same distance W.b.S., true of the latter, 37 fathoms, rocky bottom. These depths were not more than seven miles apart, and further on, seven miles from the latter cast on the same course, S. 33° E., 118 fathoms was the depth. After the last cast at the usual distance, there was a gradual increase to 630 fathoms, when N.W. of the Hasanee Island, and which was eventually proved the greatest depth on this line. From thence on to Jeddah the depth varied from 270 to 502 fathoms. The lesser depth in passing close to the westward of the Palinurus and Thetis reefs. The 502 fathoms was about two miles West of the boundary line of the northern part of the Eliza Shoals, or outside Guttah Degazie. In fact, one sounding of 425 fathoms, soft bottom, was within this boundary, and not more than a pistol shot distance from the shoals of Aboo Farbramish. Again, not more than a quarter of a mile outside the break of Ras Gehaize, 408 fathoms, soft sand, was got. Indeed, the water close up to the reefs off Jeddah, appear in all places to be very deep.

Entering Jeddah Harbour we took the northern or Coozermere Channel, in fact it was by it that we passed in on first visit to the place, and certainly without meeting anything to induce a belief that this channel was not perfectly available, notwithstanding Moresby in his directions is not in favour of its adoption. This time however, I learnt from experience, or I should say from the pilot's over confidence, that it has its disadvantages, and that the second gateway is preferable, for on passing West of Abu Hamrum I felt the ship scrape on the ground, and turning to the pilot, he affirmed that he felt no shock, in fact, positively asserted that the ship did not touch the ground; but I was positive and certain that if she had not been going full speed she would have hung. I could see the bottom, too, distinctly for the time, and moreover others in the ship felt the shock. This was not to be the only time, and this very day too, for on approaching the inner gateway, the pilot, whether from nervousness I cannot say, had forgotten the time she took to turn up, together with a set of tide to the southward, she could not clear the northern part of the Abu Harritt reef, consequently she hung there; but fortunately her way was so checked in time, and tide rising, that after lowering all the starboard boats down, shifting a quantity of shot to the port side, and all hands running aft on that side, with a back turn at the same time, she got off, and I anchored in 11 fathoms of water in the

outer harbour. Divers were sent down the next day and reported no damage.

Mr. Page, the Vice-Consul, having on our former visit informed me that coals were to be got here, I desired him now to make a purchase of 600 tons for the use of the ship; and as it would occupy him some time to complete the arrangement, I decided on going to sea in the meanwhile, and sound to the southward as long as the coal we had on board would allow. I therefore put to sea the next morning.

I ran to the southward (under sail) as far as latitude $19^{\circ} 7'$ North, and commenced a line just without the boundary of the shoal patches, on the eastern shore, 215 fathoms being the first cast; steering thence toward Jeddah outside the shoal patches. The greatest depth got on this line was 583 fathoms, to the westward of the shoal of Urgo Gorab, and the least 215 fathoms at the point of commencement. Close off Moosmarec, with the centre of it bearing S. 60° E. (true), the depth was 499 fathoms, from which we ran into Jeddah, anchoring in the inner harbour between the shoals Berry and Mayatt, on the evening of the 9th of June.

This line, as far as direction went, was rather irregular, for there was evidently a strong current setting off shore and to the southward the whole time, and its cause the wind, for throughout they were strong from North and N.W., with a clear sky overhead, but hazy all round the horizon. The current by the reckoning for the first eighteen hours after commencing, was S. 28° W. ten miles. The next twenty-four or from noon of 8th to 9th, S. 4° W. twenty-four miles, and the winds were generally strongest during the day.

The winds generally prevailing on this run to Jeddah, after leaving the Island of Tirahn were from North and N.W. of a moderate strength, seldom if ever exceeding six. Drawing to the southward the wind decreased, coming occasionally from easterly quarters; thus in $23^{\circ} 37'$ North, a light air sprung up for a short time from the S.E., having lasted a few hours previous from N.E.; still further South, and into Jeddah very variable, occasionally S.W., but very light.

Anchoring under Tirahn the weather was perfectly still and calm, in fact had been so for the greatest part of the afternoon, with light and variable airs from the South. In the early part of the day the wind was fresh and steady from N.N.W., strongest when the whole space of the Gulf of Suez was fully open, still not sufficient to impede the work of sounding then in hand. Drawing up to Ras Mahommed however, it seemed as if we were running into a different region, for under the lee the winds were light from South, finally falling quite calm.

It would have been a good opportunity for entering the Gulf of Akabah, apparently a much dreaded place, where the winds are constantly blowing so strong down it, that it is seldom, if ever, visited by the native boats (buggalows).

A specimen of this wind we experienced while at anchor under the

Island of Tirahn, for although well sheltered, it appeared to keep the cable in a taut strain, coming down in such fierce and heavy gusts, nine in strength, that the surface of the sea was lashed into sheets of foam, raising the spray in a thick mist all round for a considerable height. This commenced shortly after we anchored, lasting till we got well off the land, where, although fresh from N.W., for a time it was steady. At the anchorage it veered from North to N.W.

Throughout the first twenty-four hours, commencing before we anchored at Tirahn, the range of thermometer in the air was between 75° and 87.5° ; the minimum between four and six a.m., the maximum at four p.m., when it fell to 85° . This heat was somewhat tempered by the winds when fresh, but it is most desirable to keep out of the sun.

While at anchor though, notwithstanding the fresh wind blowing all day, the thermometer stood higher throughout the twenty-four hours, ranging from 80° to 92.5° ; the maximum at two in the afternoon, the minimum six in the morning.

On the Monday morning before we left this anchorage, the thermometer fell from 87.5° to 77° in the space of four hours, or from midnight to four a.m.; but the range during these twenty-four hours was between 77° and 87° ; the maximum at noon, minimum at four in the morning.

Invariably during this run has there shewn a current against the wind, and variable in strength, certainly not much, but I think it was the cause of the ship being so much closer to the Palinurus Shoal than we expected. The current from the time of leaving Tirahn until passing that shoal had casting the first twenty-four hours, five miles on a S. 61° E., true course, the next N. 5° E., four miles. Afterwards it turned to N. 30° W., nine miles, and N. 16° W., eighteen miles, increasing as we got southward. By boat I have not yet tried, for there has generally been a sea on, and moreover, I don't think combining these experiments leads to good results.

(To be continued.)

THE COMING WINTER AND THE WEATHER.

November 18th, 1862.

Sir,—We call ourselves a great maritime nation, with already the finest fleet the world ever saw, and yet rapidly increasing; we have new docks in progress, improved dockyard administrations; the finest iron and wooden ships afloat; with the biggest and best guns wherewith to arm them; a hard working Board of Admiralty, with an enlightened statesman at its head. We have too a Board of Trade, taking cognizance, in one branch of it, of all that concerns the welfare

of a magnificent merchant marine service, even to the manning of it. But alas! we have also a large (and in itself noble) National Life-Boat Institution, and hand in-hand with it a Shipwrecked Mariners' Benevolent Society!

The enormous demand for the services of the former, and the plaintive appeals of the latter for help, at the very beginning of what promises to be a severe winter, should however cause us to ask if these be compatible with the dignity and prestige of (as it undoubtedly is) a great maritime nation?

Nautical science cannot always protect shipping from accident. Errors in judgment may occasionally endanger the seafaring of our community, and, even neglect will sometimes produce a tragical and calamitous collision, but there are considerations which we, although a great country, avoid or possibly despise. A nation whose admirals choose the burricane in which to train its officers, and who carry their fleets into the storm in which to perfect their evolutions, can afford to trust their gallant navy, and their well-manned and well-found ships in contest with the very elements; but far otherwise is it with the deeply laden, the often badly built, and less seaworthy fleets which traverse our channels and crowd our roadsteads in the pursuit of commerce.

Yet why should gales prove so destructive to our mercantile marine? Why should life-boats be so much needed upon every part of our coast? Let the reply sink deeply into the minds of all. Life-boats are for the most part needed to save the lives of those who are unexpectedly caught in bad weather upon a lee shore.

It distresses me to reflect that, had my very humble suggestions been more strongly urged, or met in a fair spirit many months since, things might this winter have been more cheering. British hearts would then have had but one great sympathy with the specially distressed. Our full attention would have now been alone absorbed by the grievous national calamity which appeals to every one of us, from the wailings of the poor and patriotic operatives of Lancashire. As a member of the British public, deeply sympathising through a whole life with those exposed to the dangers of the sea, (in which, in my own person, it was my lot to have large experience in my younger days,) I cannot, while deeply touched with the accounts from Preston, &c., where human misery seems increasing to a fearful extent; I cannot, I say, lose sight of other threatenings as to the coming winter, which reach us painfully.

In June last, a letter from me was kindly inserted among the widely read pages of the *Nautical*. I therein alluded to the coming winter, and the position of the Shipwrecked Mariners' Society in particular, little suspecting either the terrible demands on charity which now menace from northern England, or that (to use the words of a leading journal,) the respected society referred to, would early in November "have no money in its till." The unusually heavy gales in October had not then desolated so many miles of coast, leaving a large number of rescued but destitute beings, dependant for days on the bounty of the

Shipwrecked Mariners' Society, for common necessaries of food and raiment.

It is, however, consoling, to find that sailors, removed as they are from all knowledge of manufacture, come forward like their fellow-landsmen to help the poor cotton weavers. Perhaps there is not a ward room of a commissioned ship in European waters, which does not respond to their cry for food, and indeed for life itself, from the unfortunates of our northern and midland counties. Yet there are other claims upon us which must also be met, or the public streets, during the gloom of approaching winter and early spring, will swarm with poor shipwrecked mariners, increased fifty per cent. in number by vile and idle impostors, who will gladly adopt the garb and habit of sailors, to aid them in abusing the generosity of the hard pressed public.

We ought then to consider whether anything can be done to help (and promptly too) the Shipwrecked Mariners' Society; and I crave the favour of your obligingly inserting this communication, in the next number of the *Nautical*, on their behalf.

That the Shipwrecked Mariners' is a really benevolent society, in the widest acceptance of the term, cannot be doubted. I have for years been disconnected with it, (except in my trifling subscriptions), but I forcibly remember that about the year 1849, a fearful gale from the southward caused so heavy a surf on the South coast of the Wight, where I was living, that many boats and nets, and much fishing gear, which were customarily stored far above high water mark, were swept away in one tremendous tide. I happened to know of the great distress caused to one poor fisherman, who had a large family, and acquainted the warm hearted secretary of the society with full particulars. Pleased indeed and surprised was I to find the society so considerate, as to relieve (to the extent of pounds,) this poor and worthy fellow, with a promptness which in such cases trebles the value of the gift. And yet this society, which numbers about 50,000 half-crown members, has in its benevolence exhausted its funds! Between the 1st of March last and the 31st of May, it relieved the crews of about 150 vessels, "boarded, lodged, clothed, and forwarded them to their homes." I have not communicated with the society as to this appeal, but I quote from my having noticed their July report. Now surely something must be done for it, or rather for those who may be shipwrecked during the winter. If I write strongly may it be excused, when I declare my belief, that within a week of the time of my writing these words, another fearful gale of the worst kind may shatter many a goodly ship on the rocks, and make increased demands on the sympathies of those, who like me, admire and honour the Shipwrecked Mariners' Benevolent Society. Before these lines are printed, there will be, if any truth exist in my so-called "lunar theory," on or about the 21st or 22nd inst., a very great atmospheric disturbance, and God alone knows where its fury may burst! I fear its effects will be extensively felt, and strongly felt, because all the influences which can coincide to produce disturbance will then do so!

Not only must the evils arising from such be met, but I say more, they must be prevented. Every thing which can be done must be done, to prevent vessels being caught in these gales. But let me first consider what is being done to prevent shipwreck, apart from the wise restrictions imposed on the mercantile marine by our law-givers.

It may seem presumptuous in me to speak so plainly, but the public really are not satisfied with things as they are, and I will prove it. Why do the seamen on the coast, (the East coast,) put to sea when the drum or the hoisted cone warns of a gale? simply for the following reasons:—If I am crossing a railway cutting on foot, and a railway watchman calls out to me that a train is coming, for he sees it, I hastily seek to avoid the danger; but suppose he on several occasions shouts out to me, not to cross, because he sees a train is coming, when actually none appears, and I wait, and lose perhaps my dinner, or miss a probable engagement of importance; in either case, if I am a man of ordinary feelings, I at least thank him; although in the latter case while giving him credit for good intentions, I am likely to doubt his judgment, and resolve to depend in future upon my own eye-sight and experience. And thus it is with seamen. In the *Shipwrecked Mariners' Quarterly Magazine*, for July last, p. 163, under the head of "Meteorological Telegraphy," an explanation is given of what is really meant by what are officially called forecasts of weather. It says, "all that the cautionary signals imply is look out, be on your guard, notice your glasses and the signs of the weather; the atmosphere is much disturbed." Is that all? How are seamen to receive this? Vigilance is the attribute of a sailor, watching his glasses and the signs of the weather have been his habit from his apprenticeship; and sailors can generally detect disturbance in the atmosphere by the state of the sky itself. The seafaring public evidently believed that more was implied in those signals, and hence their disappointment.

In justice to what is now pretty well known as my weather theory, allow me to remind you, that in the page 164, following the one already quoted, some dates are given, (Nov. 12th and March 7th,) in proof of the value of the official system of meteorological telegraphy now in use. I do not dispute the value, to a certain extent; but if your readers will turn to your *Nautical Magazine* for January last, I at p. 32, called to your recollection my having in October, at p. 624, particularly cautioned against the cyclonic periods of November 14th, and December 11th. And again, I gave many weeks' previous warning against the other period, viz., the 7th of March; therefore, I claim (as I can in perhaps, all cases of recent gales of any magnitude) having given timely notice, while the official telegrams have been able merely to announce their arrival, at of course, the time predicted by me.

Now, let us suppose the system of meteorological telegraphy to be perfect: What is the utmost it can do? It can only make known to vessels near the land and in sight of signals, that they had better take precautions against bad weather, and very often the gale is upon them before such precautions can be taken, for in most cases they are probably, already caught upon a lee shore—while vessels in the offing,

which are out of sight of signals, may actually be running unconsciously into danger. Why should our signals, or warnings, or forecasts be limited to vessels near shore, when other means exist of avoiding danger? When months, and even years before hand, such warnings may be issued with infallible accuracy?

Now, let this be once believed, and a valuable means is provided for the avoidance of danger to vessels, wherever they may be. That such is possible, will be seen from what follows in this letter; and it is the means of preventing shipwrecks, which of all others is likely to be most available in future, in keeping up the funds of the Shipwrecked Mariners' Society.

I have lately had many applications from the coast for more precise information, among such (and as indicating the extent of a knowledge of my system, and its appreciation) I have already enclosed for your private eye, a letter received from Aberdeen; I can show others from the Shetland Isles, Dover, Bristol, the western coast of Ireland, &c., &c., all indicating belief in the truth of my theory, from the writers having watched my marked days; some of these are sea captains, who have long kept registers for the Board of Trade. I will now, as an instance, give a copy of a letter, received from an intelligent ship master, whose name for obvious reasons I prefer handing to you privately.

“Bristol, October 14th, 1862.

“Sir,—Will you have the goodness to give me a list of your marked days for this month, and also for November.

“I have lately returned from the West coast of Africa, and three of your days turned out as expected: a very great disturbance in the Trade winds (N.E.), and also a very unusual disturbance in the air. As I am much interested in a ship which leaves on Monday for West Africa, I should be very much obliged for your opinion of the weather about that time.

“Having had the honour of keeping Admiral Fitzroy's register for two voyages, I take very great interest in it; and particularly your lunar remarks which I frequently read in the *Nautical*.

“Most respectfully,

“S. M. Saxby, Esq.”

In reply to the above, I at once on the 16th of November instant, cautioned him to avoid sailing if possible, on Monday the 20th, or even during that week. We have melancholy records written in black crape, all round the coast, that I was strictly right. A grateful letter was returned from him, in which this merchant captain gives me details of the proofs of my theory, as observed by him on the coast of Africa, &c., adding—“I place every dependance on your periodical remarks, and I am sure some of my friends (captains of steamers) out of this port, would be glad to be better acquainted with them.” And again he says, “In August, 1861, I just escaped the centre of a violent cyclone;” (then follow details,) “and I found on my arrival here it was one of your marked days.” Now, this merchant captain

has written since the gale which I predicted for the 19th or 20th of October, giving me all due credit for my accuracy in thus forecasting the gale, and the subsequent bad weather. Finding from my reply that I am fearful of the 21st and 22nd, &c., instant, he declares he will keep a good offing if possible, and pass outside the Cape de Verdes. He did not sail till about the 6th instant.

Another letter from a merchant captain at Bristol, and one belonging to the same owner, (who has fourteen ships, five of them keeping the Board of Trade register,) tells me on the 6th instant, that "when at sea in extra tropical latitudes, I have (he says) watched the changes of the weather about the time the moon crosses the equator, and in two cases have experienced otherwise unaccountable sudden changes of wind and weather, within an hour of the time mentioned in the *Nautical Almanac*." He adds, "according to your predictions I expected a gale or change from the 1st to 3rd instant, but we have had unusually serene and settled weather." The word unusually explains all. I desire no stronger testimony; I only in general predicted change. He concludes by asking still more information, but says, "I have copied off your dates, and consider myself forewarned and forwarned, though I think I understand your system well enough to make the *Nautical Almanac*, answer every purpose."

Respect for the value of your space forbids my sending at present further abstracts; but with your permission I will enclose this captain's letter also for your private satisfaction.

I have thus, sir, shown that many eyes are upon me, and that I am not without some public support, whatever indifference and private sarcasm may be shown towards, and cast upon me and my exertions, in working out this or some other all important weather theory.

It would ill become me to attempt retaliation: all my opinions have been plainly and faithfully offered in the *Nautical Magazine*, but there exists the binding thong strapped across the very mouth of science, which the greatest philosophers of this and of former ages, (perhaps the Astronomer Royal and Sir John Herschell excepted,) have by degrees so tightened, that we have in the question of meteorology a perfect gag to be got rid of, before a weather system of any public use can be fairly investigated and encouraged. The impossibility of any weather theory based on lunar influences is yet the cry of the multitude. As a proof, a few months since, I sent (intended as a compliment to an official of some position,) a copy of my marked days. I had sent others to the very heads of the nation, and in most cases they were suitably and even encouragingly acknowledged, but this gentleman had the good taste, and good sense, and politeness, to direct his secretary to return my communication, saying that he "did not believe that any one could foretel weather for above two days in advance." For the present I withhold his name even from you, sir, out of respect for his office.

This, however, reminds me, that I am in a position to clearly show abundant proofs, that the weather tables published in the daily papers are not only fallacious in their attempts to predict for two days in ad-

vance, but often totally contradictory. How can we expect the public to profit by such forecasts if this be true; and why should such fallacies be longer tolerated? If they were the best hints that science could offer we should receive them with respect, but science has nothing whatever to do with them. Science is knowledge, but these are mere guesses: to talk of calculations is absurd. Combinations there may be, but let us judge of their value by the test of resulting weather.

I am not seeking to advance my own opinions at the expence of those of others. In your columns I have sought the truth and that only, and have paid dearly in purse and peace of mind, in maintaining my belief in that truth, and now I see a most benevolent society being sacrificed and its usefulness impaired by fallacies, which I am resolved henceforward to do all in my power to correct: and therefore with regard to the test referred to, I will adduce an instance—let it be taken even from the past week. Now, if the weather forecasts as published in the daily papers be not intended for public information, and the public benefit, why are they published at all? Those who live inland may innocently imagine that because these are official they must be trustworthy: but ask the intelligent seafaring man, even the ordinary fisherman what he learns by them, and he will laugh at your belief in supposing he can put faith in such constantly contradictory probabilities, since the forecasts of weather for the Thursday for instance, are not unfrequently ignored by next post, and a new opinion published, neither of which agree with resulting weather. Now, lest it be supposed that this is overwrought, let us turn to the daily papers of the past week, we there see that the *Daily Telegraph* of the under-mentioned dates gives quite contradictory opinions as to the Friday, as follows:—

Nov. 13th.—Foretold for Friday N.N.W to E.N.E., strong to fresh.

Nov. 14th.—Foretold for Friday S.E. to S.W., strong, snow or rain.

Thus, in the first place, assuming the wind to blow from some one of one half of the points of the compass is a pretty wide licence, because northerly winds and southerly winds are of opposite character in the weather produced. The actual weather at Sheerness (being the South-East part of England,) was as under:—

Wind at Sheerness northerly, nearly calm, and very fine. No strong wind, no snow, no rain, nor any appearance of either; but lest the accuracy of my register should be impugned, let us refer to the official register itself, as given for Friday in the *Daily Telegraph* of Saturday, the 15th instant.

Wind at Dover.—N.N.E., 2, meaning light airs with scarcely a cloud.

Wind at London.—N.E., 1, or scarcely a breath, and perfectly cloudless.

Now, what can any reasonable man (setting aside the experienced and veteran sailor,) think of such forecasts? Of what use are they? I can produce plenty of such contradictions from the same lists. If my own theory have even little merit, (but I dispute this,) it must be better even in its novelty as exciting attention, than a so-called

system, which dispirits those by its palpable failures who look for help from science; and I therefore throw down this public challenge in favour of my system, which has theory and facts as its foundation. I may have much yet to learn, and I dare say a liberal public would accord to me the same indulgence which has been so long given to present attempts to benefit the shipping interest, by attending to weather warnings. But let it be shown in any one instance, say in the approaching 21st and 22nd, &c., Nov. that I am mistaken, and I will freely acknowledge it in your columns—unfair as it would be to put a single failure out of three years, in counterpoise to the hundreds which I can bring during the past twelve months, as belonging to the present system. I must again and again declare, that I know enough of certain parties, to highly respect them and their praiseworthy labours, but what can they do in defiance of the philosophical dogma which denies to them, as it does to us all, the free exercise of reason, and should they advocate a lunar theory, would brand them, as it does me, (although little I care for it,) with the stigma of credulity and incompetence, or worse.

I believe, therefore, that next to the prompt assistance needed by the Shipwrecked Mariners' Society, the best we can do for it permanently, is to more extensively forewarn merchant captains, as to the periods which I have so often mentioned in your numbers of the *Nautical Magazine*, viz., the times of lunar stitial colure, and lunar equinox, but more especially when these happen, (as they will on the 21st and 22nd instant,) at or near the time of the new moon in perigee.

I have, &c.,

S. M. SAXBY.

To the Editor of the Nautical Magazine.

THE LIVERPOOL MERCANTILE MARINE SERVICE ASSOCIATION.

A general meeting of the Liverpool Marine Service Association was held at the rooms of the Association, Water Street, on the 10th November, Captain Sproule presiding. Among those present were Captains G. Hamlin, J. Miller, S. Gale, G. Roche, W. Hoskins, T. Hamlin, J. Olive, J. Wright, W. Wilson, W. T. Marsden, B. J. Thomson (Secretary), J. Owen, J. R. Cameron, A. Webster, J. Wilson, J. G. Scott, H. J. Ward (Treasurer), W. Mason, W. E. Betts, G. M'Donald, J. Colvin, P. C. Petrie, J. Hogg, J. Henderson, Worsley, Clint, &c., &c.

Mr. Thomson, the Secretary, read the Report of the Council:—

The Council regrets that, from various causes, no general meeting of the members and associates has been held since the last annual meeting; but it trusts that for the future they will be called together at least every two months, in order that not only the interest of members

in the association may be maintained by knowing intimately its workings and management, but that sufficient opportunities may be afforded to them to bring forward and discuss all matters relating to the service.

The new rooms have now been completely fitted up and furnished in a manner which, the Council trusts, has added to the comfort and convenience of members. It is with sincere pleasure that the Council reports that, through the exertions and kind donations of the members and their friends, all this has been done without affecting the subscriptions or necessitating the reduction of the ordinary expenditure.

The Merchant Shipping Amendment Act has now become law. Although it does not embrace all the improvements and additions which were suggested on the part of the Association, it contains some which show that there was a desire on the part of the Government to meet the views put forward. The Board of Trade have also, in carrying out the regulations of the act, stated it to be their intention to appoint nautical men as their nominees at the Local Marine Board, and to appoint two instead of one nautical assessor to the courts of inquiry into the causes of wreck and casualties to merchant ships. With regard to the latter subject the Council considers that these courts would be still more improved, and more confidence in them would be felt by the service, if one only of the nautical assessors was nominated by the Board of Trade, and the other by the Local Marine Board of the district where the inquiry takes place. It is intended again, at an early period, to urge this upon the Board of Trade.

It was with much pleasure that the Council granted the use of the rooms for the presentation to Captain Wm. Wilson, of the *Emily St. Pierre*, a member of the Association, of the reward so well earned by his gallantry, perseverance, and skill, under the extraordinary circumstances attending the recapture of his ship; and that it was enabled to present to him a gold medal as a memorial of the admiration of the members of conduct so characteristic and worthy of a British sailor.

The Council had also the pleasure of giving the use of the rooms to the committee of the Association for the Promotion of Social Science, to inquire into the causes of mortality among merchant seamen; and through the members it afforded, it is believed, valuable information upon this important subject. The report will be found among the proceedings of that association.

Some time since, a communication was received from the Ship-owners' Association, requesting assistance in promoting a proposal of that body to improve the education of merchant officers, by instituting periodical examinations, and conferring honorary distinctions upon those officers who passed them. The Council gave the proposal such support as it was able. It regrets that it has been rejected by the authorities before whom it went, but hopes that other opportunities will be found to press forward a scheme so desirable, and so well calculated to instil habits of thought and study as well as proper emulation in self-improvement among young officers.

The usual yearly report of the Committee of the *Conway* has been made to the Council. It shows this branch of the Association is an-

swering well the important objects it was instituted to fulfil, and that in its management the Committee have exercised an energy which has both merited and commanded success. The Council is sure that the report of the proceedings on the distribution by Sir John Pakington of the prizes to the boys will be read with great interest by every member anxious for the improvement and elevation of his profession, and also that all the members under whose care these boys may now or hereafter be placed will give them that protection and that assistance in acquiring their education as sailors which the Council considers boys brought up as they have been, under the auspices of the Association, should receive.

A question of much importance to the service was discussed at the annual meeting, in reference to the seizure of masters, officers, and ships, because small quantities of tobacco were found secreted on board; and at the instance of the Association, Mr. J. C. Ewart, M.P., moved for and obtained an order for a return to the House of Commons of the seizures during two years in this port.

The Council considers that the returns exhibit most clearly that an enormous and unnecessary amount of inconvenience is sustained by the service as well as by the shipowners from the present system. It much regrets that in the column for remarks in which the Customs profess to give the explanations attending the cases which they appear to consider the most important and to require justification, they have omitted to mention that of Captain Chivers, of the *Onward*, who was arrested and detained in prison on a charge of smuggling tobacco he had actually imported, and that in other instances the statement of the Customs is not, the Council believes, in strict accordance with the facts: for instance, in the case of the *Hope*, the second vessel named in the return, it is stated in the column for remarks, "The tobacco having been found in the master's cabin, and the officers having reason to believe that he was privy to its concealment, though no positive proof could be obtained, a fine of five pounds was inflicted."

The report of the Commissioners of Customs upon the same case, in another paper, says, "In this case the officers had strong reasons to believe, although 'legal proof' was wanting, that the seized tobacco 'was the property' of the master, and we therefore deemed it right to impose a fine of five pounds on the release of the ship."

It is impossible of course to review every case in the return, but the case of the *City of Boston*, fol. 36, is one which observation peculiarly points out, as it throws distinctly upon the master the imputation of dishonesty and smuggling.

The actual culprit is stated to have been released not on proof of the captain and owner's guilt, but upon "the ground of their guilt."

Captain Sears, however, not only denies this, but says that in the chest of the steward, who was seized and fined £100, in default of payment of which he was imprisoned, the receipt for payment of the tobacco was found, and, at great expense, Captain Sears also procured the affidavits of the parties connected with fitting up the place in

which it was concealed, and which show that Captain Sears had nothing whatever to do with it.

The steward, tired of imprisonment, alleged that the captain was an accomplice or principal, and accordingly was not only freed from arrest, but, it is understood by Captain Sears, was sent by the customs authorities by steamer to America to procure evidence to convict the captain.

That he failed in this is clear, for the fine was reduced, and no proceedings taken against Captain Sears, but upon what principle of justice—after the failure of such an attempt, and after reading the affidavits produced by Captain Sears, showing the true state of the case, the commissioners only reduced the fine from £500 to £250—it is difficult to understand, unless it was to make Captain Sears pay the expense of efforts to convict him.

The quantity of tobacco was considerable; but it will be seen from the case of the *Benjamin Adams*, in the same page, that it was not more than another steward attempted to smuggle.

Without desiring to cast any undue reflection upon the officers of Customs, the Council feel that the mode in which the fines are disposed of is peculiarly objectionable.

The return shows that the officers themselves get large proportions of the fines, and are directly benefitted by procuring convictions. In the case of the *City of Boston*, the Customs officer who informed received upwards of £80 for that transaction alone—thus temptations are placed in the way of officers of inferior position and small incomes which are not likely to conduce to the accuracy of their information or reports.

Copies of the returns will be found in the rooms, and the Council trusts members will peruse these with attention, and will give any explanation or information with reference to any case in which they may have been interested, so that upon the sitting of Parliament the matter may be brought before the legislature, and especially under the consideration of the committee of the House of Commons upon Customs, which will then sit again to conclude its labours. In the meantime the attention of the Chamber of Commerce, and of the Shipowners' and the Steam Shipowners' Associations, have been called to the subject.

The Council thinks that it would be highly desirable if members, when abroad, had the means of recognising and communicating with each other, and with this object it has prepared a flag which it trusts members will display in foreign ports. It hopes, as well, that members sailing under the flag of the association will recognise in this some obligation of mutual support and assistance, and that they will in all instances do for each other those offices of kindness and friendship and counsel which they would expect to receive from the Association or the Council if at home.

To enable members desirous to obtain appointments to ships to bring their names and qualifications before the shipowners of the port,

and to enable shipowners to select their masters and officers, the Council has, during the last three months, published and circulated lists of the members who have entered their names in the books kept for the purpose in the rooms. The experiment has proved most successful—thus seven commanders and five officers entered their names for the first circular in September, and four commanders and all the officers were appointed to ships; nine commanders and four officers entered their names in October, and three commanders and all the officers were appointed to ships.

The interest of the members and associates in the progress of the Association is shewn by their subscriptions, as well as by their attendance at the rooms, to be still warm and active. There must, however, be very many who belong to or who are connected with the service who have not enrolled themselves, and, the Council are sorry to say, there are many who have not maintained their membership.

The Council trust that those who have not joined will make themselves aware of the objects the Association has in view, and what has been done to carry them out. It trusts as well that those who have ceased to maintain their membership will remember that the very nature of their profession renders it impossible to collect their subscriptions in the ordinary way, and that to such a scattered body it is far more important than to any other profession that they should have an institution such as this, because having such a common centre is the only means by which the interests of the service can be watched, its privileges protected, and its rights advocated efficiently.

These remarks are not made in a spirit of grumbling or dissatisfaction, or because the Council despairs of carrying out all the objects of the Association, for it has achieved many of them, and will try to do the rest. Nor does it make them on the ground of poverty and want of support; on the contrary, its income has always exceeded its expenditure, and is increasing in proportion to it. It makes them simply because it most firmly believes that the welfare and permanence of the Association is of vital importance to the service, because if so much has been done with comparatively limited means, far more will be done, and far more rapid progress will be made if these means are—as they easily may be—doubled, and because it anxiously seeks that the commanders and officers of the port who are already members should maintain and support the Institution, but that those who are not, should consider its advantages, join it, and share in the privileges it affords.

The Chairman said it had been thought that the Association was incurring a very serious expense in going into the new rooms, but he was happy to say that they were money in pocket by the removal. He might also state that their subscriptions were larger to the amount of £50 this month than they were at the corresponding period of last year, and he believed the increase had taken place chiefly within the last two months. This looked as if men were beginning to see that it was to their advantage to have their names enrolled as members of

the Association. It had been suggested that it would be most advisable that each member should have a flag, which he might hoist in foreign ports, by which he might be recognised by every brother member, thus forming an immediate introduction on a basis of common and mutual interest. This had been laid before the Council, and a flag was in course of preparation, which would be supplied to members at a very moderate cost. He hoped every member would avail himself of it on every possible occasion. He strongly recommended the boys of the *Conway* to the masters of vessels, and he hoped that when they got any boys from that institution on board their ships they would do everything they could to improve them morally and scientifically. The tobacco question had been a much vexed question for many years; and, through the exertions of the Council, with the kind assistance of the borough members, a return had been obtained from Government of every case in which ships had been seized and detained, and masters fined, in consequence of tobacco being found on board, during the last two years. Many other things the Association had done. They had obtained two nautical assessors instead of one, but they did not intend to let the constitution of the board of inquiry into the loss of vessels rest there. At present both the nautical assessors were nominated by the Board of Trade. The Association had urged that one ought to be appointed from the Local Marine Board of the port where the investigation took place, not because they meant to impugn the conduct of the nautical assessors, or to find fault with their verdicts, but because they thought it would be more satisfactory if one of them were a local man, and they should continue to urge the point upon the attention of the Government. He earnestly entreated every member to continue his membership, and to induce all he knew to follow his example, and concluded by moving the adoption of the report.

Captain George Hamlin, in seconding the motion, said the great bane of the profession had been a want of cohesion, but now that this Association had been formed, and was able and willing to represent the interests of the service, he anticipated a great improvement amongst all ranks of the mercantile marine. He congratulated the association upon having a balance in hand, and reminded the members that the balance as it increased would be appropriated to assist the widows and orphans of its members who stood in need of pecuniary aid. He earnestly urged all the members of the profession to assist in carrying out an object so necessary for them, exposed as they were to constant danger and peril. It was only one of their objects, but it certainly was one which alone ought to induce every commander to join the Association.

Captain John Miller gave his entire approval to the proposal to have a distinguishing flag for members of the Association. It would bring them together in foreign ports, and cause the Association at home and abroad to be a rallying point for the service, and a common ground on which all members could meet—a thing greatly wanted. The tobacco question was one embodying a serious grievance, but it

was as nothing to many other grievances under which the mercantile marine laboured. He would give them a glaring instance. On his last passage home he had rescued a ship's crew, consisting of thirty-seven men. He took no credit to himself for having done that which he conceived to be his duty as a man and as a sailor. The ship had on board 8,000 bales of cotton, and her total value was about £260,000. His own ship had been considerably detained, and he had been put to much expense in running into a foreign port to put the shipwrecked crew ashore. It was possible that he might be rewarded for what he had done as an individual, but about that he did not care so much as that a full act of justice should be rendered to his owners. The only remuneration that he could look forward to legally was *nil*; but if he had recovered thirty-seven bales of the cotton on board that ship, he would have had a large claim upon them. Men afloat had not that consideration extended to them that they would have on shore, and when he went to sea he went with the full conviction that his life was not worth the value of a paltry bale of cotton. In this case the signal of distress was hoisted not to him, but to another ship, which proceeded on her way, leaving the sinking vessel to her fate. The moral that he drew from this was that, apart from a feeling of humanity, it should be made a man's interest to rescue life before property.

The resolution was unanimously agreed to.

The Chairman said the business of the meeting was concluded. With reference to Captain Hamlin's remarks, he explained that the expenses of the Association were now at a maximum rate, and he did not see any probability of their spending much or any more than they spent at present for maintaining their rooms and for their other ordinary purposes; yet they had a balance in the hands of the bankers, and he might tell them that every penny that was added to the funds of the Association would go to their provident fund.

A vote of thanks to the chairman for presiding terminated the proceedings.

EVENINGS AT HOME AT THE NAUTICAL CLUB.—*The "Albert Edward" Lifeboat—Gallant Deeds of the Boats of the Royal National Lifeboat Institution, and its Generous Supporters—The Leading Subjects Producing the Cotton Famine, and its Effects on our Countrymen—The Distinguishing Attributes of the Contending Parties in America—Neutrals and their Neutrality—Mr. Glaisher's Visit to the Higher Aerial Regions.*

We have again passed through the ordeal of wrecks observed the Chairman, and our mercantile fleet have sorely suffered as they mostly do. At our last meeting they had recorded some distressing losses.

In fact our late gales have caused great disasters. More than a hundred vessels have been wrecked, and in some cases the crews were lost. A single steamer, on its way to Hull, which was forced to put into Hamburg by stress of weather, saw no less than six vessels foundered without being able to render them the slightest assistance.

Before, however, calling on the Secretary, for the report of the gallant doings of the lifeboats, he had heard of a remarkable circumstance which was worth recording, which was this:—It related to the majority of the Prince of Wales. The Padstow lifeboat, belonging to the National Lifeboat Institution, was the means of saving, under very perilous circumstances, the crew of four men of the sloop *Loftus*, of Padstow, which had in a heavy surf parted from her anchors and gone ashore. But the curious circumstance was, that by the written permission of the late Prince Consort, this lifeboat was called the *Albert Edward*, after the Duke of Cornwall, and this deed of gallant daring was done on the 9th of November, the Prince's birthday.

The Chairman then called on the Secretary to read the report of last meeting of the Royal National Lifeboat Institution, held on the 6th of November, at its home, John Street, Adelphi. It commenced by stating that a reward of £6 10s., in addition to a local subscription, was voted to the crew of the institution's lifeboat stationed at Lytham, for putting off, in tow of a steamer, during a fearful gale of wind, and rescuing, under great difficulties, fourteen persons from the American ship *Annie E. Hooper*, of Baltimore. The lifeboat's warp having parted whilst picking up a poor fellow from the sea, she was swept away from the wreck; but fortunately the Southport lifeboat of the society came up just at the time, and took off the Captain and three others. The Hon. C. F. Adams, the American minister, expressed his great satisfaction with this valuable lifeboat service to his countrymen.

It was stated that Mr. Alsupp, owner of the *Loch Lomond* and other steamers, had given a general order to his captains, that when any of his steamers were required for lifeboat services, whatever might be their other engagements, the lifeboat must always have the preference.

The committee expressed their thanks to Mr. Alsupp for his generosity and humanity.

The Lytham lifeboat was also the means, during a heavy gale of wind, of saving the schooner *Ceres*, of Arbroath, and her crew of five men. This valuable lifeboat has often been the means of saving shipwrecked crews, and sometimes vessels, from destruction.

A reward of £12 was also voted to the crew of the *Thorpe* lifeboat, for putting off on the night of the 20th ult. and rescuing four men belonging to the barge *Henry Everest*, of Rochester, which, during a strong gale, and in a heavy sea, had sunk off Thorpeness, Suffolk. The cost of this valuable lifeboat was generously subscribed last year and presented to the institution by the town of Ipswich and other Suffolk residents. It is to be hoped that many inland towns, especially,

will be found to emulate the laudable example of Ipswich in this good work; and thus, although not on the coast, assist indirectly in saving the lives of shipwrecked sailors.

The Caistor lifeboat of the institution had been the means of bringing into port the schooner *Hannah Booth*, of Plymouth, which during a heavy gale of wind, was found abandoned on the Barber Sands, on the Norfolk coast, on the night of the 19th of October.

The Margate lifeboat of the society had also put off and remained alongside a brig which had struck on the Girdler Sands, off Margate, during a heavy gale of wind on the night of the 19th of October. The presence of the lifeboat encouraged the crew to persevere in their endeavours to save their vessel, which they fortunately succeeded in doing after some hours of exertion.

Rewards amounting to £90 were likewise voted to pay the expenses of the Yarmouth, Fleetwood, Lytham, Southport, Walmer, Newhaven, Fraserburgh, Campbeltown, and Arklow lifeboats of the society, for putting off during the fearful gales in October, with the view of saving life.

The silver medal of the institution, a copy of its vote on parchment, and £2 each, were voted to Mr. William Goldring, James Spraggs, and David Farmer, being the crew of the smack *Ferret*, in admiration of their noble and persevering conduct on the 17th of October, in putting off in the boat of the smack and rescuing, at the greatest risk of life, the crew of three men of the sloop *Cygnnet*, of Portsmouth, which had sunk off the Hampshire coast. The three men were seen clinging to the rigging of their sunken vessel on the Woolsiner Sandbank, with the sea dashing over them. After having encountered the heavy gale then blowing, the vessel had become unmanageable, and struck on this dangerous shoal, where in a few minutes she was overwhelmed by the waves, and began to break up immediately. Mr. Goldring and his crew, after making an attempt to reach the poor shipwrecked men in the smack, put off in their small skiff, only 18 feet long, and after great exertion, and at the utmost peril of their lives, they succeeded in recovering the three men, who had been exposed to the fury of the wind and sea for five hours. They were laid in the bottom of the boat, one of them in a state of insensibility, and after encountering the perils of a return passage through a heavy sea, the boat safely reached the shore.

A reward of £2 was also granted to a boat's crew for saving, at much risk of life, the crew of six men belonging to a fishing yawl, which, during a frightful squall, was capsized off Clogherhead, on the Irish coast, on the 12th October. The silver medal of the society and £2 were also voted to James M'Millan, who is upwards of seventy years of age, for his general services in saving life, and particularly for his intrepid conduct in rushing into the surf to the rescue of Wm. Fordyce, of the ship *Genova*, of London, which, during a heavy gale of wind, had been wrecked on the Mull of Cantyre, on the 13th of October. Soon after the vessel struck she began to break up, and the crew betook themselves to various portions of the wreck which were

floating about. Four of them were carried out to sea; the fifth, Wm. Fordyce, who had charge of the ship, got upon the poop, and was driven near shore, where he kept floating about among the fragments of the wreck for nearly five hours. At last, when carried near the land by a wave, he made a desperate effort to reach it, but fell short inside the cleft of a rock, where M'Millan seeing him in danger of being again carried out, rushed at the risk of his life into the sea up to his shoulders, and succeeded in dragging him to the shore very much exhausted.

It was stated that wherever the lifeboats of the institution had put off during the late storms, when handled by able and determined men, their behaviour in the heavy seas had in most instances excited the admirations of their crews. At Bude Haven, however, the lifeboat had been ill-manned on the occasion of the fearful wreck of the *Ben-coolen*, and the result was that she was unable to save any lives on that disastrous occasion.

It was also reported that the beautiful lifeboat, mounted on her transporting carriage, which was recently exhibited in the gardens of the Royal Horticultural Society, contiguous to the International Exhibition, had been sent to Tynemouth, Northumberland. The officers and some of the men of the Royal Naval Volunteers attached to the Exhibition and to the London depot had, on the removal of the boat, given it a grand ovation. Sir Richard Mayne had also kindly directed the police to give the procession every assistance in their power.

A lifeboat had just been sent by the institution to Drogheda, on the Irish coast.

Mr. Robartes, M.P., had again presented to the institution £150, to assist it to found a lifeboat station at Porthleven, Cornwall. He had previously, in conjunction with his mother, the late Mrs. Agar, founded a lifeboat station in connection with the society at the Lizard.

The Committee decided on naming a new lifeboat after Thomas Chapman, in acknowledgment of the great and important services Mr. Chapman had rendered, for many years past, to the lifeboat cause, in his capacity of deputy-chairman of the National Lifeboat Institution.

The new obverse of the medal of the institution, representing a portrait of her Majesty the Queen, executed by Mr. L. Wyon, was exhibited to the meeting. It is in lieu of one of George IV., the first patron of the Lifeboat Society, and is a beautiful specimen of art.

The demands on the institution at the present period of the year continue to be unusually heavy, and the committee were in consequence compelled on the 6th ult., to order the sale of £1,000 stock from its small funded capital.

Interesting reports were read from the inspector and assistant inspector of lifeboats of the institution, on some of the lifeboat stations of the society on the south coast which they had recently visited.

Payments amounting to £600 were ordered to be made on various lifeboat establishments.

The proceedings then terminated.

There seems to be two great subjects occupying our attention at present, said the Chairman. The first and all-important one, which indeed was the occasion of the second, was the American war of rebellion, and the second as they would anticipate, was the distress of our operatives from the loss of the cotton supply. He was happy to see that that distress was taken up in the spirit it should be. It was not likely that such a cause would be otherwise dealt with in this country, and he had no doubt that the severities of the winter now at hand would be warded off from our unfortunate countrymen. But what sympathy should we have, he would ask, for those by whom it had been produced, by glutting our markets with cotton for their own purposes, and then cutting off the supply, thus reducing them to endure the misery of idleness and eat the bread of charity. Yet such was the case, for although every one would sympathise with our distressed Lancashire operatives, three-fourths of our countrymen sympathise with the Southern Seceders. The Society for the Suppression of Foreign Slavery has drawn so faithful a picture of the two parties, that he would state it in a few words. It may be regarded as established beyond disproof, that the South was not only the aggressor, but designedly provoked an armed contest with the United States government, with the express sole object of founding a confederacy to perpetuate slavery.

On the other hand, the United States government, embracing the political anti-slavery party of the North—commonly called the republican party—has initiated and carried into effect measures in furtherance of negro emancipation, which entitle it to the sympathy of all true friends of freedom. It has enforced the statutes against slave trading which former administrations, being pro-slavery, had allowed to become inoperative, and has prosecuted slave traders to conviction and punishment. It has entered into a new anti-slave-trade treaty with Great Britain, conceding right of search, which former governments, overruled by the Southern party, had steadfastly refused. To promote the speedy settlement of the territories by a non-slaveholding population, it has enacted a Homestead Bill, giving 160 acres of land to every immigrant, irrespective of his national origin; and moreover, carrying into effect the policy of Jefferson, ratified by act of Congress in 1789, it has prohibited slavery for ever in those territories, upon which issue alone the Southern candidate for the presidency was defeated at the election which immediately preceded the present rebellion. It has also abolished slavery from the district of Columbia. It has virtually repealed the Fugitive Slave Act, by prohibiting the rendition of slaves escaping from the rebel states to the lines of the United States army, providing compensation on account of such as may belong to loyal citizens. It has recognized and entered into diplomatic relations with the negro republics of Liberia and Haiti. By the Confiscation Bill—considerately made non-retrospective—it, in effect, proclaimed emancipation to the slaves in the rebel States, within a specified period. A majority in congress has ratified the President's plan of compensated emancipation for such slave states as may elect to

take advantage of it, and only recently the President has announced that the details of the measure will be submitted to the next congress, with a view to its immediate practical application.

Lastly, the President has lately issued a proclamation, declaring absolutely and for ever free all the slaves in those States which shall be in rebellion on the 1st of January next, and pointing to the measures in progress for the abolition of slavery in the loyal States, upon the principle of indemnification.

Now, he, the Chairman, believed that this was a fair statement of the question between North and South, and what the South were fighting against. As to the question of mediation, he considered that the proposal had met with a just reception from our Government, coming as it did in a way that was certain of benefitting the South, whether it succeeded or not, to the disadvantage of the North, by whom it would have been spurned.

There are grave statements continued the Chairman, of vessels being openly fitted out in our ports, especially at Liverpool, such as these which we commonly read under "Steamers for the South."

"The fleet of first-class steamers that have been purchased in this country for the purpose of running the blockade, are leaving gradually. The swift river steamer *Ruby*, 120 tons, and the splendid Belfast mail steamer *Giraffe*, 360 tons, sailed on Saturday afternoon from Greenock. They have both undergone a strengthening outfit for the passage. The *Ruby* is commanded by Captain Gregory, has 22 men, and sails in fuel. The *Giraffe* is commanded by Captain Duguid, has 50 men, and takes out a valuable cargo in boxes, cases, and packages (containing 'Gregory's pills,' it is said), and over £13,000 worth of leather boots, £4,300 worth of medicines, and £600 worth of surgical instruments. The *Giraffe* also takes out 30 passengers, as they are styled; but these are said to be more useful than ornamental.

Every one comprehends the meaning of these Gregory's pills, the "packages," and the "passengers" that are said to be more useful than ornamental, and yet observed the Chairman, it must be supposed the persons who are at the bottom of such proceedings, have read the Queen's proclamation. So much however for Southern sympathies.

[Space obliges us to omit much interesting discussion on this and several other subjects, as well as some arguments on balloon voyaging, to make room for the following more interesting account of the management of a balloon from its leaving the earth to its return, explained by Mr. Glaisher.—Ed.]

Many persons entertain the belief that, in order to go several miles high, it is simply necessary to jump into the car, allow the balloon to reach its desired elevation, and then open the valve and descend. But so far from this being the case, I will convince you that the guiding of a balloon requires much skill and calm consideration, and calls into play a continued exercise of judgment.

I may here state that during my watchings of Mr. Coxwell I was

much struck with the difference between theoretical and practical ballooning. It is one thing, indeed, to start upon an aerial voyage five or six miles high, and it is another to accomplish it with safety and certainty. In such a journey the balloon is but little more than one half filled. It may be instructive to state the reason for only partially filling the balloon, especially as it may appear to the uninitiated in such matters that the more gas the balloon contains the higher it will go.

The pressure of the atmosphere on the surface of the earth, amounting, as you all know, to about 15lbs. to the square inch, confines the gas, as it does other fluids, within certain limits. As the balloon mounts up this pressure is lessened in proportion to the distance from the earth, so that at a height of three miles and three quarters, a volume of gas which occupied 30,000 cubic feet will here expand to 60,000 cubic feet, and so on as the air becomes more rarefied and the pressure less.

You will at once perceive, then, that to fill the balloon is to waste gas, because half the contents of the balloon in the lower atmosphere soon becomes equal to the whole volume, owing to expansion. Now it is this process of expansion, causing as it does continual variations in the shape and bearing of the balloon, that calls forth the skill and judgment of the aeronaut.

With a view that you may fully understand this interesting practical part of our subject, you must be pleased to imagine the giant balloon now half inflated and eager for flight, and confined to *terra firma* by one connecting link only, which is an instrument technically called the liberating iron or catch. The philosophical instruments being all carefully adjusted, Mr. Coxwell brings the balloon to a nice and even balance, so that 20lbs. of sand placed in the car would prevent it from rising, but removed, gives the required ascending power. The moment for departure now arrives, friends and wellwishers become impatient, and then in one man alone appears to be vested the ability and right to let go. Everybody is anxiously watching the final arrangements, but the aeronaut looks stern, and awaits the opportune moment for a fair start. Some one cries out, "Now," and another, "You cannot do better—pull," but Mr. Coxwell knows best, and very properly thinks for himself, regardless of everybody; and just when the sun shines, and the breeze lulls, and the balloon stands proudly erect, the cable is slipped, and we are free.

There is more in a skilful setting out than I can here describe; but I call attention to it because it leads one to infer that a masterly beginning will have a triumphant termination. Once away, we are both immediately to work; we have no time for graceful acknowledgements to cheering friends. Mr. Coxwell must put the car in order, and accordingly looks to his balloon and the course we are steering; and I get as early a reading of the instruments as I possibly can.

In a few minutes we are 2,000 feet high, and some progress has been made with the blue book (for it is in a book of that colour in which I write my observations). Mr. Coxwell is looking very intently

upwards to see how the huge folds of the balloon fill out into the netting, as this is a critical operation, especially at a high elevation.

We now hear the busy hum of Wolverhampton, if we should have started from that town, and see the surrounding black country, and Mr. Coxwell, alive to the beauties of the opening landscape, fixes his eye upon me, and just when a rural scene of surpassing beauty is lighted up in the West, I am summoned to look and admire. I struggle against picturesque temptations and romantic feelings, somewhat at variance with my duties. I cannot so quickly suppress them—a bewitching cloud rears its alpine cap by the side of the car; Mr. Coxwell looks as delighted as an artist when he displays a magnificent painting. I feel I must conquer such enchantment; I exclaim,—“Beautiful! grand indeed!”—and again seize my pencil with a cold philosophic resolve to pursue my readings without interruption. For a while I am quiet, and the instruments afford unmistakable indications that we are rapidly mounting. Mr. Coxwell again disturbs, and recommends a farewell peep at Mother Earth; and just as I am gazing to ascertain his meaning, the clouds receive us, at first into a light gauze of vapour and then into their chilling embrace, when again I work away, especially for indications of moisture; but have no sooner got some satisfactory results, than a flood of light, at first striking, then dazzling, bursts upon us, and just as I note them down we break into brilliant sunshine,—the clouds open out in bold and fantastic embellishments,—they disport themselves around us in wild grandeur, and at length roll on into a perfect sea of vapour, obscuring the earth entirely, so that now in deepest silence I again resume my observations and note the reading of the instruments uninterruptedly for several minutes.

“See,” cries Mr. Coxwell, “the balloon is now full, and the gas is e-caping from the safety valve.” I of course look, for this is an exciting moment. I am then called upon to examine the fit and proportions of the netting. I see the upper dome of the balloon is transparent, with the meshes of the network showing through. I feel a sense of security. The aeronaut passes his fingers over the valve line as in readiness to pull the cord; he is ready to demonstrate the use and application of the upper valve; a stream of gas issues from the neck, and although that aperture is very capacious, being thirty inches in diameter, I observe a slight gathering on Mr. Coxwell’s brow, and he decides on opening the large upper valve, but carefully explains why. “The tension,” said he, “on the balloon is not greater than it would bear with safety in a warm stratum of air; but now that we are three miles up with a chilled balloon, it is better to allow some to escape at top, as well as a good deal from the neck.” I at once saw the force of the argument, and inferred that I was in no way dependent upon chance, and not likely to suffer from carelessness.

Before getting my highest observations, I noticed Mr. Coxwell counting his sand bags and calculating how much higher we can go without keeping a reserve with which to regulate the descent.

This business-like calculation is reassuring, and I perceive the ne-

cessity of keeping close to my work, knowing how soon we must take a downward course. Already I feel a vibration on the car, and in turning round I detect Mr. Coxwell in the act of completing the lowering down of the grapnell. I guess what these preparations mean, and see the aeronaut first look up at the balloon, then scan the horizon, and weigh apparently in his mind some distant clouds, through which we are likely to pass in going down.

This display of forethought is accompanied by a certain air of command which Mr. Coxwell only assumes when occasion requires. A glance now suffices to show that his mind is made up how much higher it is prudent to rise, and how much ballast it is expedient to preserve. The balloon is now lingering, as it were, under the deep blue vault of space, hesitating whether to mount higher or gravitate without further warning. We now hold consultation, and then look round from the highest pinnacle, giving silent scope to those emotions of the soul which are naturally called forth by such a wide spread range of creation.

Our course is now about to change, but here I interpose with,—“Stop! not yet; let us remain so long that the instruments are sure to take up the temperature, when I am satisfied I will say, now.”

Mr. Coxwell's eyes are turned towards me, and mine to the instruments. We bide our time patiently until I wave my hand and say,—“Pull.” A deep resonant sound is heard overhead, a second report follows that rings with shrill accompaniment down the very sides of the balloon, (do not be alarmed, ladies, nothing is amiss,) it is the working of the valve only, which causes a loud booming noise as from a sounding board as the springs force the shutters back.

This is cheering; it proves all to be right, and that the colder regions have not frozen tight the outlet for gas. We now slowly descend. Never in my lifetime did I work so expeditiously as now; the downward series of observations, so valuable in checking the upward, are made with great rapidity. We have descended a mile and more, and our feelings improve with the increase of air and warmth; but silence reigns supreme, and Mr. Coxwell, I observe, turns his back upon me and is intently scanning the cloudscape, speculating as to when and where we shall break through and catch sight of the earth. We have now been two hours without seeing *terra firma*. How striking and impressive is it to realise a position such as this! And yet, as men of action, whose province it is to subordinate mere feeling, we refrain from sentimentalising. I say refrain,—but presently Mr. Coxwell breaks out, and can contain himself no longer,—“There, Mr. Glaisher, (he says,) you must look here, and welcome another balloon.” I obey, of course, and get amply repaid for so doing; for what appeared to be another balloon is in reality the counterpart or reflection of our own. The spectral balloon, so charming to look upon, presented itself in a variety of imposing aspects, which are magnified or diminished according to the relative distance of the balloon from the clouds, and of its position to the sun, which produced the reflection. At midday it is deep down almost under us, but is more grandly de-

fined towards evening, when the golden and ruby tints of the declining sun impart a gorgeous colouring to Cloudland. You may then see the spectral balloon magnified upon the distant cloud tops, with three brilliant circles of rainbow tints. Oh, how utterly language fails to describe adequately these illuminated photographs, which spring up with matchless truthfulness and choice decoration! Just before we enter the clouds, Mr. Coxwell again inspects his ballast bags, and strictly enjoins that I should be ready to put up my instruments in case we should approach the earth with greater rapidity than calculated upon. I ask permission to hold on to the last, as I crave as low an observation as is consistent with the safety of the instruments; but Mr. Coxwell reluctantly consents, not knowing exactly how the balloon will act when it loses the powerful rays of the sun and absorbs the moisture of the lower clouds.

We now approach their confines and dip swiftly in the thickest of them; we experience a decided chill and hear the rustling of the collapsing balloon, but cannot see it, so dense is the mass of vapour; sixty seconds expire and still we cleave asunder this massive cloud, but cannot sight the earth,—how thick and large it must be, considering how fast we drop; presently,—“Land, ho!” is the cry. A high road intersecting green pasture is fully descried; a piece of water, looking like polished steel, presents itself; a farmhouse, with stacks and cattle, is directly under us. The sea coast is seen, but at a distance; an open country lies before us. A shout comes up and announces that we are seen, and all goes well, save the rapidity of our descent, which has been caused by that dark frowning cloud shutting out the sun’s rays and bedewing us with moisture. Mr. Coxwell, however, is counteracting it with the ballast, and streams out one bag, which appears to fly up instead of down; now another is cast forth, but still it goes up, up. A third reduces the wayward balloon within the bounds of moderation, and Mr. Coxwell exultingly exclaims that “he has her now under perfect command, with sand enough to spare.”

Delighted to find the balloon is brought almost to a standstill, I push forward my observations with increased rapidity. This laying to, as seamen say, just suits my wants; it is favourable to good readings of the several instruments. I am now challenged to signify when my appetite is appeased, as yonder, about two miles distant, is a fine park, where Mr. Coxwell’s eye seems to wander with something like a desire to enter it. I approve of this spot, as it is in every way suitable for a descent. The under current, which is oftentimes stronger than the upper, is wafting us merrily in that direction. We are now only a few hundred feet above the surface. “Put up your instruments,” cries Mr. Coxwell, “and we will keep on this level until you are ready.” A little more sand is let out, and I pack up quickly in the wadded cases, which are in readiness to receive them. “Are you all right?” inquires the aeronaut. “All right,” I respond. “Look out, then, and hold fast to the ropes, as the grapnel will stop us in that large meadow with the hedge row in front.”

There, sure enough, we land, and get a hearty welcome from the

gentry and villagers. The cattle, however, stand at bay affrighted, their tails are horizontal, and they run wildly away. But a group of friends draw up near the balloon, and although some few question whether we belong to this planet, or are just imported from another, yet any doubt upon this point is soon set at rest when we tell our story, how that we travelled the realms of space, not from motives of curiosity, but for the advancement of science, its applicability to useful purposes, and the good of mankind.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 609.)

Name.	Place.	Position.	F. or R.	Ht. in Feet.	Dist. seen in Mls.	[Remarks, &c. Bearings Magnetic.]
24. Sandhamaren	Sweden, S. coast	55° 23' N., 14° 11' 5" E.	F.	104	16	Est. October, 1862. Two: 260 yards from shore; 250 yards apart N.N.W. and S.S.E.
25. Cayo Bahía de Cadiz	Cuba, North coast	23° 13' 4" N., 80° 29' 3" W.	Fd.	173	24	Est. 10th October, 1862.
Reefs of Cruz del Padre	Ditto	23° 17' 1" N., 80° 54' 2" W.	F.	49	10	Est. 10th October, 1862.
Cayo Diana	Ditto	23° 9' 9" N., 81° 7' W.	F.	43	7	Est. 10th October, 1862. Shown from a mast.
Taplon Point	St. Lucia	.....	F.	..	..	Est. —. Red. In lieu of two white lights discontinued.

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

GODREY LIGHT.—The Trinity House of London has given notice that with the view of indicating the position of the Stones Rocks by night, a Fixed Red Light will be exhibited from the lighthouse on Godrevy Island, in the direction of and so as to cover those rocks.

The red light will burn 27 feet below the present revolving light, and will be shown on an arc from N. $\frac{1}{2}$ W. to N.W. $\frac{1}{2}$ N., from the lighthouse.

GENERAL CHARACTER OF THE WEATHER FOR DECEMBER.—We have received the following for insertion in the *Nautical Magazine* in reference to the weather for December, viz.:—The month will commence with strong winds and unsettled weather to about the 7th instant. From about the 8th to the 19th the weather will be of a very stormy character, except at short intervals, with some severe gales. Strong winds will again occur about the 21st, 22nd, and 28th instant. Throughout the month the weather will be unsettled, with some snow and frosts towards the end of it.

G. SHEPHERD.

FLOATING CYLINDERS FOR LAYING ELECTRIC SUBMARINE CABLES,
Proposed by Captain J. H. Selwyn, R.N.

The project of an electric cable for the bed of the Atlantic, implies not only the best form of construction of a cable for the intended purpose, but also the best mode of laying it safely, in the place which it is intended to occupy—assuming that by previous investigation this has been found. The sad failure of the first, in the *Agamemnon* and *Niagara* is still fresh in our memory, and these pages have borne testimony to the mistakes that were made in the grand work of depositing it. And in order to avoid the injuries arising from coiling in a ship, the heat of the hold, and the possibly imperfect hasty joining, besides the severe straining to which it was subjected, Captain Selwyn, R.N., comes forward with a very novel proposal for effecting the concluding operation of laying it down. This consists of a huge hollow cylinder, of sufficient dimensions to carry it all wound round its surface, and to be thus *towed* astern of a ship, which as she moves forward on her course, compels the cylinder by rolling, immersed as it would be in the water, to unwind the cable, and thence it descends to the bottom. Does the cable from its weight incline to run too fast, the speed of its descent is checked by the resistance of paddles at each end of the cylinder.

At first view of this plan, simple as it appears, there are so many conditions from which objections are started, that the proposal seems to be scarcely worth entertaining. The high seas, the current, the way of the ship, the small rate of progress, the course steering probably not being in the line of direction in which the cylinder is turning, and many more points have no doubt been started against it. But to all of these Captain Selwyn has given straightforward seaman-like answers, and moreover, as no experience of such a machine was made, he cannot be met with the force of argument from that quarter: and Captain Selwyn in the ordinary service of towing, is abundantly at home as to the most judicious manner of effecting it.

Were that faithless element the sea as it often has been, in a moderately quiet condition during the whole voyage, Captain Selwyn might be certain of thus slowly effecting his object. And even if he could always command a certain speed in spite of the sea, he would also be successful, because he could always keep ahead of his cylinder. But being obliged to lie to with it in a gale of wind, adverse to his course, would be the opposite state of things, from which it would not be so easy to say that he would come off scatheless. We recommend Captain Selwyn to fortify his proposal with the opinions of some of our leading seamen, as an inducement to get the experiment tried; and as to the further application of his cylinder, which he has so very ably devised for bringing home petroleum from Canada, we must say his figures are entirely satisfactory. We have not yet heard however that a cable is to be laid; the form of which as well as the mode of laying it, will we hope undergo the most searching trial, before the actual work is taken in hand.

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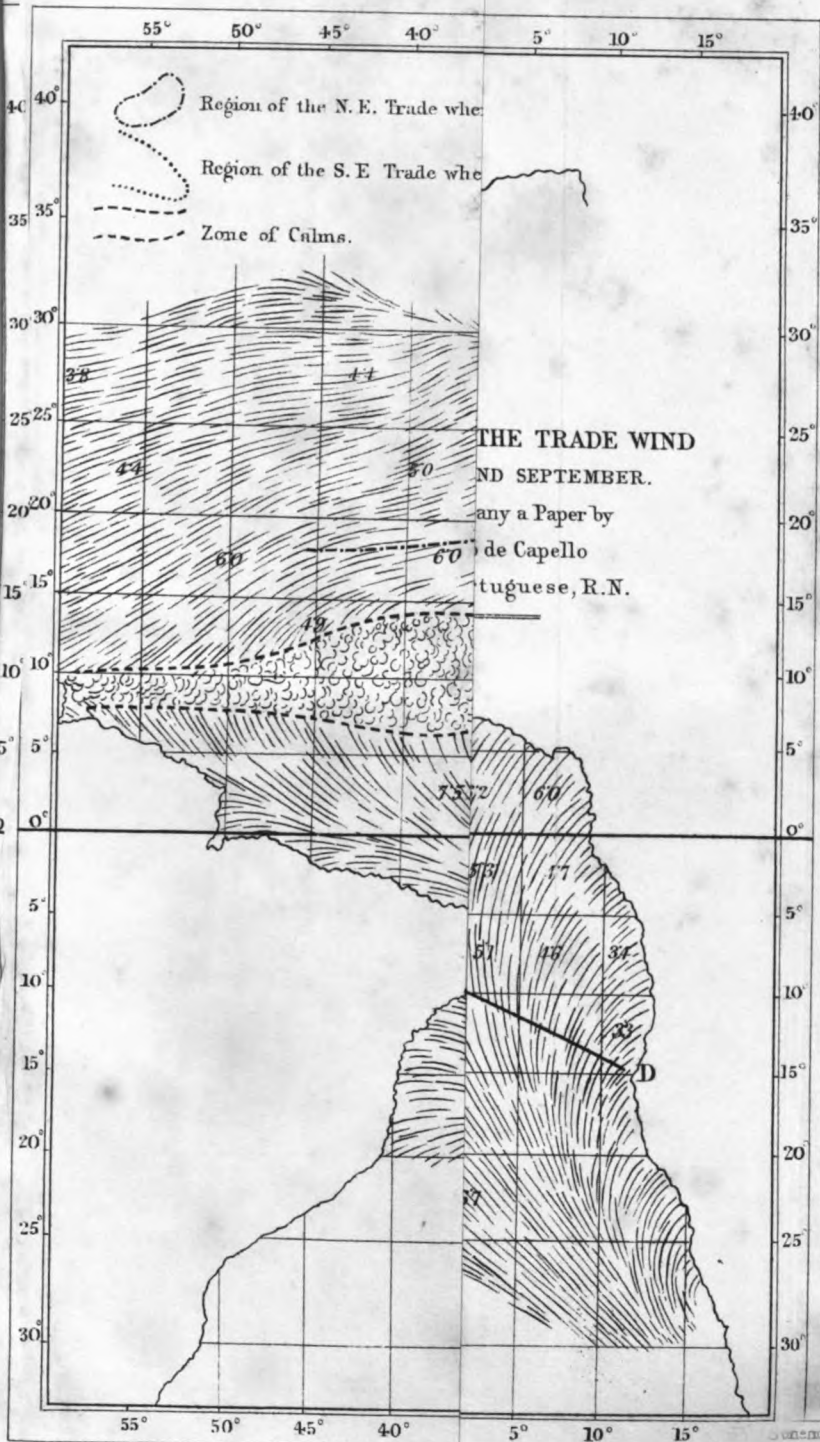
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APPEAL TO SEAMEN.

THE COMMITTEE OF MANAGEMENT have to state that, during the past two years and a half, the ROYAL NATIONAL LIFE-BOAT INSTITUTION has incurred expenses amounting to 24,560*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 Vessels:—

Schooner <i>Ann Mitchell</i> , of Montrose	1	Schooner <i>Prospect</i> , of Berwick	6	Snack <i>Merrion Lass</i> , of Aberystwyth—saved vessel and crew	3
Schooner <i>Jane Roper</i> , of Ulverstone	9	Sloop <i>Thomas and Jane</i> , of St. Ives	3	Barque <i>Frederick</i> , of Dublin	1
Brig <i>Pallas</i> , of Shields	3	A Fishing-boat of Whitburn	4	Barge <i>Peace</i> , of London	2
Ship <i>Ann Mitchell</i> , of Glasgow	9	Brig <i>Arethusa</i> , of Blyth	8	Lugger <i>Saucy Lass</i> , of Lowestoft	11
Snack <i>John Bull</i> , of Yarmouth	5	Schooner <i>Devi Wym</i> , of Portmadoc	5	Snack <i>Adventure</i> , of Harwich	10
Schooner <i>Catherine</i> , of Newry	4	Flat <i>Cynnares</i> , of Beaumaris	2	Pilot cutter <i>Whim</i> , of Lowestoft	7
Barque <i>Niagara</i> , of Shields	11	Schooner <i>William</i> , of Morecambe	5	Barque <i>Undaunted</i> , of Aberdeen	11
A Barge of Teignmouth	2	Snack <i>Gipsy</i> , of Newry	4	Wrecked boat on Blackwater Bank on the Irish Coast	1
Brig <i>George and James</i> , of London	2	Schooner <i>Margaret Anne</i> , of Preston	4	Schooner <i>Nykark</i> , of Folkestone	6
Brig <i>Zephyr</i> , of Whitby	6	Brig <i>New Draper</i> , of Whitehaven	4	Brig <i>Lively</i> , of Clay, Norfolk	5
Coble <i>Honour</i> , of Cutlercoats	3	Schooner <i>William</i> , of Liverpool	5	Barque <i>Robert Watton</i> , of Sunderland	5
Schooner <i>Eliza</i> , of North Shields	7	Lugger <i>Nimrod</i> , of Castletown	3	Schooner <i>Auchincruis</i> , of Grangemouth	8
Barque <i>Uberon</i> , of Liverpool	15	Brig <i>Providence</i> , of Shields	8	Schooner <i>Friends</i> , of Lynn	4
Brigantine <i>Nancy</i> , of Teignmouth	9	Brig <i>Mayflower</i> , of Newcastle	8	Schooner <i>Eliza Anne</i> , of Dublin	5
Snack <i>Womr</i> , of Teignmouth	2	Schooner <i>Village Maid</i> , of Fleetwood	4	Brig <i>Content</i> , of Sunderland	5
Brig <i>Scotia</i> , of Sunderland	6	Barque <i>Guyana</i> , of Glasgow	19	Snack <i>Allen Queens</i> , of Cardigan	3
Sloop <i>Three Brothers</i> , of Goole	5	Brig <i>Roman Empress</i> , of Shields	10	Barque <i>Celarine</i> , of B-rnuda	13
Sloop <i>Charlotte</i> , of Woodbridge	5	Brig <i>San Spiridione</i> , of Galaxide	2	Schooner <i>Epimachus</i> , of Amsterdam	5
Brig <i>Ann</i> , of Blyth	8	Schooner <i>Voador da Vouga</i> , of Vianna	8	Barque <i>Druid</i> , of Sunderland	9
Sloop <i>Hope</i> , of Dublin	3	French Brig <i>La Jeune Marie Therese</i>	5	Schooner <i>Bellona</i> , of Red Bay	1
Schooner <i>Druud</i> , of Aberystwyth	5	Barque <i>Perseverance</i> , of Scarborough	5	Brig <i>Pioneer</i> , of Carnarvon	1
Barque <i>Vermont</i> , of Halifax, U.S.	16	Schooner <i>Elizabeth</i> , of Bridgewater	4	Schooner <i>Princess Alice</i> , of Ipswich	5
Schooner <i>William Keith</i> , of Carnarvon	2	Ship <i>Danube</i> , of Belfast	17	Brig <i>Mincora</i> , of Workington	4
Brig <i>Flying Fish</i> , of Whitby	5	Schooner <i>Oriensia</i> , of Hanover	4	Schooner <i>Elizabeth and Hannah</i> , of Newburgh	6
Snack <i>Elizabeth Ann</i> , of Lyme Regis	3	Schooner <i>Horegon</i> , of Stonehaven	4	Brig <i>Sisters</i> , of Whitby	9
Steam Dredge, at Newhaven	9	Brig <i>St. Michel</i> , of Marais	8	Brigantine <i>Matilda</i> , of Stockholm	4
Schooner <i>Admiral Hood</i> , of Rochester	6	Spanish Barque <i>Primera de Torre Vieja</i> —Saved vessel and 1 of the crew	1	Brig <i>Jane</i> , of North Shields	8
Schooner <i>Susan and Isabella</i> , of Dundee	5	Schooner <i>Hurrell</i> , of Penzance—Saved vessel and crew	4	Schooner <i>Liberty</i> , of Dublin	4
Schooner <i>Rose</i> , of Lynn	3	Brig <i>Anne</i> , of Plymouth—Saved vessel and crew	8	Brig <i>Trial</i> , of Poole	7
Brig <i>Prodroma</i> , of Stockton	11	Schooner <i>Betsy</i> , of Peterhead—Saved vessel and crew	6	Schooner <i>Sylphides</i> , of Nakskov—Saved vessel and crew	7
Brig <i>Eliza</i> , of Middlesbrough	7	Schooner <i>Fly</i> , of Whitby—Saved vessel and crew	4		
Brigantine <i>Fria</i> , of Kongsberg	6				
Brigantine <i>Diana</i> , of Fredrikshamn	7				
Brig <i>Gloucester</i> , of South Shields	7				
Brig <i>Lovely Nelly</i> , of Seaham	6				
Brigantine <i>Nuydel</i> , of Bideford	5				
					Total..... 700

For these and other Life-boat services the Institution has voted 2,250*l.* as rewards to the crews of Life-boats. It has also granted rewards amounting to 931*l.* 10*s.* for saving 507 shipwrecked persons, by shore-boats and other means, making a total of 1,267 persons saved from a watery grave during the last two years and a half.

The number of lives saved by the Life-boats of the Society, and other means, since its formation, is 12,600; for which services 22 Gold Medals, 711 Silver Medals, and 15,926*l.* in cash, have been paid in rewards. The Institution has also expended 61,685*l.* on Life-boats, Life-boat Transporting-carriages, and Boat-houses.

THE COMMITTEE OF MANAGEMENT OF THE ROYAL NATIONAL LIFE-BOAT INSTITUTION appeal to the Officers and Seamen of the Royal and Merchant Navies to lend them a helping hand in their efforts to place and maintain LIFE-BOATS on every exposed part of the Coasts of the United Kingdom. A great work has already been done, as will be seen by the List of Boats given on the other side. And who better than Seamen can appreciate the comfort of knowing where to run for a Life-boat when on a lee-shore, and no port of refuge near? They cannot but sympathize with the vigorous efforts now being made, by this Society, to save the lives of Shipwrecked Crews. Their help was never more needed than at the present time, when, through the extraordinary exertions the Society has made within the past few years, it has now One hundred and Twenty-two Life-boats under its management, for the maintenance of which, in a state of thorough efficiency, a large permanent annual income is absolutely needed, if its humane mission is to be perpetuated.

THOMAS BARING, Chairman.

THOMAS CHAPMAN, Deputy-Chairman.

Donations and Annual Subscriptions will be thankfully received by the Bankers of the Institution, Messrs. WILLS, FERGIVAL, and Co., 76 Lombard Street; Messrs. COURTS and Co., 69 Strand; Messrs. HERRIES, FARQUHAR, and Co., 16 St. James's Street, London; by all the London and Country Bankers; by the several Metropolitan Army and Navy Agents; and by the Secretary, RICHARD LEWIS, Esq., at the Office of the Institution, 14 JOHN ST., ADELPHI, LONDON, W.C.

Payments may be made by Cheques, or by Post-office Orders (crossed), to Messrs. WILLS, FERGIVAL, and Co., or to the Secretary.

LIST OF THE LIFE-BOAT STATIONS

OF THE

ROYAL NATIONAL LIFE-BOAT INSTITUTION.

ENGLAND.				
NORTHUMBERLAND—		ISLE OF WIGHT .	Brighthone Grange.	CUMBERLAND . . .
	1 Berwick-on-Tweed.		Brooke.	ISLE OF MAN . . .
	North Sunderland.	GUERNSEY . . .	St. Samson.	Silloth.
	Boulmer.	DORSET . . . 50	Lyme Regis.	Castletown.
	Alnmouth.	SOUTH DEVON .	Exmouth.	
	5 Hauxley.		Tegmouath.	
	Newbiggin.	CORNWALL . . .	Plymouth.	
	Cullercoats.		Fowey.	
	Tynemouth.	56	Lizard.	
DURHAM . . .	Whitburn.		Penzance.	
	10 Seaton Carew.		Senen Cove.	
YORKSHIRE . . .	Middlesborough.		St. Ives.	
	Redcar.		Newquay.	
	Salburn.	60	Padstow.	
	Whitby.		Bude Haven.	
	15 Scarborough.	NORTH DEVON .	Appledore.	
	Filey.		Braunton.	
	Bridlington.			
	Hornsea.			
	Withernsea.			
NORFOLK . . . 20	Blakeney.			
	Cromer.			
	Mundesley.			
	Bacton.			
	Paling.			
	25 Winterton.			
	Caistor.			
	Yarmouth, No. 1.			
	" No. 2.			
SUFFOLK . . .	Lowestoft.			
	30 Pakefield.			
	Southwold.			
	Thorpness, No. 1.			
	" No. 2.			
KENT . . . 35	Aldborough.			
	Kingsgate.			
	Margate.			
	Wainier.			
	Dover.			
	Dungeness.			
SUSSEX . . . 40	Camber.			
	Rye.			
	Hastings.			
	Eastbourne.			
	Newhaven.			
	45 Brighton.			
	Selsey.			

The object of the ROYAL NATIONAL LIFE-BOAT INSTITUTION, for the Preservation of Life from Shipwreck, is to afford assistance to every wrecked person around the Coasts of the United Kingdom.

The chief means by which the Society hopes to carry this object into effect are:—
To build, station, and maintain in repair, Life-boats of the most perfect description; to furnish them with all necessary Appurtenances, including Houses to preserve them in, and Carriages for their conveyance to the spots where their Services are called for; and further, to provide, through the instrumentality of Local Committees, for their proper Management, and the occasional Exercise of their Crews.

To confer Honorary Rewards in the form of Medals and Votes of Thanks, and also to grant Pecuniary Remuneration to all persons who, at the risk of their own lives, save, or attempt to save, those of others on board vessels wrecked, or in distress, upon any part of the Coasts of the United Kingdom.

As an index of the necessity for the provision of such a machinery as the above, it may be stated—that the average loss of life from shipwreck annually on the shores of the United Kingdom is 800.

Form of Bequest of Money, Stock, or other Personal Estate.

I give and bequeath to the ROYAL NATIONAL LIFE-BOAT INSTITUTION, for the Preservation of Life from Shipwreck, founded in 1-24, London, the sum of £ _____ *for the use of the said Institution, and I do hereby direct that*

Over.

PEACOCK AND BUCHAN'S IMPROVED COMPOSITION FOR SHIPS' BOTTOMS.

The best preservative known against CORROSION and fouling on IRON and other Ships, and giving additional speed, as shortly after immersion it becomes slimy like the back of a fish.

Apply to the Manufacturers direct, Southampton; to

ALFRED BRETT & Co., 150, Leadenhall Street, London; to

Messrs. Cato & Overend, Drury Buildings, Water-street, Liverpool; or to Messrs. McSymon and Potter, Ship Chaudlers, &c., Glasgow.

The *Persia*, *Atrato*, *Himalaya*, *Simla*, *Shannon*, *Nubia*, *Delta*, *Ceylon*, *Pera*, and other fast steamers, have always used the No. 2 Composition from the commencement of their career, and still continue to use it with unimpaired speed.

Several Compositions for Ships' bottoms having been patented within the last few years containing *copper*, (the Patentees being doubtless in ignorance of the injurious effects of copper on iron), Messrs. PEACOCK & BUCHAN conceive it to be their duty to inform the Public of the results of their experiments with preparations of copper commenced upwards of *twenty-one* years ago, and laid aside in 1847,* and herewith annex a letter from the Superintendent of the Peninsular and Oriental Company on this interesting subject, after examining the Professional opinions of some of the first *practical* Chemists of the day.

From J. B. Engledue, Esq., to Messrs. Peacock and Buchan.

P. & O. Co.'s Office, Southampton, Oct. 19th, 1850.

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 your 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 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. ENGLEDUÉ,

Superintendent of the Peninsular & Oriental Co.

COMPOSITIONS FOR COATING SHIPS' BOTTOMS.—A number of gentlemen interested in ship-building assembled in the Southampton Docks on Tuesday morning, to witness the result of an experiment which had excited some interest among persons of that class. In the early part of last May the Royal Mail Company's steamship *Atrato* was coated on the starboard side with M'Innes's green copper soap, and on the port side with Peacock and Buchan's pink Composition, for the purpose of practically testing the relative merits of the two articles in keeping the bottom of the ship clean. On docking the *Atrato* on Tuesday for examination it was found that the starboard side was covered with coral pipe shells and barnacles, with a good deal of corrosion; while the port side was perfectly free from coralline incrustation or barnacles, having merely a thin slimy unctuous coating upon it. The result is considered as having incontrovertibly proved that preparations of copper are of little value in preventing incrustation or fouling on the bottoms of iron ships, while their galvanic action must, sooner or later, prove injurious to the rivets and plates. The green composition is now being scraped off the *Atrato*.—*The Times*, Thursday, November 17th, 1850.

Bermondsey, 20th September, 1850.

Messrs. A. BRETT & Co., 150, Leadenhall-street, London.

Gentlemen,—We have pleasure in handing you the particulars of the result of an experiment we have made with the Patent Composition of Messrs. PEACOCK & BUCHAN, on our vessel *Omega*, which was coppered in the spring of 1856, and the state of that material recently taken off, after two voyages to Australia and Bombay; during the two and a half years, one side was painted twice with this Composition, and the other side was left entirely with the bare copper, and we find the copper now taken off to weigh as follows:—

Port side, painted twice	46 cwt. 1 qr. 0 lbs.
Starboard side, not painted	37 " 0 " 13 "
Difference	9 " 0 " 15,, nett.

If these facts are of any service to you, they can always be confirmed by,

Gentlemen, Yours truly,

(Signed) WILSON & COOKE.

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Published every afternoon, at 54, Gracechurch Street, in time for dispatch by the Afternoon Trains from London; and may be had of all newsvenders.

Deptford Green Dockyard, 30th March, 1861.

Messrs. Peacock & Buchan, Southampton,

Dear Sirs,

I have much pleasure in sending you an extract from a letter received from Captain Roulle Carey, of my iron ship *The Pride of the Thames*, just arrived at Queenstown from the West Indies. She has previously been engaged in voyages between this and the West Coast of South America.

“Although we have been afloat fourteen months with PEACOCK & BUCHAN'S COMPOSITION on the bottom, and never renewed during that time (except between wind and water), I do not find the vessel's progress impeded in the least by any fouling, and you well know the West Indies, particularly Guadaloupe, is a very bad place for fouling, and likewise Callao and the Chinchas. The longer I use this Composition the better I like it, and think the constant use of it, say two coats once a year, is quite sufficient to prevent all fouling and corrosion.”

I am, dear Sirs, your obedient servant,

CHARLES LUNGLY.

MALBY'S MODERN GLOBES, TELESCOPIC COMPANION, AND TREATISE ON THE USE OF THE GLOBES,

Published by Malby and Son, at the Globe Manufactory, 27, Parker Street, Little Queen Street, Lincoln's Inn Fields, London.

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12-in. Rosewood 8 18 6	"	12-in. Rosewood, 8 18 6	"	12-in. Rosewood, 8 18 6	"
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36-inch	£1 1 0
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36-inch	£4 4 0 the pair.
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ROYAL NATIONAL LIFE-BOAT INSTITUTION.

(Incorporated by Royal Charter.)

Patroness.—HER MOST GRACIOUS MAJESTY THE QUEEN.

President.—VICE-ADMIRAL HIS GRACE THE DUKE OF NORTHUMBERLAND, K.G., F.R.S.

Chairman.—THOMAS BARING, Esq., M.P., F.R.S., V.P., Chairman of Lloyd's.

Deputy-Chairman.—THOMAS CHAPMAN, Esq., F.R.S., V.P., Chairman of Lloyd's Registry of British and Foreign Shipping Society.

APPEAL TO SEAMEN.

THE COMMITTEE OF MANAGEMENT have to state that, during the past year, the INSTITUTION has incurred expenses amounting to £6,258. 1s. on the following Life-boat Stations.—

ENGLAND.

NEWBIGIN, Northumberland.
SALTBURN, Yorkshire.
FILEY, "
CAISTOR, Norfolk.
ALDBOROUGH, Suffolk.
MARGATE, Kent.
WALMER, "
SEISEY, West Sussex.
GRANGE, Isle of Wight.
BROOKE, "

PENZANCE, Cornwall.
ST. IVES, "
NEWQUAY, "
PENARTH, Glamorganshire.
LLANDWYN, Anglesey.
LLANDUDNO, Carnarvonshire.
SOUTHPORT, Lancashire.
LITHAM, "
SILLOTH, Cumberland.
SCOTLAND.
AYR, Ayrshire.

IRVINE, Ayrshire.
KANTYRE, Argyleshire.
BUCKLE, Banffshire.
BANFF, "
ST. ANDREW'S, Fifeshire.
NORTH BERWICK, Haddingtonshire.

IRELAND.

PORTRUSH, Antrim.
TYRELLA, Dundrum Bay.

The Institution has also expended on the repairs, stores, alterations, and inspection of its numerous Life-boats, Boat-houses, and Transporting-carriages, £3,632. 19s., and £1,550 for exercising the crews of its Life-boats, making altogether a total of £11,441.

During the past year the LIFE-BOATS of the Institution have been instrumental in rescuing the crews of the following wrecked vessels:—

Schooner <i>Ann Mitchell</i> , of Montrose	1	Bricantine <i>Nancy</i> , of Teignmouth...	9	Schooner <i>Admiral Hood</i> , of Rochester	6
Schooner <i>Jane Royer</i> , of Ulverstone	6	Snack <i>Wonder</i> , of Teignmouth....	2	Schooner <i>Susan and Isabella</i> , of	2
Ship <i>Pallas</i> , of Shields.....	3	Brig <i>Scotia</i> , of Sunderland.....	6	Dundee.....	5
Ship <i>Ann Mitchell</i> , of Glasgow....	9	Sloop <i>Three Brothers</i> , of Goolle....	5	Schooner <i>Rose</i> , of Lynn.....	3
Snack <i>John Bull</i> , of Yarmouth....	5	Sloop <i>Charlotte</i> , of Woodbridge....	5	Brig <i>Prodroma</i> , of Stockton.....	11
Schooner <i>Catherine</i> , of Newry.....	4	Brig <i>Ann</i> , of Blyth.....	8	Brig <i>Eliza</i> , of Middleborough....	7
Barque <i>Niagara</i> , of Shields.....	11	Sloop <i>Hope</i> , of Dublin.....	3	Brigantine <i>Frcia</i> , of Konigsberg....	6
A Barge of Teignmouth.....	2	Schooner <i>Druid</i> , of Aberystwyth....	6	" <i>Diana</i> , of Fredrikshamn....	7
Brig <i>George and James</i> , of London..	8	Barque <i>Vermont</i> , of Halifax, U.S....	16	Brig <i>Gloucester</i> , of South Shields...	7
Brig <i>Zephyr</i> , of Whithy.....	6	Schooner <i>William Keith</i> , of Carnarvon 2			
Coble <i>Honour</i> , of Cullercoats.....	3	Brig <i>Flying Fish</i> , of Whithy.....	5		
Schooner <i>Eliza</i> , of North Shields....	7	Snack <i>Elizabeth Ann</i> , of Lyne Regis 3			
Barque <i>Oberon</i> , of Liverpool.....	15	Steam Dredge, at Newhaven.....	9		
				Total 210	

For these and other Life-boat Services the Institution has voted £908. 8s. 4d. as rewards. It has also granted rewards amounting to £203. 4s. for saving 245 shipwrecked persons, by shore-boats and other means, making a total of 455 persons saved from a watery grave.

THE COMMITTEE OF MANAGEMENT of the ROYAL NATIONAL LIFE-BOAT INSTITUTION appeal to the Officers and Seamen of the Royal and Merchant Navies to lend them a helping hand in their efforts to place and maintain LIFE-BOATS on every exposed part of the Coasts of the United Kingdom. A great work has already been done, as will be seen by the List of Boats given on the other side. And who better than Seamen can appreciate the comfort of knowing where to run for a Life-boat when on a lee-shore, and no port of refuge near? They cannot but sympathize with the vigorous efforts now being made by this Society, to save the lives of Shipwrecked Crews. Their help was never more needed than at the present time, when, through the extraordinary exertions the Society has made within the past few years, it has now One Hundred and Twelve Life-boats under its management, for the maintenance of which, in a state of thorough efficiency, a large permanent annual income is absolutely needed, if its humane mission is to be perpetuated.

THOMAS BARING, Chairman.

THOMAS CHAPMAN, Deputy-Chairman.

Donations and Annual Subscriptions will be thankfully received by Messrs. WILLIS, PERCIVAL and Co., 76 Lombard Street; Messrs. CUTTS and Co., 59 Strand; Messrs. HERRIES, FARQUHAR, and Co., 16 St. James's Street, London; by all the London and Country Bankers; by the several Metropolitan Army and Navy Agents; and by the Secretary, RICHARD LEWIS, Esq., at the Office of the Institution, 14 JOHN STREET, ADELPHI, London, W.C.

Payments may be made by Cheques or by Post-office Orders (crossed), to Messrs. WILLIS, PERCIVAL, and Co., or to the Secretary.

LIST OF THE LIFE-BOAT STATIONS

OF THE

ROYAL NATIONAL LIFE-BOAT INSTITUTION.

<p>ENGLAND.</p> <p>NORTHUMBERLAND— 1 Berwick-on-Tweed. North Sunderland. Boulmer. Alnmouth. 5 Hauxley. Newbiggin. Cullercoats. Tynemouth. Whitburn. 10 Seaton Carew. YORKSHIRE . . . Middlesborough. Redcar. Saltburn. Whitby. 15 Scarborough. Filey. Bridlington. Hornsea. NORFOLK . . . 20 Mundesley. Bacton. Palling. Winterton. Caistor. 25 Yarmouth, No. 1. " No. 2. SUFFOLK . . . Lowestoft. Paketfield. Southwold. 30 Thorpeness, No. 1. " No. 2. KENT . . . Margate. Walmer. 35 Dover. Dungeness. SUSSEX . . . Camber. Rye. Hastings. 40 Eastbourne. Newhaven. Brighton. Selsey.</p>	<p>ISLE OF WIGHT . . . Grange. 45 Brooke. DORSET . . . Lyme Regis. SOUTH DEVON . . . Exmouth. Teignmouth. CORNWALL . . . 50 Fowey. Lizard. Penzance. Sennen Cove. St. Ives. Newquay. 55 Padstow. Bude Haven. NORTH DEVON . . . Appledore, No. 1. " No. 2. Braunton.</p> <p style="text-align: center;">—</p> <p style="text-align: center;">WALES.</p> <p>GLAMORGANSHIRE— 60 Penarth. Porthcawl. CARMARTHENSHIRE— Llanelly. Carmarthen Bay. PEMBROKESHIRE . . . Tenby. 65 Fishguard. CARDIGANSHIRE— Cardigan. Aberystwyth MERIONETHSHIRE. Aberdovey. Barmouth. CARNARVONSHIRE— 70 Portmadoc. ANGLESEY . . . Llanddwyn. Rhoscolyn. Holyhead. Cemlyn. 75 Moelfre Penmon. CAERNAVONSHIRE— Orme's Head. FLINTSHIRE . . . Bhyl (Tubular).</p>	<p>LANCASHIRE . . . Southport. 80 Lytham. Fleetwood. CUMBERLAND . . . Silloth. ISLE OF MAN . . . Castletown.</p> <p style="text-align: center;">—</p> <p style="text-align: center;">SCOTLAND.</p> <p>AYRESHIRE . . . Ayr. 85 Irvine. ARGYLLSHIRE . . . Campbeltown. CAITHNESS-SHIRE . . . Thurso. BANFFSHIRE . . . Buckie. Banff. ELGINSHIRE— 90 Lossiemouth. ABERDEENSHIRE . . . Fraserburgh. FIFESHIRE . . . St. Andrew's. HADDINGTONSHIRE . . . North Berwick</p> <p style="text-align: center;">—</p> <p style="text-align: center;">IRELAND.</p> <p>CO. ANTRIM . . . Portrush. DOWN . . . 95 Groomsport. Tyrella Newcastle. LOUTH . . . Dundalk. Drogheda. DUBLIN . . . 100 Skerries. WICKLOW . . . Wicklow. Arklow. WEXFORD . . . Cahore. Wexford. 105 Rosslare Fort. Carusore. WATERFORD— Tramore. Dungarvan. Ardmore. CORK . . . 110 Youghal. Ballycotton. MAYO . . . 112 Westport.</p>
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The object of the ROYAL NATIONAL LIFE-BOAT INSTITUTION, for the Preservation of Life from Shipwreck, is to afford assistance to every wrecked person around the Coasts of the United Kingdom.

The chief means by which the Society hopes to carry this object into effect are:—

To build, station, and maintain in repair, Life-boats of the most perfect description; to furnish them with all necessary Appurtenances, including Houses to preserve them in, and Carriages for their conveyance to the spots where their Services are called for; and further, to provide, through the instrumentality of Local Committees, for their proper Management, and the occasional Exercise of their Crews.

To confer Honorary Rewards in the form of Medals and Votes of Thanks, and also to grant Pecuniary Remuneration to all persons who, at the risk of their own lives, save, or attempt to save, those of others on board vessels wrecked, or in distress, upon any part of the Coasts of the United Kingdom.

As an index of the necessity for the provision of such a machinery as the above, it may be stated—that the average loss of life from shipwreck annually on the shores of the United Kingdom is 800.

Form of Bequest of Money, Stock, or other Personal Estate.

I give and bequeath to the ROYAL NATIONAL LIFE-BOAT INSTITUTION, for the Preservation of Life from Shipwreck, founded in 1824, London, the sum of £ _____ for the use of the said Institution, and I do hereby direct that the same be paid out of my chattels personal,

Over.]

Royal National Life-Boat Institution,

For the Preservation of Life from Shipwreck.

(Incorporated by Royal Charter.)

Patroness—HER MOST GRACIOUS MAJESTY THE QUEEN.

President—VICE-ADMIRAL HIS GRACE THE DUKE OF NORTHUMBERLAND, K.G. F.R.S.

Chairman—THOMAS BARING, Esq., M.P., F.R.S., V.P., Chairman of Lloyd's.

Deputy-Chairman—THOMAS CHAPMAN, Esq., F.R.S. V.P., Chairman of Lloyd's Registry of British and Foreign Shipping Society.

APPEAL TO SEAMEN.

THE COMMITTEE OF MANAGEMENT have to state that, during the past two years, the INSTITUTION has incurred expenses amounting to 20,650*l.* on various Life-boat Establishments on the Coasts of England, Scotland, and Ireland.

During the same period the LIFE-BOATS of the NATIONAL LIFE-BOAT INSTITUTION have been instrumental in rescuing the Crews of the following Vessels:—

Schooner <i>Ann Mitchell</i> , of Montrose	1	Brigantine <i>Freia</i> , of Königsberg	6	<i>riega</i> —Saved vessel and 1 of the crew	1
Schooner <i>Jane Roper</i> , of Ulverstone	6	<i>Diana</i> , of Fredrikshamn	7	Schooner <i>Hurrell</i> , of Penzance—Saved vessel and crew	4
Brig <i>Pallas</i> , of Shields	3	Brig <i>Gloucester</i> , of South Shields	7	Brig <i>Anne</i> , of Plymouth—Saved vessel and crew	8
Ship <i>Ann Mitchell</i> , of Glasgow	9	Brig <i>Lovely Nelly</i> , of Satham	6	Schooner <i>Betsy</i> , of Peterhead—Saved vessel and crew	6
Smack <i>John Bull</i> , of Yarmouth	5	Brigantine <i>Nugget</i> , of Bideford	5	Barque <i>Frederick</i> , of Dublin	1
Schooner <i>Catherine</i> , of Newry	4	Schooner <i>Prospect</i> , of Berwick	3	Barque <i>Pecco</i> , of London	2
Barque <i>Niagara</i> , of Shields	11	Sloop <i>Thomas and Jane</i> , of St. Ives	6	Lugger <i>Saucy Lass</i> , of Lowestoft	11
A Barque of Teignmouth	2	A Fishing-boat of Whitburn	4	Schooner <i>Fly</i> , of Whitby—Saved vessel and crew	4
Brig <i>George and James</i> , of London	2	Brig <i>Arethusa</i> , of Blyth	8	Smack <i>Adventure</i> , of Harwich	10
Brig <i>Zephyr</i> , of Whitley	6	Schooner <i>Devi Wyn</i> , of Portmadoc	2	Pilot cutter <i>Whim</i> , of Lowestoft	7
Coble <i>Honour</i> , of Cullercoats	3	Flat <i>Cymras</i> , of Beaumaris	8	Barque <i>Undaunted</i> , of Aberdeen	11
Schooner <i>Eliza</i> , of North Shields	7	Schooner <i>William</i> , of Morecambe	5	Wrecked boat on Blackwater Bank, on the Irish Coast	1
Barque <i>Oberon</i> , of Liverpool	15	Smack <i>Gipsy</i> , of Newry	5	Schooner <i>Skylark</i> , of Folkestone	6
Brigantine <i>Nancy</i> , of Teignmouth	9	Schooner <i>Margaret Anne</i> , of Preston	4	Brig <i>Lively</i> , of Clay, Norfolk	5
Smack <i>Wonder</i> , of Teignmouth	2	Brig <i>New Draper</i> , of Whitehaven	8	Barque <i>Robert Watson</i> , of Sunderland	5
Brig <i>Sotia</i> , of Sunderland	6	Schooner <i>William</i> , of Liverpool	6	Schooner <i>Auchincruive</i> , of Grangemouth	6
Sloop <i>Three Brothers</i> , of Goole	5	Lugger <i>Nimrod</i> , of Castletown	3	Schooner <i>Friends</i> , of Lynn	4
Sloop <i>Charlotte</i> , of Woodbridge	5	Brig <i>Providence</i> , of Shields	8	Schooner <i>Eliza Anne</i> , of Dublin	5
Brig <i>Ann</i> , of Blyth	8	Brig <i>Mayflower</i> , of Newcastle	4	Brig <i>Content</i> , of Sunderland	5
Sloop <i>Hope</i> , of Dublin	3	Schooner <i>Village Maid</i> , of Fleetwood	4	Smack <i>Ellen Owens</i> , of Cardigan	3
Schooner <i>Drauid</i> , of Aberystwyth	5	Barque <i>Guyana</i> , of Glasgow	19	Schooner <i>Epmachus</i> , of Amsterdam	5
Barque <i>Vermont</i> , of Halifax, U.S.	18	Brig <i>Roman Empress</i> , of Shields	10		
Schooner <i>William Keith</i> , of Cardarvon	2	Brig <i>Nan Spiridione</i> , of Galaxide	2		
Brig <i>Flying Fish</i> , of Whitley	5	Schooner <i>Voador du Vouga</i> , of Vianna	8		
Smack <i>Elizabeth Ann</i> , of Lyme Regis	3	French Brig <i>La Jeune Marie Therese</i>	6		
Steam Dredge, at Newhaven	9	Barque <i>Perseverance</i> , of Scarborough	4		
Schooner <i>Admiral Hood</i> , of Rochester	9	Schooner <i>Elizabeth</i> , of Bridgewater	4		
Schooner <i>Susan and Isabella</i> , of Dundee	5	Ship <i>Danule</i> , of Belfast	17		
Schooner <i>Rose</i> , of Lynn	3	Schooner <i>Hortensia</i> , of Hanover	4		
Brig <i>Prodroma</i> , of Stockton	11	Schooner <i>Tregon</i> , of Stonehaven	4		
Brig <i>Eliza</i> , of Middlesborough	7	Brig <i>St. Michel</i> , of Marans	8		
		Spanish Barque <i>Primera de Torre-</i>			
				Total	498

For these and other Life-boat services the Institution has voted 1,845*l.* 7*s.* 2*d.* as rewards. It has also granted rewards amounting to 515*l.* 10*s.* for saving 373 shipwrecked persons, by shore-boats and other means, making a total of 871 persons saved from a watery grave during the last two years.

The number of lives saved by the Life-boats of the Society, and other means, since its formation, is 12,293; for which services 82 Gold Medals, 704 Silver Medals, and 15,250*l.* in cash, have been paid in rewards. The Institution has also expended 57,200*l.* on Life-boats, Life-boat Transporting-carriages, and Boat-houses.

THE COMMITTEE OF MANAGEMENT of the ROYAL NATIONAL LIFE-BOAT INSTITUTION appeal to the Officers and Seamen of the Royal and Merchant Navies to lend them a helping hand in their efforts to place and maintain LIFE-BOATS on every exposed part of the Coasts of the United Kingdom. A great work has already been done, as will be seen by the List of Boats given on the other side. And who better than Seamen can appreciate the comfort of knowing where to run for a Life-boat when on a lee-shore, and no port of refuge near? The Committee and Honorary Agents of the Shipwrecked Mariners' Society have full fellowship in this good work, and great interest in its prosperity; and the Secretary and Honorary Agents of that Society will receive the Subscriptions of those Commanders and Seamen who desire to help it forward.

(1.)

[Over.]

LIST OF THE LIFE-BOAT STATIONS

OF THE

ROYAL NATIONAL LIFE-BOAT INSTITUTION.

ENGLAND.		ISLE OF WIGHT .		CUMBERLAND .	
NORTHUMBERLAND—		Brightstone Grange. Brooke.		85 Shilloth. Castletown.	
1 Berwick-on-Tweed. North Sunderland. Boulmer. Alnmouth.		GURNEY St. Samson. DORSET Lyme Regis. SOUTH DEVON 50 Exmouth. Teignmouth. Plymouth.		SCOTLAND.	
5 Hauxley. Newbiggin. Cullercoats. Tynemouth.		CORNWALL Fowey. Lizard. 58 Penzance. Sennen Cove. St. Ives. Newquay. Padstow.		KIRKCUDBRIGHT Kirkcudbright. AYRESHIRE Ayr. Irvine.	
DURHAM		NORTH DEVON 60 Bude Haven. Appledore. Braunton.		ARGYLISHIRE 90 Campbeltown. CAITHNESS-SHIRE Thurso.	
10 Seaton Carew. YORKSHIRE		WALES.		ELGINSHIRE—	
Middleborough. Redcar. Saltburn. Whitby.		GLAMORGANSHIRE—		BANFFSHIRE Lossiemouth. Buckie. Banff.	
15 Scarborough. Filey. Bridlington. Hornsea.		Penarth. Portcawll.		ABERDEENSHIRE 95 Fraserburgh. FORFAR Buddon Ness. Broughty Ferry	
NORFOLK		CARMARTHENSHIRE—		HADDINGTONSHIRE North Berwick.	
20 Cromer. Mundesley. Bacton. Palling. Winterton.		CARMARTHENSHIRE—			
26 Caistor. Yarmouth, No. 1. " No. 2.		65 Llanelly. Carmarthen Bay.		IRELAND.	
SUFFOLK		PEMBROKESHIRE Tenby. Fishguard.		CO. ANTRIM 100 Portrush. Groomsport.	
Lowestoft. Pakefield. Southwold. Thorpeness, No. 1. " No. 2.		CARDIGANSHIRE—		DOWN Tyrella. Newcastle. Dundrum.	
SUFFOLK		70 Cardigan. Aberystwyth		LOUTH 105 Dundalk. Drogheda.	
30 Southwold. Thorpeness, No. 1. " No. 2.		MERIONETHSHIRE Barmouth.		DUBLIN Skerries. Howth. Poolbeg.	
KENT		CARNARVONSHIRE—		WICKLOW 110 Kingstown. Wicklow.	
Aldborough. Kingsgate.		ANGLESEY 75 Llanddwyn. Rhoscolyn. Holyhead. Cemlyn. Moclire. Penmon.		WEXFORD Cahore. Wexford. 115 Rosslare Fort. Carnsore.	
35 Margate. Walmer. Dover. Dungeness.		CARNARVONSHIRE—		WATERFORD—	
SUSSEX		80 Orme's Head. Rhyll (Tubular).		Tramore. Dungarvan. Ardara.	
40 Rye. Hastings. Eastbourne. Newhaven. Brighton.		FLINTSHIRE Southport. LYNCASHIRE Lytham. Fleetwood.		CORK 120 Youghal. Ballycotton.	
SUSSEX				MAYO 122 Westport.	
45 Selsey.					

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 5s. each in stormy weather, and 3s. each in fine weather; and on every occasion of going off to a Wreck to save Life, each of the Crew to receive 10s. 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."

(1.)

THE WRECK REGISTER AND CHART FOR 1860.

From THE TIMES, 26th September, 1861.

At the present period, when storms and shipwrecks are warning us of the approach of winter, it will be well to call attention, as we have been accustomed to do for many years past, to the Annual Official Register of Shipwrecks on the Coast and in the Seas of the United Kingdom, presented by the Board of Trade to Parliament. It is hardly possible to overrate the importance of this document, for it details, with great accuracy, an average annual loss of 800 lives, and the destruction of about 1,500,000*l.* of property yearly, from these lamentable disasters.

The past year will long be remembered for its stormy character, which penetrated far into the summer, for between the latter end of May and the beginning of June, upwards of 250 shipwrecks occurred.

As might have been expected from the continued succession of bad weather, the number of shipwrecks during the whole year was unusually large, giving a total loss of 1,379. Whilst, however, wrecks and strandings have increased, collisions have happily decreased, being 298 against 349 in 1859; but the whole number of casualties of all kinds in 1860 is 146 above the annual average for the past six years. On the other hand, it is satisfactory to find, that although the number of wrecks and strandings has been greater than usual, the loss of life has been considerably less, being 264 under the annual average of the past nine years. The total loss of life from the 1,379 shipwrecks during the year was 536, whilst 2,152 persons were fortunately saved by life-boats, the rocket and mortar apparatus, shore boats, and other means—a most gratifying and encouraging result, not only to the poor people themselves thus snatched from a premature death, but also to those who have toiled hard for many years past in organizing and completing the means of saving life from shipwreck on our coasts.

With respect to the important services thus performed, there is a terrible sameness in their general character every year, though the details are ever new and ever interesting. It is the same story in one sense, but the several parts of it are infinitely varied. It is always a "brave ship" in distress, always the "winds and the seas roaring," always some "poor souls" who are in the direst extremity of danger. Happily, too, through the instrumentality of the National Life-boat Institution and other bodies, it is nearly always the same story on the humane side. The life-boat is always ready, and a brave crew is ever at hand to man her.

The great and unprecedented loss of life in 1859 was mainly attributable to the destruction of two or three large passenger-ships. It will be remembered that 870 lives were lost in two great calamitous disasters alone, viz.—the wrecks of the *Royal Charter*, on the Anglesea coast, and the *Pomona*, on the Blackwater Bank, on the Irish coast.

The *Register* furnishes, as usual, some curious facts relative to the class of ships that are inevitably wrecked when overtaken by a gale of wind. Of the 2,795 vessels wrecked on our coasts during the past two years, 1,504—or more than half—were colliers, and of that class; and 1,291 were timberladen, passenger-ships, and vessels in ballast.

Of these our old friends the schooners hold as usual their pre-eminence for wrecking, 912 of them having during the same period gone to pieces. Next to the schooners come the brigs, 644 of which have in the same time met a similar fate. We find that of the 1,379 vessels wrecked last year, 554 were commanded by masters who were not required to have certificates of competency.

The annexed table shows that the classes of ships to which casualties most frequently occur are those between 50 and 300 tons burthen, which are usually employed in carrying coal, coke, ores, and stone:—

Vessels under	Tons	Vessels.
51 and under	100	284
101	300	393
301	600	557
601	900	106
901	1,200	25
1,200 and upwards		9
Total		1,379

The direction of the wind which proved most destructive to vessels wrecked on our coasts last year is also given. 111 vessels were wrecked during the prevalence of the wind from S.W.; 128 from W.N.W.; and 104 from N.W. 8 vessels were wrecked during absolutely *calm weather*; 151 in a fresh breeze; 168 in a whole gale; 101 in a storm; and 139 in a hurricane.

We find that 21 wrecks took place from not heaving the lead; 2 from intemperance; 35 from general negligence and want of caution; 39 founded from unseaworthiness; and 5 from defective compasses.

Some curious facts are given in the *Register* regarding the ages of ships. It appears that when they should be most vigorous, they are most feeble. Thus we find that, during the past three years, 377 vessels under 3 years old were wrecked;

and 472 between the ages of 3 and 7 years; whilst 644 of them perished between the ages of 15 and 20.

The Wreck Chart which accompanies the *Register* shows clearly the site of each of the casualties, from shipwrecks on our coasts during the year 1860. Who can behold such a picture of the loss of hundreds of lives, without contributing, as far as his means will allow him, to the mitigation of so much human suffering!

The estimated loss of property last year, as reported by the officers of some of the ships at the time of the several casualties is given. It is, however, absolutely impossible to ascertain correctly the loss of property from all the disasters that annually occur on our coasts. The destruction of fishing-boats, such as was witnessed lately at Yarmouth and Filey, is not referred to in the *Register*.

We believe that this lamentable state of things, by which a great loss of life and an immense destruction of property takes place every year, cannot be remedied until all vessels are subjected to a rigid inspection before they put out to sea, in order that it may be accurately ascertained whether they are well found and provided with life-boats, and with such a proper and suitable equipment, as will enable them to combat successfully with the elements.

We cannot help laying great stress on this point, because the loss of life from shipwrecks on the coasts alone of the British Isles within the last eleven years is really frightful to contemplate: it amounted to 6,883.

The districts where this immense sacrifice of human life took place—inflicted, we fear, not solely by the visitation of God, but in a great degree through the obstinacy and perversity of man—are as follows:—

	No.
Farn Islands to Flamborough Head	523
Flamborough Head to the North Foreland	957
North Foreland to St. Catherine's Point	465
St. Catherine's Point to Start Point	81
Start Point to the Land's End	445
Land's End to Hartland Point, including Scilly	330
Hartland Point to St. David's Head	440
St. David's Head and Carnore Point to Lambay	
Island and Skerries, Anglesey	879
Skerries and Lambay to Fair Head and Mull of Cantire	1,453
Cape Wrath to Huchan Ness	197
Buchan Ness to Farn Islands	271
All other parts of the Coast	842
Total lives lost	6,883

Between the Farn Islands and the North Foreland there are sixty-two life-boat establishments, and as many life-saving rocket and mortar stations. Here every winter some of the most daring and persevering life-boat services are performed. The poor sufferers are often snatched from the very jaws of death; and, on the lowest calculation, beyond this large number of 1,480 persons who have perished in this district, one-third more would have swelled the death-roll had it not been for the services of the life-boats and the life-saving apparatus.

From the above account of the loss of life on the coasts it is seen that the most serious wrecks, resulting in the greatest loss of life, do not happen on the north-east coast of England, as is generally supposed, but on those parts of our coasts most frequented by large foreign ships. A few months ago a large American ship, *The Danube*, was coming up the Irish Channel. Mistaking her position, she found herself on some rocks in Cardigan Bay. A fearful storm was raging at the time. Her signals of distress were observed late in the evening. The Portmadoc life-boat, belonging to the NATIONAL LIFE-BOAT INSTITUTION, was immediately launched for the rescue of the crew who had taken to their boats. After a night of great hardship and ceaseless toil, the life-boat brought on shore 17 poor creatures, who were more dead than alive. Similar services are constantly being rendered by the Institution's life-boats to foreign ships' crews, and frequently to those belonging to the United States of America.

During the past nine years the total number of all casualties on the coasts and in the seas of the British Isles are thus given:—In 1852, there were 1,115; in 1853, 832; in 1854, 987; in 1855, 1,141; in 1856, 1,153; in 1857, 1,143; in 1858, 1,170; in 1859, 1,416; and in 1860, 1,379: making a total of 10,236 vessels lost in nine years, or 1 lost in every 210 British ships, and 1 in every 232 foreign vessels, and giving an average annual loss of 1,148 vessels on the coasts and in the seas of the United Kingdom.

We regret to find that the sacrifice of life from this great multitude of shipwrecks amounted to 7,201, or an average of 800 lives that meet with a watery grave from shipwrecks every year on the coasts and in the seas of the British Isles.

In our narrow seas it is only natural that a large number of collisions should constantly take place. The number of British and foreign vessels entering British ports, including repeated voyages, every year amounts to upwards of 204,945, representing a tonnage of 23,176,196. Vessels clearing outwards under the same circumstances every year number 203,402, having a tonnage burden of 23,530,906. We must, therefore, be prepared for a considerable number of collisions, although happily it is not increasing. During the past six years they have amounted to 1,788, giving an annual average of nearly 300. No calamity is greater than that of a collision at sea during a dark, stormy night. It is often instantaneous in its destructive effects; and in less than ten minutes afterwards it not unfrequently happens that not a vestige of one of the ships is to be seen, a large number of persons frequently sinking with her.

Having dwelt on the dark side of our picture so long, we must now briefly turn to the brighter and more encouraging side of it.

It appears that during the past five years the number of lives saved on the coast by life-boats,

life-saving apparatus, shore and ships' boats, and other means, amounts to 11,495.

We cannot refrain here from giving a few examples of noble life-boat services:—

On the 10th of February last, in the fearful gale from the east which caused such destruction to shipping and terrible loss of life on the east coast, the brig *Providence*, of Shields, coal laden, was driven on the Long Scarr Rocks, between the mouth of the Tees and Hartlepool. The Seaton Carew life-boat, belonging to the NATIONAL LIFE-BOAT INSTITUTION, was quickly launched, and proceeding to her assistance through a high surf, took off her crew, eight in number, and landed them in safety. She had scarcely done so when she was again called to the aid of the brig *Mayflower*, of Newcastle, also coal laden, which had gone ashore on the East Gare Sand, off the Tees mouth. The life-boat also took off her crew of eight men, and safely landed them. On the previous day this boat had, in conjunction with the West Hartlepool life-boat, endeavoured to save the crews of the brig *Alliance* of Guernsey, and schooner *Warnsbeck* of Shields, which were wrecked on the Long Scarr Rocks; but although every effort was made, they were unsuccessful, owing to the difficult position into which the vessels had driven on these dangerous rocks. As it was, the boat was herself injured and partially disabled thereby. "I wish you had been here on that disastrous Saturday and Sunday (9th and 10th February)," writes the Honorary Secretary, the Rev. J. LAWSON, of the Seaton Carew Branch of the NATIONAL LIFE-BOAT INSTITUTION, "I am sure you would have been gratified to see the gallant way in which our crew worked, though composed, as you know, chiefly of landsmen. They were going from 9 A.M. on Saturday until 11 A.M. on Sunday, without rest, and not only attending to our own life-boat, but helping to man the West Hartlepool boat when short of hands."

Again, on the 1st January, 5 men were saved on the Doomed Bar Bank, Padstow, from the brigantine *Nugget*, of Bideford. From January 1st to the 6th, 32 men were saved by the Institution's boats, and one vessel was brought safely into harbour. But sometimes darkness is added to the perils which the life-boat men encounter in their exertions on the stormy deep. At Lyme Regis, for instance, the word was given during one of the winter nights that a vessel was in the offing in distress. It was "pitchy dark." A strong gale was blowing, and a heavy surf beating on the shore, but the life-boat men felt that duty called, and they did not hesitate. They went to sea as if

it were to their firesides they were going; and they were successful in saving a ship's crew. The brief narrative of this adventure tells us that very few on shore believed the life-boat "would ever return," the night was so awful; "it was sufficient to appal any one entering the life-boat."

The payments to the crews of the life-boats are placed in the Annual Report of the Life-boat Institution, opposite the services thus rendered. For instance, the 16 men belonging to the brigs *Providence* and *Mayflower*, mentioned above, were saved for the sum of 25*l.* At Portmadoc, in a heavy gale with a terrific surf, 17 men were saved for 14*l.* This is about 17*s.* a head, and flesh and blood is certainly cheap at that rate. The Carnsore life-boat saved 19 persons, at a cost of 22*l.* 14*s.* Suppose the average expense of saving a man by means of the life-boat is a pound, this is the way to put it before the public—will you give 20*s.* a year to save a fellow-creature from a horrible death? Perhaps you save more than one by that gift. You may save a family from an irreparable loss, you may restore a darling boy to his widowed mother, a father to his young and helpless children. Here is a strong claim upon the national benevolence, and fortunately it is becoming day by day more openly acknowledged, just as the merits of the NATIONAL LIFE-BOAT INSTITUTION become more widely known.

Public and private gratitude calls for the support of this Institution, and some instances have been recorded which show how beautifully gratitude works, and how sweetly its work is repaid. The Carnsore life-boat, mentioned above as saving 19 people from shipwreck, was the "thank-offering" of a lady who was saved from drowning. One sees a striking appropriateness in that thank-offering, as an example of the ruling Power which brings good out of evil. There is another instance recorded of a similar character. Two ladies, in memory of a departed sister, place a life-boat at Llandudno, in North Wales, and call it the *Sisters' Memorial*. The memory of departed worth, or departed affection, could not be preserved in a more fitting manner. The memorial is all goodness and all mercy, and has as little of the taint of the world in it as anything that could be mentioned. It is to keep these benevolences in active operation—to endow them for ever, as it were—that the Life-boat Institution appeals to the public. It is an appeal that will stand any test—a cause that all can assist in—and a cause that only requires to be known to insure a sufficiency of help to keep up its large life-saving fleet of 115 life-boats, and gradually to increase their number.

Royal National Life-Boat Institution,

For the Preservation of Life from Shipwreck.

(Incorporated by Royal Charter.)

Patroness—HER MOST GRACIOUS MAJESTY THE QUEEN.

President—VICE-ADMIRAL HIS GRACE THE DUKE OF NORTHUMBERLAND, K.G., F.R.S.

Chairman—THOMAS BARING, Esq., M.P., F.R.S., V.P., Chairman of Lloyd's.

Deputy-Chairman—THOMAS CHAPMAN, Esq., F.R.S., V.P., Chairman of Lloyd's Registry of British and Foreign Shipping Society.

Secretary—RICHARD LEWIS, Esq.

Inspector of Life-Boats—CAPT. J. R. WARD, R.N.

APPEAL.

THE COMMITTEE OF MANAGEMENT have to state that, during the past two years, the INSTITUTION has incurred expenses amounting to 22,850*l.* on various Life-boat Establishments on the Coasts of England, Scotland, and Ireland.

During the past two years the LIFE-BOATS of the NATIONAL LIFE-BOAT INSTITUTION have been instrumental in rescuing the Crews of the following Vessels:—

Schooner <i>Ann Mitchell</i> , of Montrose	1	Brigantine <i>Freia</i> , of Königsberg	6	<i>wiega</i> —Saved vessel and 1 of the crew	1
Schooner <i>Jane Roper</i> , of Ulverstone	6	<i>Diana</i> , of Fredrikshamn	7	Schooner <i>Thurvell</i> , of Penzance—	1
Brig <i>Pallas</i> , of Shields	3	Brig <i>Gloucester</i> , of South Shields	7	Saved vessel and crew	4
Ship <i>Ann Mitchell</i> , of Glasgow	9	Brig <i>Lovely Nelly</i> , of Seaham	6	Brig <i>Anne</i> , of Plymouth—Saved	8
Smack <i>John Bull</i> , of Yarmouth	5	Brigantine <i>Nugget</i> , of Bideford	5	vessel and crew	8
Schooner <i>Catherine</i> , of Newry	4	Schooner <i>Prospect</i> , of Berwick	6	Schooner <i>Jetsey</i> , of Peterhead—	6
Barque <i>Niagara</i> , of Shields	11	Sloop <i>Thomas and Jane</i> , of St. Ives	4	Saved vessel and crew	6
A Barque of Teignmouth	2	A Fishing-boat of Whitburn	4	Barque <i>Frederick</i> , of Dublin	1
Brig <i>George and James</i> , of London	2	Brig <i>Arethusa</i> , of Blyth	8	Barque <i>Peace</i> , of London	2
Brig <i>Zephyr</i> , of Whitby	6	Schooner <i>Devi Wynn</i> , of Portmadoc	8	Lugger <i>Saucy Lass</i> , of Lowestoft	11
Cotic <i>Honour</i> , of Cutlercoats	3	Fiat <i>Cymarae</i> , of Beaumaris	5	Schooner <i>Fly</i> , of Whitby—Saved	4
Schooner <i>Eliza</i> , of North Shields	3	Schooner <i>William</i> , of Morecambe	2	vessel and crew	10
Barque <i>Oberon</i> , of Liverpool	16	Smack <i>Gipsy</i> , of Newry	4	Smack <i>Adventure</i> , of Harwich	7
Brigantine <i>Nancy</i> , of Teignmouth	9	Schooner <i>Margaret Anne</i> , of Preston	4	Pilot cutter <i>Waim</i> , of Lowestoft	11
Smack <i>Wonder</i> , of Teignmouth	2	Brig <i>New Droper</i> , of Whitehaven	5	Barque <i>Undaunted</i> , of Aberdeen	1
Brig <i>Scotia</i> , of Sunderland	6	Schooner <i>William</i> , of Liverpool	8	Wrecked boat on Blackwater Bank,	1
Sloop <i>Three Brothers</i> , of Goole	5	Brig <i>Nimrod</i> , of Castletown	3	on the Irish Coast	6
Sloop <i>Charlotte</i> , of Woodbridge	5	Brig <i>Providence</i> , of Shields	8	Schooner <i>Skylark</i> , of Folkestone	5
Brig <i>Ann</i> , of Blyth	8	Brig <i>Mayflower</i> , of Newcastle	8	Brig <i>Lively</i> , of Clay, Norfolk	6
Sloop <i>Hope</i> , of Dublin	3	Schooner <i>Village Maid</i> , of Fleetwood	4	Barque <i>Robert Watson</i> , of Sunder-	5
Schooner <i>Druid</i> , of Aberystwyth	5	Barque <i>Guyana</i> , of Glasgow	19	land	6
Barque <i>Vermont</i> , of Halifax, U.S.	16	Brig <i>Roman Empress</i> , of Shields	10	Schooner <i>Auchincruive</i> , of Grange-	6
Schooner <i>William Keith</i> , of Carnarvon	2	Brig <i>San Spiridione</i> , of Galaxide	2	mouth	4
Brig <i>Flying Fish</i> , of Whitby	5	Schooner <i>Vador du Vouga</i> , of Vianina	6	Schooner <i>Friends</i> , of Lynn	5
Smack <i>Elizabeth Ann</i> , of Lyme Regis	3	French Brig <i>La Jeune Marie Therese</i>	6	Schooner <i>Eliza Anne</i> , of Dublin	5
Steam Dredge, at Newhaven	9	Barque <i>Perserverance</i> , of Scarborough	5	Brig <i>Content</i> , of Sunderland	5
Schooner <i>Admiral Hood</i> , of Rochester	6	Schooner <i>Elizabeth</i> , of Bridgewater	17	Smack <i>Ellen Owens</i> , of Caidizen	3
Schooner <i>Susan and Isabella</i> , of Dundee	5	Ship <i>Danube</i> , of Belfast	4	Schooner <i>Epmachus</i> , of Amsterdam	5
Schooner <i>Rose</i> , of Lynn	3	Schooner <i>Hortensia</i> , of Hanover	4		
Brig <i>Prodroma</i> , of Stockton	11	Schooner <i>Oregon</i> , of Stonehaven	4		
Brig <i>Eliza</i> , of Middlesborough	7	Brig <i>St. Michel</i> , of Marans	8		
		Spanish Barque <i>Primera de Torre-</i>			
				Total	498

For these and other Life-boat services the Institution has voted 1,845*l.* 7*s.* 2*d.* as rewards. It has also granted rewards amounting to 515*l.* 10*s.* for saving 373 shipwrecked persons, by shore-boats and other means, making a total of 871 persons saved from a watery grave during the last two years.

The number of lives saved by the Life-boats of the Society, and other means, since its formation, is 12,293; for which services 2 Gold Medals, 704 Silver Medals, and 15,250*l.* in cash, have been paid in rewards. The Institution has also expended 57,200*l.* on Life-boats, Life-boat Transporting-carriages, and Boat-houses.

The public cannot but sympathise with the vigorous efforts now being made by this Institution, to save the lives of Shipwrecked Crews. Their help was never more needed than at the present time, when, through the extraordinary exertions the Society has made within the past few years, it has now *One Hundred and Twenty-one Life-boats* under its management, for the maintenance of which, in a state of thorough efficiency, a large permanent annual income is absolutely needed, if its humane mission is to be perpetuated.

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, FAULKNER, 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.

Payments may be made by Cheques, or by Post-office Orders (crossed), to Messrs. WILLIS, PERCIVAL, and Co., or to the Secretary.

