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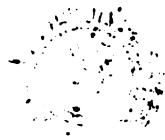
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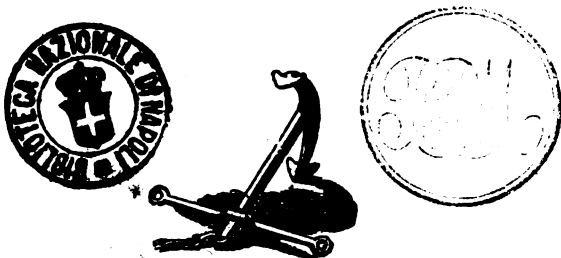
Naval Chronicle

FOR 1860.

A JOURNAL OF PAPERS

ON SUBJECTS CONNECTED WITH

MARITIME AFFAIRS.



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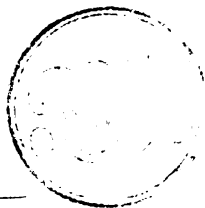
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Naval Chronicle



JANUARY, 1860.

LONGITUDES OF SOME OF THE PRINCIPAL PLACES IN CANADA,
by Electric Telegraph. By Lieut. E. D. Ashe, R.N., F.R.A.S.

The introduction of the telegraph wire into an observatory, and the facility and rapidity of registering observations by its means, may be considered one of the most useful adaptations of the age; and I never recollect having been more deeply impressed by the idea of man's intellectual development, than I was when I heard the "relay" in the Observatory, Quebec, beating the seconds of the sidereal clock in the Observatory at Cambridge. I have long ceased to wonder at the snorting locomotive as it dashes past at the rate of forty miles an hour, dragging some hundreds of human beings in its wake. Man can reason, step by step, from the tea kettle until he arrives at the steam engine; but when we hear the pulsations of a clock, be it ever so far off, our reasoning faculties stagger under the stupendous fact. It follows then, as a matter of course, that as the beating of a clock in one observatory can be heard in another, no method can be so accurate for determining the difference of meridians as the mode of doing so by the electric telegraph.

Two fixed observatories being connected by the telegraph wire, there are various modes of determining their difference of meridians. Perhaps the most accurate is to send a signal every time a star of a pre-arranged list passes each wire of their respective transit instrument, and as the time of these signals is carefully noted in each, it follows that the time taken by each star to pass from the meridian of one

observatory to that of the other can be most accurately obtained. Care, however, must be taken to change the observers in order to eliminate the personal equation. And if the signal be sent from East to West, and again from West to East, the time occupied by the signal in passing along the line causes the meridional difference to be too great in one instance and too little in the other, and consequently the mean gives a correct result. For instance, let the observatory A be twenty minutes to the eastward of an observatory B, and suppose the signal to occupy one second in going along the line, then if A sends a signal at 4h. 30m. 10s., if no time is lost, B will receive the signal at 4h. 50m. 10s.; but as we suppose the signal to occupy one second in passing from A to B, B will receive the signal at 4h. 50m. 11s., and the difference of meridians will be 20m. 1s., a second too much. But supposing B to send a signal to A at 4h. 50m. 10s., then A will receive it at 4h. 30m. 11s., and the difference of time will be 19m. 59s., evidently one second too little; but the mean of the results give 20m., the correct difference of longitude. Therefore, by the observers exchanging places, and by sending the signal backward and forward, the greatest accuracy may be obtained.

Lunar and stellar photography may be the means of superseding the laborious and imperfect manner of taking observations with the human eye; and it is to be hoped that the noble example set by the Observatory, Cambridge, U.S., in this respect, may be followed by others, and that we shall ultimately succeed in making the heavenly bodies register their own observations. With respect to stellar photography, so much will depend upon the state and purity of the atmosphere, that but few places are well adapted to this mode of observing, but many say that Quebec has the advantage in this respect over most other places in British America, and I sincerely hope that ere long stellar photography will be taken up by Canada.

Before giving my report on the determination of longitude, I will make a few observations that may be useful to those who may be occupied on a future occasion in determining meridional distances.

On arriving at the place, just call at the telegraph office and make friends with the department, as without their hearty co-operation it is useless to proceed. Then look out for some rocky ground near to the office, where you can build your observatory. Let the support of your instrument be of stone, and of a height that will enable you to apply and read the level when standing on the ground. This is of great importance, as the level must be applied quickly and often. Also take care to have the screw that moves the instrument in azimuth to your right hand in looking to the northward. If you are left-handed, *vice versa*. See that the collimation has not been thrown much out by travelling. If it has, correct it as nearly as you can by the middle wire in reversed positions.

As you do not know the longitude of the place within two minutes, and as the rate of your chronometer should not be trusted with its former rate after travelling, you cannot get the instrument into the meridian by bisecting a star with the middle wire,—as the correct

time cannot be known by the chronometer, and procuring observations for the correct local time would occupy much time,—I recommend the following way to get a transit instrument quickly into the meridian.

First direct the instrument to a point about a degree and a half from Polaris, in a line joining that star and the fifth star of the Great Bear. This ought to place the transit instrument within half a degree of the meridian; then take from the *Nautical Almanac* two circumpolar stars, that differ about twelve hours in their R.A. For instance, 51 Cephei and δ Ursæ Minoris on March 1st, 1859, had a difference of R.A. of 15m. 58.75s.—51 Cephei passing *sub. polo.* first, and it will come into the field of an inverting telescope on the right; before it has passed the second wire of the instrument (if it is not much out of the meridian) by elevating the telescope δ Ursæ Minoris ought to be in the field. If it is not, move the North end of the telescope to the East until it is. When you have got these stars within range of the field, and (as near as you can guess) 51 Cephei 15m. in advance, there will then be sufficient time to adjust the level, which has of course been put out by moving the instrument. Should you have a mean solar chronometer, the difference of R.A. 15m. 58.75s. must be turned into mean time. Now mark the time that 51 Cephei passes the middle wire, and if the transit is in the meridian, δ Ursæ Minoris will come to the middle wire in an opposite direction 15m. 58.75s. after 51 Cephei. Should it not do so, mark its position at the moment that it *should* be at the middle wire, and then by turning the azimuthal screw, bring δ Urs. Min. not quite half way towards the middle wire. The distance that the star is to be moved is known by looking at deviation factors. This mode of proceeding is independent of the error of the chronometer; it only supposes that it goes with an even rate for a quarter of an hour, and by one operation it should place the instrument within one second of time of the meridian. You then take observations for the errors of deviations, and proceed at once to get local time.

By looking at my report to Sir William Logan many causes of failure may in future be avoided, and perhaps some trouble saved.

Report to Sir W. E. Logan, F.R.S.

Quebec, 20th January, 1858.

Sir,—In the month of October, 1856, at your request I left Quebec for Montreal, in order to determine by electric telegraph the longitude of that city. On my arrival, the first object was to procure a suitable place, not far from the telegraph wire, and permission was given to make use of the top of the Exchange.

The transit instrument was placed upon a stack of chimneys, and a temporary canvas cover erected to protect the instrument from the wind. On the 28th October the transit instrument was in the meridian, the telegraph wire was led up to the top of the house, and a message sent to Quebec to be ready at 7h. p.m. The night was fine and clear, and we commenced by giving a signal to look out when a star entered the field of the telescope, and as it passed each wire a

single dot was sent along the line to Quebec. The assistant, Mr. Heatley, on the signal being given to look out, listened attentively to these dots and to the tick of the sidereal clock, and registered the fraction of a second: by these means the observations at Montreal were noted down with all the ease and facility that could have been attained in a properly fitted observatory instead of the temporary arrangement we had on the top of a house.

From the operators not understanding some technical expressions, and from the novelty of the transaction, many stars were lost; but considering that it was a first trial we had every reason to expect that we should finally succeed.

On the following night we were again connected by the telegraph wire, but after sending a few stars a great disagreement was found to exist between this and the preceding night's work. On my taking observations to determine the errors of the instrument, I found that it had moved considerably out of the meridian; and subsequently I discovered that the passing of a cart, even at the distance of two streets, put the whole chimney in motion: for this there was no remedy, and the idea of succeeding with the present arrangement was hopeless.

Having to return to Quebec, I left on the 2nd November, with the knowledge gained by experience that a transit instrument placed on the top of a house could only give doubtful observations, which were worse than useless.

On the 29th December I left Quebec for Toronto, and on my arrival took up my quarters with my friend Professor Kingston of the Magnetic Observatory. Here there was every convenience, a small transit instrument in position, and a sidereal clock. The observations for time were under the superintendence of Professor Kingston. The distance of the Observatory from the Telegraph Office is, I should think, about two miles, and the work of leading the wire through the town and into the Observatory presented many difficulties: one, the ground being frozen hard could not be opened for sinking the posts, and another, the interference with private property: but by the hearty co-operation of the Superintendent of the Telegraph Office, Mr. Dwight, and by some contrivance, these difficulties were surmounted.

The cloudy state of the atmosphere prevented our working until the 17th of January, which was fair for observations. As our object was to determine the time by the face of our respective clocks at the same instant, thirty dots were sent at intervals of a second in each minute, so that if the clocks were not beating together, the fraction of a second that one clock was after the other might be guessed at. The fraction being known, the second, minute, and hour are sent, and consequently the readings of the two clocks are known at the same moment.

The errors of the clocks were obtained by observations of many stars on the same night, and the errors applied to the respective clocks; the true difference of time between Quebec and Toronto was thus known, and hence the longitude. See *Table*.

On the 5th of February I left Quebec for Kingston, and on my

arrival was offered a home and every assistance by Dr. Yates. The site which I selected for the temporary observatory is situated in a cross street between Earl Street and Barrie Street. Two large blocks of limestone were brought and placed in the corner of a yard, and some planks about six feet long were fixed around them, covering in a space about eight feet square. This was also some distance from the Telegraph Office, but by taking advantage of an old fence and of an occasional tree, the wire was brought to the observatory without much difficulty.

My past experience had taught me to avoid the tops of houses, and to select the solid earth and solid rock for the support of my transit instrument. Still, I had another lesson to learn. This neighbourhood was infested with boys, who, when they saw a light shining through the cracks of the boards, commenced throwing stones with a determination and precision worthy of a better cause; and some of the few clear nights that occurred in this month were lost in consequence of boys' love of mischief. I first tried mild entreaties and then severe threatenings; they laughed at the former and made faces at the latter. I then procured the service of the police, who partly succeeded in keeping the boys from further interference with my duties.

On the night of the 20th of February, all being ready, and the weather favourable, we made arrangements for sending signals to Quebec. I found that the method adopted at Montreal, of sending a signal to the Observatory at Quebec each time a star passed the wire of the telescope, involved the necessity of employing a telegraph operator for some hours; but by merely exchanging the time, the operator was not required for a longer period than half an hour; consequently, in this case, we sent thirteen taps, at intervals of twenty seconds, from Kingston to Quebec, from a mean solar chronometer. As a sidereal clock gains one second on the mean solar chronometer in six minutes, Quebec listened for and marked down the second of the sidereal clock which was co-incident with the signal sent from Kingston, and consequently, without any guess-work, had the fraction of a second. Quebec then sent similar signals from the sidereal clock, and Kingston listened for and marked down the second which was co-incident with the signal sent from Quebec; in this way was the difference between the two places ascertained to the hundredth part of a second. I conceive that signals sent from one end of the line by *mean time* and from the other end by *sidereal time* ensure the most satisfactory results. Although the observations for time were not very satisfactory, still, from the severity of the weather, and the nuisance above alluded to, I resolved not to stay any longer for further trials, but left for Montreal on the 30th. On my arrival, I accompanied you, and we reconnoitred in the neighbourhood of Viger Square, where we were glad to find that there appeared to be a scarcity of boys, and those that did heave in sight were perfectly tame. The gardener's tool-house, in Viger Square, appeared well suited to our purpose, and by placing a large block of limestone on a solid basis

built beneath it, we had in perfection the principal requisite for the support of a transit instrument—that of fixity.

In order that I might avail myself of every opportunity of taking observations, I took up my residence there, and although great cold was experienced, nevertheless the advantage of being close to my work far more than compensated for the severity of the weather.

The night of the 12th of March was clear, the instrument firmly fixed and well adjusted, and signals were sent to and from Quebec. Although the electric current was weak, and the signals at the Montreal end of the line difficult to be heard, still the results were most satisfactory, and I left on the following morning for Quebec.

Chicago being placed on some charts in a longitude differing by upwards of forty miles from that on another, it was of the greatest consequence, before making a map of Canada, that the right position of Chicago should be ascertained. I therefore, with that view, left Quebec early in the month of April for this renowned city, and on my arrival called on Lieut-Col. Graham, U.S.A., and stated the object of my visit. He offered and gave me his valuable assistance, and obliged me by taking charge of the operations at one end of the line; after an observatory was erected, my transit instrument in position, and the telegraph authorities spoken to, I hurried back to Quebec, and found that they had succeeded on one night in sending signals; but in consequence of the weather not being very favourable at Chicago, we were again in communication on the night of the 15th of May.

The electric current was transmitted via Toledo, Cleveland, Buffalo, Toronto, and Montreal, a distance of 1,210 miles, by one entire connection between the two extreme stations, and without any intermediate repetition, and yet all the signals were heard distinctly at either end of the line; the signal occupied only $\cdot 08$ of a second in passing along that distance.

On the 24th July I left Quebec for Windsor, and my past experience enabled me soon to select a spot suitable for the transit instrument, around which a covering of boards was put up. On the night of the 15th of August we succeeded in sending signals to Quebec; but unfortunately the sky became cloudy, and I was unable to get satisfactory observations for the local time. However, on the 18th, the signals and observations for time were most complete.

On the 19th I left Windsor for Collingwood, and on my arrival, I found rock and quietness in the yard of Mr. Armstrong's house, where I was stopping. The instrument was in position and the night favourable on the 1st of September, and satisfactory signals were exchanged. I left on the following day for Quebec.

It was now most important that the longitude of Quebec should be determined with the utmost possible accuracy. I had formerly by electric signals on one night from Fredericton, N.B., obtained by the kindness and assistance of Drs. Toldervy and Jack, the position of the Quebec Observatory; but on that night observations for our local time could not be taken, and we had to trust to the observations

taken on the previous night and to the good character of the sidereal clock.

If we had been able to get the difference of longitude between Fredericton and Quebec, the position of the Quebec Observatory would have been quite certain, as the longitude of the former had been obtained by frequent signals on many nights with Cambridge, which by interchange of several hundred chronometers with Greenwich, is supposed to have its meridional difference of longitude ascertained with all the accuracy possible short of that to be arrived at by the transatlantic cable.

We were unable to again get telegraphic communication with Fredericton on account of the submerged cable at Cape Rouge being broken; but Professor W. C. Bond, of Cambridge Observatory, offered in the kindest manner possible to send and receive signals to and from Quebec. On the 21st of September and 9th of October, the communications between the Observatories of Cambridge and Quebec were completely successful, and the longitude of Quebec, as well as those places already referred to, finally settled.

The longitude of the Observatory as obtained by telegraphic signals, and the longitude published on the Admiralty charts, differ by no less than fourteen seconds of time, and the other places whose positions have been determined in a similar manner, have a still greater difference.

On the 29th of October I left Quebec for Ottawa, and on my arrival put up at Mr. Doran's boarding-house and went in quest of a site for the transit instrument. On Barrack Hill there were several blocks of limestone, around one of which I built a little observatory, and had the telegraph wire brought there. The night of the 14th of November was beautifully clear, and the result of our night's work most satisfactory.

June 18th, 1858. I left Quebec for Three Rivers, and on my arrival I accepted the kind invitation of Oliver Wells, Esq., to make his house my home, and immediately went in search of a place suitable for fixing the transit instrument. After some time I selected the Barrack Square (then unoccupied) as the spot most suitable for my purpose, as it was close to the Telegraph Office, and was also fenced in; I felt myself secure from the intrusion of boys,—the pest of itinerant astronomers; indeed I had not seen any since my arrival.

As there was no rock in the neighbourhood, nor anything suitable for the support of the instrument on the sandy foundation that exists in the vicinity of Three Rivers, and as a very fine Roman Catholic Cathedral was in the process of erection not far off, I went at once to the Curé and begged a stone, when with that politeness peculiar to the French Canadians he placed everything that he had at my disposal. Availing myself therefore of his kind liberality, I took two, and had them carted to the Barrack Square. Previously to my going in quest of a stone I had spoken to a carpenter, who, on my return, had the stuff cut out ready to board in the transit instrument. The stones were firmly placed, and the telegraph wire by the support of

only two posts was brought to the observatory, and all was ready to take advantage of the fine weather to make preliminary observations requisite for getting the instrument into the meridian. I then made up my mind to return home and rest until sunset, when I would again return for my night work. On leaving the Barrack Square, to my great dismay I saw that two palings of the fence were pulled down, leaving a space sufficiently large for a boy to get through. I looked upon it in the same manner that a person in taking a house would look at a rat hole in a cupboard; but as all was quiet and not a leaf stirring, my fears quickly subsided.

A little before sunset I left my friend's house for the observatory; it was a lovely evening; the twittering of swallows took me back to other climes and other days; and as it was rather early I sauntered along with my thoughts wholly absorbed in this world and not in others, when a sound came floating on the air that quickly dispelled my reveries. It was the noise of boys at play. I then was sensibly made aware of the fact that there were boys in and about Three Rivers,—Yes,—and when I came in sight of the Barrack Square I saw it full of boys playing cricket—my feelings may possibly be imagined but they could not be described. I came amongst them just at that part of the game when they had cried “over.” Some boys were taking up their positions by jumping like a frog over the backs of all who came in their way, others by rolling like a carriage wheel into the place assigned to them. Kingston and all its annoyances came now to my mind, but I observed that they were a different sort of boy from that of Kingston. The type of the latter may be considered as short, deep-chested, yellow hair, blue eyes, one of which was always winking at a companion, face much freckled, voice loud and shrill, accompanied by a habit of putting the thumb to the nose when spoken to. The type of the former may be considered as tall, dark hair, hazel eye, musical voice, with a habit of paying attention when spoken to. I went up to them and explained the delicate nature of the instruments that were near them, begged that they would not discontinue their manly sport, as I was sure that they would be careful not to do any harm; they promised to do so, and after they had finished the game they went off and never more gave the least annoyance. That night I got the instrument nicely adjusted, and after only one failure succeeded in sending and receiving signals to and from Quebec on July 1st, that gave a most satisfactory result. I left on the 5th for Quebec.

In conclusion I may say that the ease and accuracy with which the position of a place can now be fixed by means of the electric telegraph renders it imperative that all those places which can avail themselves of the use of the telegraph line, should have their longitudes determined at once, in order that a correct map of Canada may be produced.

Subjoined I send you an abstract of the observations made.

I have, &c.,

E. D. ASHE.

Abstract of the Telegraphic Observations determining the Longitudes of several Places in North America, by Lieut. E. D. Ashe, R.N.

Quebec, 21st September, 1857.

The place of observation was the Observatory in Mann's Bastion, Citadel.

	h.	m.	s.
By the signals sent from Quebec to Cambridge, the difference of longitude is shown to be	0	0	18·27
And by the signals from Cambridge to Quebec.....	0	0	18·25
Mean difference of longitude by the work of the 21st September	0	0	18·26
Again on the 9th October:—			
By the signals sent from Quebec to Cambridge.....	0	0	18·44
By the signals from Cambridge to Quebec.....	0	0	18·33
Mean difference of longitude by the work of the 9th October..	0	0	18·38
Mean of both nights' work:—			
Quebec Observatory West of Cambridge Observatory.....	0	0	18·32
Longitude of Cambridge West of Greenwich, as communicated by Professor W. C. Bond.....	4	44	30·70
Longitude of Quebec Observatory	4	44	49·02

Toronto, 21st January, 1857.

The place of observation was the Magnetic Observatory.

By the signals sent from Quebec, Toronto is West of Quebec..	0	32	44·51
By the signals from Toronto " " "	0	32	44·31
Mean difference of longitude	0	32	44·41
Longitude of Quebec	4	44	49·02
Longitude of Toronto Magnetic Observatory	5	17	33·43

Kingston, 28th February, 1857.

The place of observation was the new Court House.

By the signals sent from Quebec, Kingston is West of Quebec.	0	21	05·60
By the signals from Kingston " " "	0	21	05·39
Mean difference of longitude	0	21	05·50
Longitude of Quebec	4	44	49·02
Longitude of Kingston.....	5	5	54·52

Montreal, 12th March, 1857.

The place of observation was in Viger Square, 650 feet West of Captain Bayfield's station on Gate Island.

By the signals sent from Quebec, Montreal is West of Quebec.	0	9	23·01
By the signals sent from Montreal " " "	0	9	22·38
Mean difference of longitude	0	9	22·70
Longitude of Quebec	4	44	49·02
Longitude of Montreal.....	4	54	11·72

Chicago, 15th May, 1857.

The place of observation was in the play-ground of the school situated to the northward of the Roman Catholic Church, Huron Street.

	h.	m.	s.
By the signals sent from Quebec, Chicago is West of Quebec..	1	5	41·44
By the signals sent from Chicago " " "	1	5	41·60
Mean difference of longitude	1	5	41·52
Longitude of Quebec	4	44	49·02
Longitude of Chicago	5	50	30·54

Windsor, 18th August, 1857.

The place of observation was in the yard of Mr. Sholand in Goyeau Street, about fifty yards to the westward of the new English Church, and twenty yards to the westward of the Court House.

By the signals sent from Quebec, Windsor is West of Quebec..	0	47	19·04
By the signals sent from Windsor " " "	0	47	18·97
Mean difference of longitude	0	47	19·00
Longitude of Quebec	4	44	49·02
Longitude of Windsor	5	32	08·02

Collingwood 1st September, 1857.

The place of observation was the Railway terminus.

By the signals sent from Quebec, Collingwood is West of Quebec	0	36	01·43
By the signals sent from Collingwood " " "	0	36	01·59
Mean difference of longitude	0	36	01·51
Longitude of Quebec	4	44	49·02
Longitude of Collingwood	5	20	50·53

Ottawa, 14th November, 1857.

The place of observation was 120 yards East of the Flag-staff on Barrack Hill.

By the signals sent from Quebec, Ottawa is West of Quebec ..	0	17	59·24
By the signals sent from Ottawa " " "	0	17	59·30
Mean difference of longitude	0	17	59·27
Longitude of Quebec	4	44	49·02
Longitude of Ottawa	5	2	48·29

Three Rivers, 1st July, 1858.

Place of observation at Three Rivers was in the Barrack Square, due South of old French Church.

By signals sent from Quebec, Three Rivers is West of Quebec.	0	5	20·14
By signals sent from Three Rivers " " "	0	5	20·18
Mean difference of longitude	0	5	20·16
Longitude of Quebec	4	44	49·02
Longitude of Three Rivers	4	50	09·18

Note.—It may be interesting to compare the longitudes as determined by Lieut. Ashe with the values previously assigned to them.

	h. m. s.
Quebec, former value	4 45 04
„ Ashe.....	4 44 49·02
<hr/>	
Toronto Observatory, by M. C. Stars in 1840	5 17 19
„ by Chronometer with Boston	5 17 38
„ Mean of above, formerly adopted	5 17 26
„ Ashe	5 17 33·43
<hr/>	
Kingston, usual value	5 06 40
„ Professor Williamson, 1854	5 06 08·48
„ Ashe	5 06 54·52
<hr/>	
Chicago, usual value.....	5 50 20
„ Ashe	5 50 30·54

CARPENTARIA TO BATAVIA, KOEPANG, SOURABAYA, ETC.,—*By*
W. Chimmo, Lieutenant, R.N.

Early in the morning of the 3rd of September, 1856, we left our anchorage off the mouth of the Victoria, to ensure having high water on the Flat with the highest tide, (the third after the change,) with which I concluded we should go over any part of it; but off Observation Island we unfortunately grounded immovably. The tide had fallen three feet in a few minutes; but we had shored her and prevented her falling over. We watched the tide falling foot by foot until it left her keel seven feet above low water mark. Indeed it seemed as if there would not be sufficient to float her off until the following springs. The *Torch* had never been on shore before in the course of this voyage, and we had the poor consolation of knowing that this bank had accumulated, since Capt. Stokes' visit and survey, from a *quarter fathom* below the level of low water spring tides to *seven feet* above it.

Every proper measure was adopted for her safety, and we waited patiently for the tide to rise, counting the minutes and watching its progress from the time it commenced to flow, which was at 6h. p.m. It rose twelve feet in two hours, when the ship rose from her bed and off she went, and we soon let go the anchor in seven fathoms to wait for daylight.

The bearings of this new portion of Australia are:—Indian Head, S. 25° E.; River Peak, S. 49° E., nearly on with South extreme of Observatory Island; North extreme of Observatory Island, S. 68° E.; Dome, S. 83° E.; left extreme of same range, N. 70° E.; right extreme of high land, S. 23° W., two hillocks. Ship's head, N.W. Deviation, 6° 30' W. Variation of the compass, 1° 14' easterly.

On leaving our anchorage the next morning (4th September) at daylight we found she had gone *four* miles after being afloat instead of *one*, as intended,—a fact that will show the strength of the tides and how entirely a ship is at their mercy, an evil, indeed, which was very nearly the cause of running on shore again. But we now shaped our course for Timor over a space left blank in the chart, being desirous of connecting the soundings of Captain Stokes with those of the French, as well as those of Captain King, as far as the Great Sahul Shoal. Being calm and under steam, we were enabled to do this closely and correctly. The soundings were regular, from twenty to sixty fathoms, generally coral, sand, and green mud, with sometimes broken shells, showing no danger or irregularity in the track.

The wind being light from S.W., steam was indispensable; but sail was made, and we ran 150 miles, by patent log, in twenty-four hours.

I was indeed glad at finding myself once more in deep water, and although there was a little anxiety in passing through an unexplored sea, yet, being clear, it was preferable by far to the muddy waters of the Carpentaria Gulf, with an atmosphere that always deceived the eye. We bade our final adieu to Australia, having taken the last walk on ground that no foot had ever pressed.

At sunset on the 7th September the lofty range of Timor Hills were in view. So accustomed had we been to seeing low land that we could hardly reconcile ourselves to elevating our eyes to look for it so high; but at daylight the high mountains of Timor were again before us, and soon after the island of Rottie; through which straits we passed at noon without a chart to guide us!

It was scarcely dark on the evening of the next day when we rounded the point which opened Koepang Roadstead, allowing us sufficient daylight to see the way to the anchorage.

In the bay were at anchor the *Sultana*, English ship, preparing for Hongkong, from Sydney the 12th August; also the English whaler *Mary*, bound to England, two small schooners, and some coasters.

Soon after we anchored in 5½ fathoms, the flagstaff on the Fort Concordia bearing S. 20° E.

The boarding-boat came alongside and we learnt that the *Tom Tough* had been here and sailed for Sourabaya, having been condemned as unseaworthy. Thus has our visit here been successful; we have a clue at last to the expedition, which appears to be scattered and disorganized.

We found Koepang very healthy, although universally admitted as a sickly spot. The houses were all newly whitewashed and painted, and the streets very clean; Fort Concordia particularly so, but not of any great strength. For the half hour that I was waiting for a despatch from the resident to Sourabaya, I rambled up one side of the river and down the other, through groves of cocoa-nuts, bananas, bamboos, and tamarind trees, and was surprised at the contrast it presented to the parched and arid land we were only within a few miles of,—Australia! I visited the Chinese joss-house, and was par-

ticularly struck with the neatness of the small shops, kept mostly by Chinese, but most exorbitant in their prices, asking four or five times as much for a thing as they would really let you have it for. I purchased a few curiosities made from bamboos, cocoa-nut shells, &c., and got them for half the sum demanded.

Chewing the beetle-nut is carried to a great extent among the Malays. In every man's mouth a huge roll of tobacco is seen protruding, the process of chewing being as follows. The Malay first bites off an inch of the beetle-fruit, then he places a leaf in his mouth, with a quarter of a beetle-nut, a little chinam or lime about the size of a pea (moistened), and, lastly, a roll of tobacco about the size of a walnut. All these are then chewed together, the lime or chinam giving the whole a deep red appearance. Sometimes the tobacco is kept outside the teeth, and the juice of the beetle-nut, &c., oozes through it. Therefore five ingredients are necessary to make up the delicious mouthful which the Malay enjoys in chewing the beetle-nut.

Among the notes which I made while here are the following :—

A great quantity of bee's-wax is lying in front of the custom-house.

Gold is found still in the running streams and in mud adjacent to the mountains.

Public companies, as well as private ones, are forming for the growth of coffee and for working the copper mines with which Timor abounds.

From the peculiar and unusual dryness of this season all the crops of maize and rice throughout the islands have failed.

The only British merchant residing here is Mr. Drysdale, from whom supplies of all sorts can be obtained. He has a small vessel constantly running to Sourabaya, &c. Mr. Tielman, son of an old and much esteemed merchant, still resides here.

There is steam communication between Batavia and this place every twenty-eight days. This would be an advantageous way of connecting our steam postal arrangements to Sydney.

The rise and fall of water during the S.E. trade is eight feet; and during the N.W. monsoon twelve feet.

Koepang is densely and luxuriantly wooded, and the geological face of the rocky projections forming the bays consists of limestone and coral (recent). Coal, wood, and water in abundance.

In the afternoon of the 10th of December, the wind being off the land, we left Koepang for Sourabaya, in company with the barque *Mary* (whaler).

At daylight on the 15th the South part of Balie Island was in sight, light S.E. wind. The next morning proceeded through Balie Straits; and in the evening of the 17th, with just sufficient light to find our way through the shipping, we anchored in the roads of Pas-sarang, in seven fathoms, among nine Dutch vessels.

At daylight the next morning a pilot came off, and we proceeded for Sourabaya, anchoring at 11h. a.m. off the dockyard. In the harbour were twenty-six vessels of all nations, as well as one Dutch frigate, a screw corvette, three paddle-wheel steamers, a brig, and the

old *Dotterel* packet, now called the *Java*. The *Tom Tough* was here, condemned, and I handed over the *Torch* to her owners.

During my stay at Sourabaya I visited the iron and steam foundry, the steam dock, and two sugar fabrics in the interior, and find the following notes in my journal:—

The former, the government steam factory, is on a very extensive and solid scale, conducted with good order and arrangement, having 300 to 400 workmen, principally Malays, with a few European leaders, carrying on a brisk work for all the sugar-mills and steam-vessels. The different turning, planing, and drilling lathes are driven by a neat eight horse power engine. The steam-hammer, furnaces, &c., are all perfect, but what most attracts the eye is the pattern loft and the mouldings, the latter throwing the castings out clean and finished as if by hand. This is done entirely by Malays, who take a great fancy to this work, preferring it to the manual part. They are possessed of much patience and ingenuity, and are considered neat and good workmen. They do not require looking after or watching; give them a job and it is done. There were not more than 250 at work at the time of my visit, it being their marrying month. They were taking advantage of it; newly married couples were met every five minutes in the streets, guarded by crowded and gaudy processions.

This factory does the late superintendent (Mr. Bennett) much credit. The wages of the Malays is from eightpence to fourteenpence per day, according to their ability. There are smaller private factories equally as effective, but not on so extensive a scale. Two small iron steamers of sixty horse power have been built here.

The dockyard is neatly built. The wet dock is capable of accommodating about twenty vessels of various sizes from 100 to 800 tons. Each basin is surrounded by all necessary conveniences,—shears, sheds, &c. A floating dry dock, with a forty horse power engine, and a patent slip, both under iron sheds, are also to be found.

Every morning between daylight and 7h. a.m. the yard is alive with the drums and fifes of the marines and blue jackets performing their evolutions and marching round for the benefit of their health, under the direction of the lieutenant of the guard.

The vessels in dock are a 26-gun frigate, the guard-ship, the *Montrado* (screw), *Vesuvius*, *Etna*, a brig, and another paddle-wheel vessel. Two of the vessels are unfit for sea. The water in the dock is very shoal, and the guard-ship, at its entrance, grounds every tide. There is also a powerful steam dredge constantly at work, and the mud is taken away in small boats and assists to build the banks of the Kalimas River.

The sugar fabrics are well worth a visit. I went fifteen miles into the country to see one at work, and, it being the first I had seen, was much interested. The cane is so rich that it produces seventy-five per cent. The country was beautifully luxuriant. The roads, level and in excellent order, are bounded on either side by lofty tamarind trees, forming an arch overhead which shaded the road, and which

extends for upwards of 700 miles East and West through Java. I was assured that the revenue of this island alone more than pays the interest of the national debt of Holland. It is indeed a lovely island.

I regretted not being able to visit the Blue Waters and the Land Sea, near Passourau: objects of great interest and curiosity.

The water frontage of Sourabaya is fast filling up. Where vessels of some tonnage once anchored a boat will now scarcely float, and by and by we shall see the town surrounded by an extensive mud flat.

The rich island of Madura forms the passages to the anchorage, the eastern one having sixteen feet water, the North twenty-three feet; the latter protected by a fort.

On the 4th of October I started in the Dutch steamer *King of the Netherlands* for Batavia and Singapore. It was strange that this steamer I should have once picked up in distress off the South coast of Australia, and took her into King George Sound.

We called at Samarang next day at noon, and having a few hours to remain, I ran on shore and found the place superior to Sourabaya. A gunboat lay at the mouth of the river, or rather gutter, and twenty-two ships were at anchor in the roads.

Early next morning we steamed for Batavia, where we arrived on the 7th in the morning. Here were at anchor the *Boreas*, Dutch corvette, and many sail of merchant ships, principally Dutch.

While at Batavia, on landing the mob had scarcely dispersed from before the court-house after witnessing the execution of two Chinese for poisoning seven persons. One, a person possessed of immense wealth, had bribed the other, also a Chinese, to poison the fathers, husbands, and brothers in order to obtain their daughters, wives, or sisters. He had succeeded with his seventh victim, when he was found out, and, with his accomplice, suffered the extreme penalty of the law. Hanging is of rare occurrence here and consequently drew together many thousands, chiefly Chinese.

I visited the hydrographical office, one of the largest, most ancient, and substantial buildings in Batavia. Here I had the pleasure of the acquaintance of Mr. P. M. Collard, the leader of the department and a lieutenant of marine. He said he much regretted that the many additions made to hydrography in these seas, the addition of lights, buoys, beacons, and the discovery of new dangers, were not published for long periods after their being communicated, and when the interest, novelty, and importance attached to them had passed away.

At Onrust Island, a few miles from the roads of Batavia, a dock has just been completed, under the superintendence of Lieutenant Melville, capable of docking a vessel of large burden. I am sorry to add that when we left Batavia this young and clever officer was on his death bed.

On the 11th left Batavia for England but before I could embark I had to proceed to the assistant-resident's office and pay $2\frac{1}{2}$ rupees for my passport *out* of the country. I thought this strange, but it was the "custom of the country."

THE RELIGIOUS CONDITION OF SEAMEN.—No. III.

We left our young friend just started on his first voyage, and it may be well to say a few words respecting the habits he is liable to contract: some are certainly wrong; others are merely questionable, depending on the amount of influence they gain over him. Under the first we must class the use of bad language, swearing, untruthfulness, neglect of duty when unobserved, &c.;—the pernicious habit of smoking, drinking grog, chewing tobacco, reading novels, &c., may be classed as belonging to the latter.

Now few will doubt that excellent men may be found who have all these latter habits in moderation; but there are many persons who are the slaves of some one or all of these habits to such a degree as to let them interfere largely with their religious duties as well as with those of their station in life.

How many ships have been lost through excess in drink! How many wives and children have been pinched in their allowances when the husband must have his expensive grog and tobacco, which habit perhaps commenced by a cigar and a glass of grog being pressed on him when young. Would the friend who did that say to him, if you acquire the habit I will find you in grog and tobacco?

Again, how many men have wasted hours, aye days, over novels, who never could find time to study the theory of hurricanes or the more difficult parts of navigation, by means of which many ships might be saved from destruction.

On these grounds, then, it is well for a boy not to learn the use of tobacco and spirits in any shape, for they are neither of them necessary, even should the latter form part of his rations. This little bit of self-command, trifling as it may appear, may be of inestimable value to him. Some ships will give him tea or coffee with sugar instead; but even if not he will gain by declining them both, for when the habit is once acquired his own pocket will soon be taxed to keep it up. In such cases as these, where on one side it may appear no harm can come, and on the other that much harm *might* come, common sense soon decides the matter.

A boy should limit his light reading, especially until he has mastered his profession; remembering that he has two all-important studies to follow up, viz., his religion and his profession. He will be none the worse if death should overtake him unread in the works of Dickens and that class of writers, who, we are told, give such faithful portraits of man in every day life. But in these he is delineated without a soul, is held up as a laughing-stock. They amuse by comic pictures of his vices, much as children are entertained by the antics of monkeys or bears, and leave their readers less than ever imbued with the feeling that man is an immortal being, capable through the aid of his Saviour of being restored to spiritual health, whereby he is made to love his God with all his heart and his neighbour as himself. But should death overtake him before he has prepared to meet his God,

there is no comforting word left for him either in reason or revelation. If, in fact, he will not stop for a moment to reflect on his fallen condition and amend it, he will find that the only reason he can give is, that custom has made him neglect his religion and that he never liked the study of it.

The religious minded boy is liable to meet with much that will shock his feelings, and more to tempt him, because those around him are more or less doing wrong, by yielding to influences which take their origin in a nature common to all. Hence he is in danger of saying to himself,—“It is impossible that I can stand against all this opposition from without and from within.” This, however, is want of faith; for the Bible says, “I have been trying to teach you that *alone* you cannot do so, but *look to the Saviour*; if you could have done without Him He need not have died.”

At the risk here of being accused of repetition, I would remind my reader that these papers do not profess to tell “some new thing,” and that, as Coleridge says, if they wish to restore a common truth to its first uncommon lustre, they have only to translate it into action. Therefore I would once more catch their attention from the busy walk of life, and ask if through Christ they are prepared or preparing for the next stage of their existence; for however foreign this may be to our nature, common sense alone would show that it is madness to neglect it.

To return to our young friend: it will be found that there are generally those on board of every ship who will gladly help a willing boy to learn who is desirous of doing so. Even though he may not be in a man-of-war there is always an instructor.

The first principle a boy should cultivate, is an earnest desire to give satisfaction to his superiors by doing his duty. With such a principle he *must* get on, for though through inexperience he will at first make mistakes, still all will notice his desire to please. And more than this;—thousands of difficulties will be removed by his making what he knows to be the will of God the rule of his conduct when doubt arises in his mind. This, with the determination to please those around him, when he can do so without offending God, will make his way easy and his duties pleasant. But he must remember that this disposition is not innate in him. Therefore he must in humility ask for it, resting assured that as “Christ’s word shall not pass away,” he must obtain it.

To the thoughtful mind there is something very striking in the inconsistencies we meet with in the world, and in none more than in that arising from the comparison between the style of religious education that the custom of our country requires should be given to children, especially to boys, and the mode in which young men are expected to avoid showing that it has produced any lasting effect on the heart. It does appear extraordinary that just at the time when everything else he has learnt is coming into use as the ground for future practice; that the sailor puts his knowledge of astronomy, gymnastics, &c., into daily practice, the merchant exercises his bookkeeping, the engineer

employs his mathematics or algebra, yet what becomes of the religious knowledge of all these ?

Natural disinclination and fear of the ridicule of others, (because it is customary to neglect it,) lead them to treat it much as the fakeer does the hand or arm which is kept in one position until it withers up and becomes useless. Indeed the comparison may be carried a step further, for both are merely accustomed to gain a better position in the eyes of men. But poor religion is often treated worse than the withered arm for many societies require that it should be entirely dispensed with to avoid censure for hypocrisy and want of spirit, forgetting that it is the fear of God which can alone bring us into the glorious liberty of the children of God.

Let us stop here to consider the charge of hypocrisy, for many who knowing their nature to be far from good, are inclined to say that it would be hypocrisy in them to profess religion. Here is a subtle mistake, which frequently has great effect on sincere minds. They would be hypocrites if they said they were perfectly good ; but they do not wish to become so, or to use the means provided through Christ for attaining so great an end. "They," he says, "who are whole need not a physician, but they that are sick." The mass of the world's religious students consists of the latter class, looking for help. Comparatively few have made great progress in attaining that true Christian state of charity or love so beautifully explained in 1st Corinthians chap. xiii., and which is the true fruit of faith in Christ, towards which every real Christian is aiming and tending. May his progress be speedy and the aim be ours.

The young sailor then must mentally look aloft, fixing his heart's desire immoveably on the Saviour, praying that every obstacle which would hide Him and his laws may be removed. This will give life to the religion of his school days, a practice which will grow side by side with that of his profession, and the result (there can be no doubt) will be a truly noble class of man. Many of us have so large a mass of wrong habits to overcome, and ill feelings to suppress, that with a full conviction of what we ought to be, we know that we make but sorry figures in the active Church of Christ. But we must not let this dishearten us ; we know our salvation depends on the perfect work of Him who never failed. Let us then strive to persuade the young hands to better things, and press earnestly forward to the mark that is set before us, our high calling in Christ Jesus : united to whom we may produce acceptable fruit when covered with the winning grace of *humility*.

As our youngster advances in his sea life and becomes an officer, he will find the natural feelings of his own heart more or less repeated in those he has to command. But he will not join in the cry which is so often heard, "Sailors are so ungrateful that it is impossible to do them any good," or "If it were not for the trouble my crew give me I should like the sea above all things." He knows that man is fallen, and he expects to find the consequences of the fall in all around him. In some they appear most in the shape of selfishness, in others in sen-

sual gratifications. Yet be the man he has to deal with who or what he may, he himself knows that if he has not gone to Christ for help, he must be going wrong.

On these grounds he will pray for such religious progress in himself that he may be usefully employed in helping others heavenward. Christ teaches him that the man who is a real Christian loves his enemies; therefore he loves and feels for these misguided men: which by the bye in no way prevents him from dealing with them according to their fault. Yet in this unpleasant duty he is enabled to act from the right principle instead of from that of anger, a difference which he will find has an improving influence on the men.

Now that I have mentioned the subject of punishment, a few words will not be out of place on the peculiar position held by the commander of a merchant ship, for it seems not to be fully treated in books on the subject. During a voyage, that is, when communication with the shore is impossible, the commander of a ship is the representative of all the Courts of law and authorities to which landsmen have recourse in cases of difficulty, especially where immediate action is required, and his power to go to extremities rises in proportion to the misconduct of those with whom he has to deal. When fairly considered this is a very responsible situation. Some tumble through it in a marvellous way, saying and doing anything to get rid of a difficulty, often flying into a fit of passion, using their power without judgement, and punishing extremely, for which they are pulled up on their return to land. Others, fully appreciating the responsibility of their position, coolly consider the subject with an honest desire to do what is *right*, always looking to the great Giver of Wisdom to all who ask for it. These men, though perhaps not highly educated, for education, though very useful, is not the highest quality of a good commander. These men see what is right and do it in spite of all difficulties, very often trusting to the old saying, "right is might," for the commander and one or two officers are sometimes opposed to the whole crew of a merchant ship.

The writer of this paper remembers an Australian crew, during the gold fever, refusing to let a man be put in irons who had knocked down a petty officer. Here was a case where they might have taken the ship or even life from the captain, but he could not rightly and did not give in to them. They refused to work so long as the man was in irons. The captain spoke quietly to them, saying, that he could not yield to a demand which they all must plainly see was wrong. He then put the two boatswain's mates, who were the ringleaders, into irons. This brought the rest of the crew to their senses; they came aft and expressed themselves sorry for their misconduct and went to work, seeing that the captain was not to be frightened. During the remainder of the passage they gave no trouble.

Much more might be said on nautical legislation and the non-appreciation of the trying position held by the commander of a merchant ship by magistrates when crews are brought before them; but the object of this paper belongs to another subject.

To return to the young officer just coming into authority. He will find his position a difficult one, for at first he will have many under him who on several points understand his duty better than he does. The single-hearted desire to do right will be of great service to him now as he is using all the means in his power to master his profession, and ever treating those under him with kindness. If the heart is really not selfish and not proud it is sure to show these good qualities in an affable and pleasant manner. Very often a warm-hearted A.B. will, with the best of feeling, suggest to a young officer something which he thinks ought to be done. Now it is not requisite that the officer should follow his advice, but there can be no harm in saying "Thank you," nor, if his advice is good, in following it.

I would particularly caution a young officer against familiarity with the crew. This is most objectionable, and is sure to breed contempt. There is a certain distance between officer and man necessary for the maintenance of discipline which the Christian officer will endeavour to find out and maintain. He will not let pride prevent him from doing anything for the lowest person on board where duty calls, especially in cases of sickness; and he will ever bear in mind that each fellow-creature around him has an immortal soul travelling very fast to eternity, and if he can give any one of those souls a lift heavenwards by the loan of good books, or even by reading to the sick and those who cannot read, when it will not interfere with his duty, it is quite certain (for we learn it from the Bible) that he shall have his reward. The earth shall, but God's word *shall not*, pass away. Now, if there are but few ships in which this sort of thing is done, the more need that my readers should begin it, for an appreciation of the value of souls must be part of the true Christian character. Those in this world who are progressing heavenwards are growing in this appreciation, so if we have it not there is something wrong.

From personal experience I am inclined to think that many, if not most, who neglect their souls have an idea that there is something in their particular calling which makes religion impossible. Each man knows the little tricks, untruths, and dishonesties which are sanctioned by his own profession, and they form into an impassable barrier before his mind's eye, for he says,—“I should be a hypocrite to profess any more religion than I do and still go on with these practices; but if I give up these I may as well give up my profession, for they have become part and parcel with it, and the man who does not yield to them must starve.” Now, this kind of feeling is keeping millions at the present moment from thinking on religion more than they do. No doubt the argument has great force, but the Bible holds up our all perfect, good, and kind Saviour to give moral strength and cure to the praying and humble soul.

But we are told of spiritual wickedness in high places tempting man, and there is no doubt that many who see their own weakness do not see the strength held out to them by the Saviour, but turn their backs and go on in the ways of the world. No wonder faith in Christ is spoken of so much in the Bible: neither need we marvel

that without this faith many thoughtful minds are driven to despair. Then we are told that religion has driven them mad, when in fact it is the want of it,—give them a faithful view of Christ and they will be happy:—

“They knew not what some bishops may not know,
That Scripture is the only cure for woe.”—*Cowper*.

And in what better way can a young man spend a little of his spare time on board ship than in helping the men to learn reading, writing, navigation, &c., and at the same time pointing out to them that the highest use man can make of his intellectual powers is to study the Word of that God before whom he may be called to stand that very day, to give an account of the deeds done in this life. There is difficulty in getting up a school amongst the men in a crowded ship, and much judgement would be required, for they must have rest. But “where there is a will there always is a way,” and in small ships with no passengers I fancy that very often the “will” is the only thing wanting. We must show men under us that we take an interest in them, and not act towards them and pay for them just as we do for a mere machine by which we make money. Our treating them as if they had no souls tends to encourage them in the too common error of treating themselves as if they had none. If the principle of schools for adults on shore were carried out in fine weather at sea, I believe most happy results would ensue.

We will now leave our young friend to digest these remarks with the parting advice which he may find in his Bible,—“Remember thy Creator in the days of thy youth, and he will not forsake thee in thine old age.”

LUNAR EQUINOCTIALS AFFECTING THE WEATHER.

Sir,—Will you allow me to make known through the *Nautical* (as the readiest mode of communicating with those whom it most concerns) that I have for some time observed facts which appear to be incompatible with the received opinion that the moon has no influence on the weather.

I have noticed during the past year (and reference to other years confirms my suspicions) that the moon never crosses the earth's equator without there being a simultaneous disturbance of the barometer or thermometer, or both.

This assertion is, of course, open to challenge. If my ground be proved untenable, I am ready to retire. But from what I have noticed it will not be yielded without a struggle. Among the most prevalent objections may be the assertion that according to my views all parts of the earth should be affected at the same time. This is

simply ridiculous. The moon's undoubted action on the tides is not simultaneous everywhere, because (irrespective of other influences) the varieties in the form of coast-line may retard or even facilitate the motion of the tidal wave. It is not, therefore, absurd to suppose or assume that in like manner certain influences, at present unknown, really exist which modify the moon's action on our atmosphere. Nor need we search far into the question before a suspicion is produced as to such influences, when we consider the possible effect of moon's age, perigee, or apogee, the earth's aphelion or perihelion, &c., &c. These speculations are left for those who have more time for investigation.

My object at present is to state that for my own personal convenience I have projected the barometric curve by scale for every three hours from 9h. a.m. till 9h. or 12h. p.m. daily during several years, and I have found that without projection the practical use of the barometer is very much limited, and especially in stormy or unsettled weather. Indeed, by watching habitually a frequently projected height of barometer, we find "prognostics" which a mere look or glance at *numbers* would fail to present.

I would propose the following question:—

If I take any period of consecutive months or years, and on every occasion during that period notice the barometric curve as registered while the moon was crossing the equator;—if, moreover, against the various curves so registered I place the identical words then written as indicating weather and its changes:—If, for instance, I take a period of eighteen months while at Rock Ferry, in Cheshire, between January, 1856, and June, 1857;—and as a counter test, or "corroborative," I take the last twelve months at Sheerness, and in both these cases and under the same circumstances find the same results invariably apparent,—am I justified or not in expressing publicly a desire to see so interesting a subject properly investigated?

The results may in general terms be thus briefly described:—The moon seems never to cross the earth's equator without there occurring at the same time a palpable and unmistakable change in the weather.

Such changes most commonly are accompanied either by strong winds, gales, sudden frost, sudden thaw, sudden calms, or other certain interruptions of the weather, according to the season.

The most remarkable circumstance (next to that of high winds prevailing at the times of the moon's equinox) is that of the occurrence of most violent winds, which are apparently due to the moon's influence, happening about two days after the day of the moon's crossing the equator.

If not encroaching too much on your space, I will give an illustration:—If any of your readers will take the trouble to project the height of the barometer for the 23rd October last, as observed at three or four times during the day, they will see a decided bend in the direction of the curve. By following onward this curve for two or three days, it will be found that about two days after (viz. on the 25th) began that terrible and disastrous gale which for years will be

remembered by seamen as the "Royal Charter Gale." And it is remarkable, and in perfect accordance with my general assertion, that while the moon was actually passing the equator on the said 23rd, the weather changed from the "clear sky" and "fresh wind" of the day before, to a calm with "dull" and very cold "drizzling rain," rapidly succeeded by snow and all the wars of the elements, which are described in the *Shipping Gazette* as "severe as any yet experienced in this country."

Another case in illustration will suffice:—The moon crossed the equator on Friday, 16th December. The wind had been blowing very strong from the northward for three days, and it is a fact well worthy of notice that on the Thursday (15th) so little appearance was there in the sky of a change, or, rather, so strong were indications of a continuing and increasing regular northerly gale, that we never saw so large an assemblage of fishermen and river barges at anchor for shelter under the lee of Cockleshell Hard, in the Medway, expecting a north-westerly gale. Instead, however, of the gale so generally looked for by the oldest and most experienced sailors, no sooner did the moon near the equator, than, on the 15th at p.m., the wind rapidly moderated, and at the precise time of the lunar equinox (if one may use that term with the moon) a dead calm set in, the intensity of the cold increased, and the wind, which had been blowing from the N.N.W. for a few days, shifted round to S.S.E., where it (17th) now remains; while the barometric curve for the 16th evidences some disturbing cause in a manner too strongly to be doubted.

It would seem peculiar to certain storms that they give none of the usually expected conventional warnings, except in the barometer. The ordinary prognostics, as derived from appearances in the heavens, fail entirely in certain cases. I could strongly exemplify this, and I would even further venture to suggest that as we find most gales occurring at about the time of the moon's crossing the earth's equator, and which gales I propose to call "Lunar Equinoctials," such gales as happen at other periods, as in the instance of that of the 1st November last are very probably "cyclones," and owe their origin to the great tropical peculiarities, which are very likely to counteract the influence of the moon in those districts and in the Trades; which influence, from some causes yet undeveloped, may affect more especially the higher latitudes.

I beg to propose that during January next observers at different parts of Great Britain project the barometric curve as often as possible, and notice any changes which may take place on or about the 12th and 27th January.

I should be glad to return to the subject in the next number of the *Nautical*.

I am, &c.,

S. M. SAXBY, R.N.

To the Editor of the Nautical Magazine.

JAPANESE MANNERS AND CUSTOMS.

A good deal of curious information is communicated in the letters from Japan at the present time relative to the peculiarities of the Japanese nation. The opening of Japan to the commercial nations of the world has furnished to observant travellers an opportunity to study human nature under new circumstances, and to investigate the influence which seclusion from the rest of the world for a long period has upon a nation. At present we have nothing but glimpses at the outward life of the Japanese, yet these are very interesting. A correspondent of the *New York Herald* gives the following account of the manner of doing business with foreigners at Nagasaki:—

“The manner of doing business in this place is odd and very troublesome. In the first place, no one but government officers are allowed to take any gold or silver money from a foreigner, under penalty of being disembowelled. All the specie that comes into the place is taken possession of by the government and custom-house officers, and by them it is transferred to the imperial government officers at the seat of government. To purchase any articles on shore you must first proceed to the proper officer and give him your specie. In return he gives you the currency of the country, which consists of pieces of thick paper about an inch wide and four inches long, and they are marked taels, half-taels, one hundredth of a tael, &c. They have the Dutch and Japanese characters upon them. A tael is twenty-three cents. With your pockets filled with this trash you can proceed to make such little purchases as you may wish. You enter one of the splendid bazaars, filled with the rich works of these people; you commence pricing the articles before you; you turn a little to the left or right, and close to your heels you perceive a Japanese mandarin or high official, with book, ink, and pencil in hand. On inquiry, you find this individual to be a government officer, who is standing by to take down all sales, the articles sold, and the price paid; the object of which is that a correct account of all goods leaving the place may be accounted for at the custom-house, if it is not more than a tael's worth; also that the government should not be deprived of its export duties. For the first time since Nagasaki has been a seaport, boom-boats (bum-boats!)* have been permitted by the Japan government to come off alongside of this ship, pretty well supplied with fowls, fish, eggs, fruits, &c., all of which have been sold at low prices,—good fat fowls two dollars fifty cents per dozen; eggs, six and eight cents per dozen; fine fresh fish, two cents per pound; nice, good Japan coffee, which is of a very fine quality, only three cents per pound. In each boat came a government officer, who kept a strict account of all rates, &c.”

The Japanese received our people on their recent visit in a very cordial manner, and manifested a liberality in extending to them cour-

* Among the clumsy corruptions of our nautical phraseology, this is one of the worst.—Ed.

teous attentions, allowing officers and men perfect liberty to go on shore and ramble about, &c., that is certainly remarkable for a people whose national policy has hitherto been marked by an excessive jealousy of foreigners.

The Japanese dwellings are mostly of one or two stories, oddly formed and unattractive in appearance. They have neither doors nor windows on the street side, but open in the rear upon handsome gardens or courtyards. Consequently, the streets, which are wide and neat, have quite a lonely appearance. The population keep housed up until towards night, and to a stranger it looks like a deserted city. The Japanese men are generally stout and well built; nearly all of them have fine black hair; they shave the upper front part of the head, the rest of their hair being nicely combed to the top of the head, where it is tied up into a sort of wig, which looks very odd, but neat. Many of them wear nothing but a sack or cloth, which is secured just above the hips, leaving the rest of their person, above their hips and below their knees, exposed. The wealthy portion of them dress very neat in silks, crapes, &c., in their native costume, which sometimes consists of the large trousers, hat, gown, and scarf.

Professional wrestlers are numerous. Some of the Japanese women are very handsome, and, it is said, would create a "sensation" even in New York. The Japanese pay great respect to their dead, and their burial places are beautiful enclosures. Elegant and expressive monuments and grave-stones abound in them. The correspondent above quoted says they are the handsomest he ever beheld in any part of the world. Some of them have human figures sculptured in bas relief on their front; others had inscriptions and images of rare beauty elegantly carved upon them. The graves are not more than four feet long, for the reason that they bury all their dead in a sitting position. Around the monuments and graves are to be seen beautiful trees, shrubbery and other choice plants, growing up, hiding almost from view the little mound of earth beneath which some loved one is sleeping. In this connection we copy a description of the "Feast of Lanterns," a tribute to the departed, from a letter in the *Newark Advertiser*:—

"I must not forget to tell you something about the "Feast of Lanterns," which we were fortunate enough to witness. It is a feast in honour of the dead. For three days all business is suspended. In the evenings all the graveyards on the hillsides are illuminated by candles in different coloured lanterns, hung by thousands on the shrubs and trees. The graveyards are the most beautiful parts of the city, and very extensive, reaching from the termination of the city on the hill sides nearly to their summits. On the evening of the feast, just as the moon was rising above the hills to the northward, the sides of the hills to the southward were bathed in a soft glow of fire, and now and then a rocket would shoot up from the midst, producing a beautiful effect.

"The second day seemed to be the principal one of the feast. On the evening of that day, small fancifully decorated boats were pushed

off from the shore, each containing one or more lanterns, a small quantity of choice food, a bottle of 'sakee,' and a slip of paper with the sailing directions of the little vessel. Of the number of these boats thus sent out alone upon the waters I cannot attempt to make an estimate, though I know there must have been thousands.

"These boats are expected to meet the departed friend in some unknown place, and supply them with food for their long journey to some land of bliss. One of these little messengers came floating so near our ship that we picked it up to satisfy our curiosity. It was made of closely bound straw, and in it were pretty little porcelain dishes, filled with presents, &c., and a bottle of 'sakee.' On a strip of paper was written the name of the deceased, and 'Steer to the southward.' After reading the sailing directions, we immediately launched the little craft again, for fear the poor fellow might be pining for her arrival. But I fear many a lost one fainted on his long journey if he depended alone on his vessel's cargo, for the next morning the harbour was covered with wrecked boats."

All accounts agree in representing the Japanese as a very acute and intelligent race, showing themselves very apt scholars. At the Dutch machine shop at Nagasaki the natives are said to be the best workmen, manifesting remarkable quickness and skill. While the *Mississippi* lay at Nagasaki, Japanese draughtsmen went on board and took a sketch of her engines and spars, and of the vessel herself. Three days after this visit, there was to be seen, in what is called the Russian factory, a beautiful miniature of the *Mississippi*. The hull was of lacquered wood; the rigging was of twisted glass; her wheel-houses, smoke-stack, and boats hanging to their davits were as complete as if it was the ship herself. It was admitted by all to be a masterpiece. The annexed description is given of their workshops:—

"We visited several of the workshops of all trades, and we found that all work was carried on in an entirely different way from that in our own country. The carpenters and cabinetmakers all sit down to saw or plane their stock. We entered a blacksmith's shop. Here we found the forge in blast, while two men were sitting down, one on each side of the anvil, hammering out a large piece of iron. The one with the sledge hammer seemed to sling it as easy in the sitting posture as our own smiths do standing. While they heat their iron, they hang to a hook in the roof of the establishment, over the fire, a pot, in which they are at the same time cooking their rice. In this shop we saw a hole, or artificial forge, dug in the ground, in which was a coal fire, which was kept up by a small bellows running under the ground. In front of this novel forge sat a small boy, who was hard at work with both hands making nails, while he kept the bellows in motion with the toes of his left foot. It was a novel sight to see with what rapidity he kept up the blast, his toes working like a lady's fingers on a piano."

NATIVE ATTACK ON THE "SUNBEAM" STEAMER.

[We have received the following account of a piece of hostility on the part of the natives on the Niger, instigated no doubt by the slave dealers, with a view to prevent legitimate trade on that river, which Mr. Laird is endeavouring to establish. In common with all true friends of Africa, we trust these attempts will meet the fate they deserve.]

Liverpool, 8th December, 1859.

Sir,—In giving you an account of the attacks made on the *Sunbeam* in the River Niger, on the 28th of July and the 1st of October last, I beg to inform you that we arrived there on the 21st of July, and on the following day started for Abo.

For three days everything went on quietly, and in passing the towns the natives appeared quite friendly, the most of them assembling on the banks of the river with a flag of truce flying, and offering to sell firewood, yams, &c., until we came to Agberi. On our passing this town, having to keep within fifteen yards of the river bank, we saw men, women, and children collecting to see the ships pass. As soon as we were abreast of the town, there was a signal given (a conch-shell blown) and the whole of the natives immediately disappeared. They then opened fire of musketry on the *Sunbeam* from the trees and amongst the underwood; the *Rainbow* being about three hundred yards ahead of us; and we were not able to see anything but the flash of their guns.

When they commenced firing I ordered the men to their guns, but I fancy we did not do any execution, as we were so close in that we could not elevate our large guns over the banks of the river. Shortly after the firing commenced I was shot through the right shoulder and lungs. I had then to go below, being faint from loss of blood. But before going I told the chief officer to keep the ship as far out as possible. We anchored about half an hour afterwards, the natives firing as long as daylight lasted.

The following day we proceeded to Abo, and arrived there without being further molested. During our stay at Abo and Lairdsport, I was told several times that the natives down the river intended taking the ship and murdering the crew on going down, for they would not allow any white man's ship to pass and trade.

On our leaving Abo on the 1st of October, I soon found the report was true, for on our arrival at Agberi, about eleven a.m., they opened fire on us again, with great guns and small arms, keeping it up for forty miles down the river, and the firing going on from ten different towns, having determined it would seem to stop the ship. In two cases they fired from both sides of the river at the same time, the ship being struck in many places with large shots, some of them passing

clean through the steel plates, and accompanied by hundreds of musket balls.

We returned their fire as fast as possible, and I think with good effect, as we knocked several of their houses down. At six p.m. we anchored, having passed the whole of the hostile towns.

The only casualty we had coming down being the cook fatally and the mate severely wounded by the recoil of our own guns.

I am, &c.,

W. WILD.

P.S. I shall send you a chart of the river with the towns that fired on us marked on it.

THE SHIP'S POSITION BY THE SUN'S ALTITUDE.—*Sumner's Method.*

[With the view of contributing all we can to making Sumner's Method known, we reprint this from our volume for 1845, from Lieutenant (now Captain) L. G. Heath, R.N.]

H.M.S. Iris, Hongkong, June 27th, 1845.

Sir,—An article in your number for April, 1844, induces me to think that the enclosed table may be of use.

I have applied it in two ways: first, for finding a line upon which the ship *must* be at the time of the morning sights (as is suggested by Lieutenant Raper); and secondly, for finding the ship's position immediately the true latitude is known, as explained in the example. It was for this latter purpose that I originally worked it out; as the time usually expended in working the sights afresh with the observed latitude is frequently of great consequence when approaching a port.

I am informed that something of the same sort has previously appeared in your pages; but requiring the sun's azimuth, and not pointing out the uses to which it might be applied.

Many useful rules and tables are comparatively lost in the back numbers of the *Nautical Magazine*; and I think editors of future editions of navigation books would do good service to the naval world by availing themselves of some of them.

I am, &c.,

L. G. HEATH, *Lieutenant.*

To the Editor of the Nautical Magazine.

Table A.—To be entered with the latitude worked with at the side, and with the hour angle at the top.

Latitude.	One hour.					Two hours.				Three hours.			Four hours.	Five hours.	Six hours.
	10m	20m	30m	40m	50m	10m	20m	30m	45m	15m	30m	45m	30m		
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.13	0.11	0.10	0.08	0.07	0.06	0.06	0.05	0.04	0.04	0.03	0.03	0.02	0.02	0.01
4	0.26	0.22	0.19	0.17	0.15	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.06	0.05	0.04
6	0.39	0.33	0.29	0.25	0.22	0.20	0.18	0.16	0.15	0.13	0.12	0.11	0.09	0.08	0.07
8	0.52	0.45	0.39	0.34	0.30	0.27	0.24	0.22	0.20	0.18	0.16	0.14	0.12	0.11	0.09
10	0.66	0.56	0.48	0.43	0.38	0.34	0.30	0.27	0.25	0.23	0.20	0.18	0.15	0.13	0.11
12	0.79	0.67	0.58	0.51	0.46	0.41	0.37	0.33	0.30	0.28	0.24	0.21	0.18	0.16	0.14
14	0.93	0.79	0.68	0.60	0.53	0.48	0.43	0.39	0.35	0.32	0.28	0.25	0.21	0.19	0.16
16	1.07	0.91	0.79	0.69	0.61	0.55	0.49	0.45	0.41	0.37	0.32	0.28	0.25	0.22	0.19
18	1.21	1.03	0.89	0.78	0.69	0.62	0.56	0.51	0.46	0.42	0.36	0.32	0.28	0.25	0.22
20	1.36	1.15	1.00	0.88	0.78	0.70	0.63	0.57	0.52	0.47	0.41	0.36	0.32	0.28	0.24
22	1.51	1.28	1.11	0.97	0.86	0.78	0.70	0.63	0.58	0.53	0.46	0.40	0.35	0.31	0.27
24	1.66	1.41	1.22	1.07	0.95	0.86	0.77	0.70	0.64	0.59	0.51	0.44	0.39	0.34	0.30
26	1.82	1.55	1.34	1.18	1.05	0.94	0.84	0.77	0.70	0.64	0.56	0.49	0.43	0.37	0.33
28	1.98	1.69	1.46	1.28	1.14	1.02	0.92	0.83	0.76	0.69	0.61	0.53	0.47	0.41	0.36
30	2.15	1.83	1.59	1.39	1.24	1.11	1.00	0.90	0.82	0.75	0.66	0.57	0.51	0.44	0.39
32	2.33	1.98	1.72	1.51	1.34	1.20	1.08	0.98	0.89	0.81	0.71	0.62	0.55	0.48	0.42
34	2.52	2.14	1.85	1.63	1.45	1.30	1.17	1.06	0.96	0.88	0.77	0.67	0.59	0.52	0.45
36	2.71	2.30	2.00	1.75	1.56	1.40	1.26	1.14	1.04	0.95	0.83	0.72	0.64	0.56	0.49
38	2.91	2.48	2.15	1.89	1.68	1.50	1.35	1.23	1.12	1.02	0.89	0.78	0.69	0.60	0.52
40	3.13	2.66	2.31	2.03	1.80	1.61	1.45	1.32	1.20	1.09	0.95	0.84	0.74	0.65	0.56
42	3.36	2.86	2.47	2.17	1.93	1.73	1.56	1.42	1.29	1.17	1.02	0.90	0.79	0.69	0.60
44	3.60	3.06	2.65	2.33	2.07	1.86	1.67	1.52	1.38	1.26	1.10	0.97	0.85	0.74	0.65
46	3.85	3.27	2.84	2.50	2.22	1.99	1.79	1.63	1.48	1.35	1.18	1.04	0.91	0.79	0.69
48	..	3.52	3.05	2.68	2.38	2.14	1.92	1.74	1.59	1.45	1.28	1.11	0.97	0.85	0.74
50	..	..	3.27	2.88	2.56	2.29	2.06	1.87	1.71	1.56	1.35	1.19	1.05	0.91	0.79
52	..	..	..	3.00	2.74	2.46	2.22	2.01	1.83	1.67	1.46	1.28	1.12	0.98	0.85
54	..	..	..	3.32	2.95	2.64	2.38	2.16	1.97	1.80	1.57	1.38	1.21	1.05	0.92
56	..	..	..	3.58	3.18	2.84	2.56	2.33	2.12	1.94	1.69	1.49	1.30	1.13	0.99
58	..	..	..	3.86	3.43	3.07	2.77	2.51	2.29	2.09	1.82	1.60	1.40	1.23	1.07
60	..	..	..	4.17	3.71	3.33	3.00	2.71	2.48	2.26	1.97	1.73	1.52	1.33	1.16
62	..	..	..	..	4.03	3.61	3.26	2.95	2.69	2.45	2.14	1.88	1.65	1.44	1.26
64	..	..	..	..	..	3.94	3.55	3.22	2.93	2.67	2.34	2.05	1.80	1.57	1.37
66	..	..	..	..	..	..	3.89	3.53	3.21	2.93	2.56	2.25	1.97	1.72	1.50
68	..	..	..	..	..	..	..	3.88	3.53	3.23	2.82	2.47	2.17	1.90	1.65

Table B.—To be entered with the declination worked with at the side, and with the hour angle at the top.

Declination.	One hour.					Two hours.				Three hours.			Four hours.	Five hours.	Six hours.
	10m	20m	30m	40m	50m	10m	20m	30m	45m	15m	30m	45m	30m		
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.13	0.12	0.10	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.04
4	0.27	0.23	0.20	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.11	0.10	0.09	0.08	0.07
6	0.41	0.35	0.31	0.27	0.25	0.23	0.21	0.20	0.18	0.17	0.16	0.15	0.14	0.13	0.11
8	0.54	0.47	0.41	0.37	0.33	0.30	0.28	0.26	0.24	0.23	0.21	0.20	0.19	0.18	0.17
10	0.68	0.59	0.52	0.46	0.42	0.38	0.35	0.33	0.31	0.29	0.27	0.25	0.23	0.22	0.21
12	0.82	0.71	0.62	0.55	0.50	0.46	0.42	0.40	0.37	0.35	0.32	0.30	0.28	0.27	0.26
14	0.96	0.83	0.73	0.65	0.59	0.54	0.50	0.46	0.44	0.41	0.38	0.35	0.33	0.31	0.30
16	1.11	0.95	0.84	0.75	0.68	0.62	0.57	0.53	0.50	0.47	0.43	0.41	0.38	0.36	0.34
18	1.26	1.08	0.95	0.85	0.77	0.70	0.65	0.60	0.57	0.53	0.49	0.46	0.43	0.41	0.39
20	1.41	1.21	1.06	0.95	0.86	0.79	0.73	0.68	0.63	0.60	0.55	0.51	0.48	0.46	0.44
22	1.56	1.34	1.18	1.06	0.96	0.87	0.81	0.76	0.70	0.66	0.61	0.57	0.54	0.51	0.49

When the latitude and declination are of the same name, the correction in Table B is to be subtracted from that in Table A; the result is the correction of longitude for each mile of latitude, and is to be called positive or negative according as the part from Table A is greater or less than the part from Table B.

When the latitude and declination are of different names, the correction in Table A is to be added to that in Table B, and the result is the correction of longitude for each mile of latitude, and is always to be called positive.

When the correction is positive, an increase of latitude will make the longitude more to the eastward, and a decrease of latitude will make the longitude more to the westward.

When the correction is negative, an increase of latitude will make the longitude more to the westward, and a decrease of latitude will make the longitude more to the eastward.

Example, showing the manner of using the Tables—

Lat. left $34^{\circ} 16' S.$ Long. left $20^{\circ} 10' W.$

The day's work to be worked up to the time of sights, and also up to noon, which may always be done before seven bells in the forenoon, as the last hour's run may be guessed quite nearly enough.

Day's work up to the time of taking sights.

<i>Courses.</i>	<i>Dist.</i>	<i>N.</i>	<i>S.</i>	<i>E.</i>	<i>W.</i>
N. 8 points W.	124·0	103·1	..	..	68·9
N. 2½ „ W.	16·0	14·1	..	..	7·5
		117·2			76·4
Diff. lat.	$1^{\circ} 57' 12'' N.$			Diff. long.	$1^{\circ} 31' W.$
Lat. left	$34 16 0 S.$			Long. left	$20 10 „$
	$32 18 48 S.$				$21 41 W.$

Carried on to Noon.

<i>Course.</i>	<i>Dist.</i>	<i>N.</i>	<i>S.</i>	<i>E.</i>	<i>W.</i>
N. 2½ points W.	17	15	..	..	8
Diff. lat.	$0^{\circ} 15' 0'' N.$			Diff. long.	$0^{\circ} 9' 30'' W.$
Lat. at sights	$32 18 48 S.$			Long. at sights	$21 41 0 „$
	$32 33 48 S.$				$21 50 30 W.$
Lat. D.R. at noon.	$32 33 48 S.$			Long. D.R. at noon.	$21 50 30 W.$

The chronometer sights to be worked with the D.R. latitude at time of sights, viz. $32^{\circ} 18' 48'' S.$, and we will suppose that the longitude resulting is $21^{\circ} 20' W.$ (at the time of sights); apply to this the longitude run, as usual, and we get longitude by observation at noon $21^{\circ} 29' 30'' W.$

We then take the corrections from the Table, and suppose them to be—

Table A	0·38	} Latitude and declination different names.
Table B	0·14	
Correction for each mile of latitude	0·52+	

Suppose the latitude observed to be $32^{\circ} 18' S.$, or $14\frac{1}{2}'$ greater than by D.R., we have—

0·52
0·14
—
208
52
—
7·28
0·13
—

Correction of longitude	7·41 =	$0^{\circ} 7' 24'' E.$
And longitude worked by D.R. lat.	21 29 30	W.
True longitude	21' 22	6 W.

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

Well, what news, Nauticals? What's the last "shave?"

As we used to say in the trenches.

Aye, Sebastopol, if you like, but what's before the Club,—What's on the tapis?

Oh, plenty, plenty, replies the Secretary to the interrogatories of Rodmond, always up for work. Heard something about a new light, he continued.

No, no, not new; nothing new under the sun, observed Albert: you shall have all about it presently.

As for work we have enough of it from Liverpool to London;—from the Mersey to the Thames. But the first thing that asks for attention is the Lime Light as it's called. I have something here about it from the Secretary of the Company, but our friend Albert will tell us all about that.

Well, as, I said, continued Albert, the light is not new, for it is but the Drummond light,—the two gasses (oxygen and hydrogen) mixed and thrown on the lime, called in former days the Drummond Light, and (taking out the *Nautical Magazine* for 1833) see, he added, here is a complete description of it from Drummond himself, with a beautiful engraving of all the apparatus as he would have applied it to lighthouses but for one difficulty, and which difficulty the new company are stated to have entirely overcome.

Now the difficulty was the supply of the lime as it became consumed and fell away. Drummond burnt his lime first in balls, then in a cylinder form, which, as you will see, was all very well until a groove

was fairly consumed round the cylinder, and a residue formed of a hard crystalline substance like enamel, and besides which, the lime crumbled away, occasioning discontinuance of light. This the Lime Light Company, it is said, have overcome, and are now looking forward to adapt it to all common purposes of lighting railways, towns, thoroughfares, and the coast as far as signals might go. But as to its application to light-houses there are two reasons against it; one is, that it has not yet established itself, and another is, that in the present means adopted there are sufficient in all respects for the purpose. There can be no doubt of the great economy of the light, while it is far superior to any other, and inferior only to the electric light, which was shown by Mr. Halpins' experiments in the *Nautical* for 1834, where the electric light is represented as 156, while the Drummond light was stated at 100.

Those experiments might be taken as giving a more complete view of the subject than the recent exhibition of the company at the Crystal Palace, which merely illuminated that building, being displayed in the various ways in which it might be applied for the ordinary purposes abovementioned, and in all of which it was very complete and perfectly overpowering in its collected form for the power of the eye to survey it. But in respect of distance, continued Albert, I will read you the late Captain Basil Hall's letter from this same volume of the *Nautical* for 1833.

4, St. James's Place, 1st June, 1833.

My dear Sir,—You wished me to take particular notice of last night's experiments with the different kinds of lights exhibited at Purfleet, and observed at the Trinity Wharf, Blackwall; but I have little to add to what I told you respecting those on the evening of the 25th inst: indeed it is not in the compass of language to describe accurately the details of such experiments, for it is by ocular evidence alone that their merits can be understood.

Essentially the experiments of last evening were the same as those of the 25th, and their effects likewise. The degrees of darkness in the evenings, however, were so different, that some particular results were not the same. The moon last night, being nine or ten days old, lighted up the clouds so much, that even when the moon herself was hid, there was light enough to overpower any shed upon the spot where we stood by your distant illumination: whereas, on the 25th, when the night was much darker, the light cast from the temporary lighthouse at Purfleet, in which your apparatus was fixed, was so great that a distinct shadow was thrown upon the wall by any object interposed. Not the slightest trace of any such shadow, however, could be perceived when your light was extinguished and any of the other lights exposed in its place.

In like manner, on the evening of the 25th, it was remarked by all the party at the Trinity Wharf, that in whatever direction your light was turned, an immense coma, or tail of rays, similar so that produced by a beam of sunlight in a dusty room, but extending several miles in length, was seen to stream off from the spot where we knew the light to be placed, although, owing to the reflector being turned too much on one side, the light itself was not visible.

Now, last night there was none of this singular appearance visible; but whether this was caused by the presence of the moonlight, or by the absence of the haze and drizzling rain which fell during the evening of the 25th, I cannot say. I had hoped that the appearance alluded to was to prove a constant accompaniment to your light, in which case it might, perhaps, have been

turned to account for the purposes of lighthouses. If in hazy or foggy weather this curious effect of reflected light from the atmosphere be constant, it may help to point out the position of lighthouses, even when the distance of the observer is so great that the curvature of the earth shall render it impossible for him to see the light itself.

The following experiments tried last night were the same as those of the 25th, and certainly no comparative trials could be more fairly arranged.

Exp. I. The first light exposed was the single Argand burner with a reflector. This was quite distinctly seen, and all the party admitted it to be a good light. After several minutes this was put out.

Exp. II. The seven Argand burners were next shown, each in its reflector; and this was manifestly superior to the first; but how much so I cannot say, perhaps four times as conspicuous. Both these lights had an obvious tinge of brown or orange.

Exp. III. The third light which was exposed (on the seven Argands being put out) was that behind the French lens; and I think it was generally admitted by the party present, that this light was whiter and more intense than that from the seven Argands, though the size appeared very much the same.

Exp. IV. The fourth light was that which you have devised, and which, instead of the clumsy word "Lime," ought to bear the name of its discoverer. The Drummond light, then, the instant it was uncovered, elicited a sort of shout of admiration from the whole party, as being something much more brilliant than we had looked for. The light was not only more vivid and conspicuous, but peculiarly remarkable from its exquisite whiteness. Indeed, there seems no great presumption in comparing its splendour to that of the sun; for I am not sure that the eye would be able to look at a disc of such light, if its diameter were made to subtend half a degree.

The next series of experiments was the most interesting and decisive of all. Each of the lights above enumerated, viz., the single Argand burner, the seven Argands, and the French lens, were exposed, one at a time, in company with your light, in order to try their relative brilliancy.

First comparative experiment. The single Argand burner was first exposed to this comparative ordeal, and nothing could be more pitiable than the figure it cut. Many of the party could not see the Argand light at all; whilst others could just detect it "away in a corner" as some one described it. It was also of a dusky orange tinge, while your light was of the most intense whiteness.

Second comparative experiment. The seven Argand burners were now substituted in place of the single light. All the party could now see both lights, but the superiority was not much less obvious. I really cannot affix a proportion either as to size or brilliancy; but I should not hesitate to say that your light was at least six or eight times as conspicuous; while in brilliancy, or purity, or intensity of light, (for I know not precisely what word to use to describe the extreme whiteness,) the superiority was even more remarkable. All this which I have been describing was expressed, and appeared to be quite as strongly felt, by the rest of the company, to the number, I should suppose, of five and twenty or thirty persons, who were all closely on the watch.

Third comparative experiment. The next comparative trial was between the French lens and your light. The superiority here was equally undeniable; though the difference in the degree of whiteness was not so remarkable. The French light, however, is so nearly similar to that from the seven Argands, that the comparison of each of them with your light gave nearly the same results, and all equally satisfactory on the score of your discovery.

Final experiment. The flashes with which the experiments concluded were very striking, and might, I think, be turned to great account in rendering lighthouses distinct from one another. The revolutions were not effective,

and, as I said before, there was no appearance last night of those enormous comet's tails which swept the horizon on the night of the 25th, to the wonder of all who beheld them: neither could there be detected the slightest trace of any shadow from the light thrown towards us, and I suspect none will ever be seen when the moon, whether the night be clouded or not, is of so great a magnitude.

Such is the best account I can give of what we witnessed; and I need only add that there seemed to be amongst the company but one opinion of the immense superiority of your light over all the others brought into comparison with it.

I am, &c.,

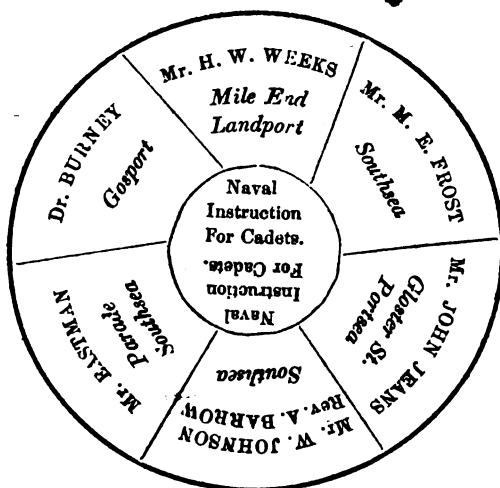
BASIL HALL.

This explanation of "Experienced Albert" elicited the thanks of the Club.

The Chairman then congratulated the Club on the proof the members had before them of the good that was likely to be effected by their means. Their Secretary had received from all quarters those announcements by which the every-day business of a busy commercial country was accelerated. They were in fact too many to be dealt with now, but considering that nautical education was one of the most important objects to forward and which itself gave a spur along with its safeguard to maritime commerce, he had selected that subject as being the first which they ought to take up, and perhaps the seat of our principal naval arsenal would be most properly adapted to begin with. The Club was no doubt aware that Portsmouth could boast of several excellent establishments of this nature, (he did not allude to the Royal Naval College of old which had died a natural death, he believed not to be regretted), but private establishments, in which the tree of nautical science was well trained and bore excellent fruit, as might be instanced in the improved condition of the *junior* officers of the navy—he wished he could say that the comparison of attainments between them and their seniors were to the credit of these, but he could say it was very much to that of their juniors—the rising generation in the service he hoped would indeed maintain that high advantage which they possessed by their practical application of those principles which they had acquired and which with their increasing years would bring increasing treasures of professional qualifications from the vast fields of experience and research which lay before them in all parts of the world, not omitting the ocean itself on which they were embarked.

Now his friends around him were perfectly aware that all favoritism was set aside by the Club, and he therefore thought the fairest way to meet the wishes of the parties to whom he had alluded was to give them a place among their papers with that impartiality which they had determined to preserve, and therefore the Secretary had formed the names of these gentlemen into a kind of round robin form, so that it might be seen at one view who were the professional instructors of our youth at our first naval arsenal. It was not for him to point out old or new, or indeed favorite or perhaps successful establishments among them. But as a general reference to preserve them in that form, and he thought that the fact of their gaining a useful publicity by that means would be a suffi-

cient reason for so doing. With these sentiments he would therefore consign the round robin of nautical tuition to its place among their papers.



The Chairman then observed in reference to the satisfaction they had recorded of the proceedings of the Channel Fleet in a gale of wind, another event called for their notice—he alluded to the recent Courts Martial on the part of the ship's company of the *Princess Royal*. It was very much to be regretted that such a display could not have been prevented. Still there was but one way of dealing with open mutiny, whatever the circumstances might be that produced it. The whole affair, like the battle of Navarino, might be considered an untoward event. Still the men had been dealt with leniently in his opinion in being sentenced to different periods of confinement under two years for an offence which when this country was struggling against the world in arms would have been treated very differently.

The attention of the Club was then called by Rodmond to a remarkable instance of the value of an invention which he considered should be recorded among their papers, of Kynaston's mode of lowering boats. Instances were repeatedly occurring even now (as in the recent case of the *Indian*) of inattention to the important subject of boats being ready on emergencies. Loss of life occurred in her case that ought not to have been. Indeed how different was the case of the *Indian* with that of the *Euryalus*, which with permission he would read. The account of the loss of the *Indian* stated that Nos. 1 and 2 boats were the first put out and lowered level with the rail, hanging to their davits. Nos. 3 and 4 were next cleared away. No. 3 was put out in safety, but by this time the ship was beginning to strain, and the after davit of No. 4 boat was firmly jammed in consequence, defying all attempts to launch her for some time. While some of the crew were

getting this boat clear, Nos. 5 and 6 were lowered in safety, but No. 7 was swamped in lowering. When the ship struck the sea was not very rough, and it was about high water, but in about fifteen or twenty minutes heavy breakers from the reef came rolling alongside the ship, filling No. 2 boat suddenly, breaking the davits, precipitating her into the water, turning her bottom upwards, and drowning all who were in her. The German family, third and fourth engineers, joiner, and two seamen are supposed to have been lost in this boat. No. 3, in charge of the second officer, was now ordered by the captain to be lowered and brought to leeward of the ship; just as she was unhooked from the tackles, and they were endeavouring to get the boat clear of the ship's side, No. 1 boat came down into the water with a fearful crash, drowning the greater number in her; several of them were picked up by No. 3 boat. All the lives that were lost, with one exception, were lost in these two boats (Nos. 1 and 2). The cause of the accident to No. 1 boat is supposed to have arisen from a heavy roller touching her bottom, and lifting her in the tackles, so that, coming down with a jerk from this cause, and the weight of the persons in her, she straightened out the after davit, filling her aft with water, the fore end of her still being suspended from the davit, when, by some means not known, it was also disengaged, and the boat turned bottom upwards in the water.

So that what with the difficulty of getting the boats clear of the davits and safely afloat, out of seven boats not more than three appeared to be of service. But see how different was this of a mere accident involving loss of life that was at once averted by Kynaston's method. It is on occasions of this kind that the value of this very ingenious method is proved.

A letter from H.M.S. *Euryalus*, dated Piræus, Nov. 15th, gives the details of an accident which occurred lately while lowering a boat of that ship, and which might have been attended with disastrous results but for the presence of mind of one of the boats' crew (Patrick Barry) and the particular kind of disengaging gear with which the boat was fitted. The ship was steaming slowly ahead when a favorite dog fell overboard; one of the quarter-boats, fitted with Captain Kynaston's life hooks, and which had already been instrumental in saving the life of a seaman, was immediately ordered to be lowered for the rescue of the animal. The midshipman and crew were no sooner in her and the boat clear for lowering when the foremost davit carried away. Now any ordinary boat under such circumstances, must have necessarily been precipitated bow foremost into the water with fearful violence, scattering her crew in every direction; in the present instance, the man who was attending the "disengaging line" in the after part of the boat, let it go in the very nick of time. The life-hooks at both ends disengaged simultaneously from the tackles, and the boat fell clear of the wreck on nearly an even keel into the water, with her crew in her safe and sound. This is doubtless a solitary instance where a davit has carried away during the process of lowering a boat, with her whole crew of fourteen men in her, without one of the latter being thrown overboard or injured, or the boat stove.

He was glad to see so excellent a plan patronized by Her Majesty's ships; and he hoped that the condition of fittings, &c., in which those boats went to sea, as well as the reasons why the *Indian* had been lost, would form subjects of one of those excellent inquiries of the Board of Trade that have done much good of late.

Aye, observed Albert, it was clearly shown in the inquiry into the loss of the *Paramatta* that the value of the motto "when you doubt abstain," was unheeded. When there was a doubt of her actual position her speed should have been stopped, and as was truly observed a South course until that position was ascertained would have made all right, and the *Paramatta* would never have been on Anegada a wreck. No doubt a light on the low island of Sombrero would have saved her, but she had to deal with things as they were not as they should be.

By the way, enquired Rodmond, is the problem yet decided how many wrecks are required to produce a light? The speaker was going on to state the conditions of the problem of currents, low land, haze, and other things as data but was silenced by the Oh, Oh's! and Albert remarking that great as the number of wrecks certainly were there eighty-four lights erected last year, and about the same number this year in various parts of the world. Indeed if they increased so fast wrecks ought to decrease. Yes, replied Rodmond, provided ships will not run down the lights as the Eddystone nearly was a short time ago!

The Chairman then observed that he had been applied to for information as to which was the best composition for preventing the oxidizing of copper or iron of ships' bottoms. Now he was aware that several preparations in which copper was an ingredient had been patented of late years for that purpose, but he believed none had stood the test of time and use so well as that of Messrs. Peacock and Buchan, which had no copper in it. Although he might risk the charge of partiality, it was not so. It was the actual result of experience. Some compositions containing copper had been prepared, but the experiments which had been made proved the pernicious effects of it, and indeed where iron was concerned that was self-evident to every observing man. Now we know that Peacock's composition, which is entirely free from copper, has established itself from long experience, for the experiments with it are dated as far back as in 1838, in the warm climate of Bermuda and South America; that while chemical science has protested against the use of copper in preparations for this purpose, that have even produced bad results in the case of a German Baron's composition on one or two of the vessels of the Peninsular and Oriental Company, that of Mr. Peacock has been most successful, the vessels using it being now in as good a condition as they were ten or twelve years ago. This is highly satisfactory and has no doubt led to the adoption of it partially in the royal navy, where there seems every prospect that it will establish itself by its preserving qualities either for copper or iron.

A process it was very well known was now in course of trial for coating the holds of iron vessels to preserve them from the effects of bilge water. It was said to be a plan of Messrs. Day, consisting of a cement which hardened into a kind of enamel so as to resist the dete-

riorating effects of bilge water, and which it was to be hoped would be successful.

Turning to another subject, continued the Chairman, a paper has been placed in my hands which will be interesting to our Club. If we cannot have harbours for which our coasting trade and ships generally can run when overtaken by the gale, it is satisfactory to know that life-boats are nearly every where, although at Moelfra there was none to save the unhappy people of the *Royal Charter*. He held in his hand a paper containing the names of vessels the crews of which have been saved, and showing the appropriation of those subscriptions which have been gathered from a portion of the people of this country. With the permission of the Club, he proposed that the following paper from the National Life-boat Institution, detailing the Services of its Life-boats during 1859, should be recorded among their papers. The proposal was carried *nem. con.*

From the annexed tabular statement it will be seen that during the year which has just ceased the life-boats of the Royal National Life-boat Institution have, at various points of our coasts, been actively called into operation on sixty different occasions. The result has been that 162 lives have been saved off twenty-eight wrecks, besides assisting five vessels safely into port. On twenty-seven occasions it happened that when the life-boats had put off in reply to signals of distress, the vessel either got out of danger, or the crew was rescued by other means. Again, crews assembled several times to give assistance, but were not required to put off to sea. For these valuable services the crews were paid nearly £278 2s. 9d. Nearly all these services took place in stormy weather and heavy seas, and often in the dark hour of the night; and yet not a single accident happened to either of the life-boats or to one of the gallant fellows who had put off in them. On these and on occasions of quarterly exercise, these life-boats were manned probably by no less than 4,000 persons. Such practical proofs as these of the great value of the Royal National Life-Boat Institution, in a maritime country like ours, cannot possibly be overrated. It has now ninety-two life-boat stations under its management. On an average, each station requires £30 a year to maintain it in a state of thorough efficiency. This good work can only be perpetuated by permanent endowments and the continued support of the public to the National Life-Boat Institution.

1859, Jan. 1.—Lytham, S. W. gale, sch. *E. D.* of Salcombe, Lytham life-boat, assisted in bringing vessel into harbour, paid by owners.

9.—Newbiggin Point, S. gale, sch. *Betsy*, Sunderland, Newbiggin, 4 men saved, 14l.

26.—Rhyl, gale, Am. ship unknown, Rhyl put off to assist, but services not required, 8l. 10s.

30.—Ditto, gale, sch. *Victoria*, Ulverstone, ditto, ditto, ditto, 12l.

Feb 2.—Holyhead, W.N.W. hvy sea, unknown, Holyhead, ditto, ditto 6l. 10s.

2.—Rottingdean, W.S.W. hvy gale, sch. *Viscaya*, Spain, Brighton, helped to bring vessel into port, 10l. 10s. 6d.

7.—Ditto, ditto, ditto, Newhaven, put off, but services not required, 6l. 10s.

8.—Teignmouth Bar, S.S.W. st. gale, brig *Peri*, Teignmouth, Teignmouth, ditto, ditto, 6l.

10.—Rottingdean, ditto, brq. *Aurora*, Newcastle, Newhaven, ditto, 7l. 7s.

10.—Ditto, ditto, ditto, Brighton, ditto, 19l. 12s.

18.—Newbiggin, W. gale, Sunderland pilot-boat, Newbiggin, ditto.

28.—Jack's Hole Bank, S. strong, br. *Louise*, Genoa, Arklow, ditto, 8l.

- Mar. 8.—Doom Bar Sands, N.W. hvy gale, br. *Gonsalve*, Nantes, Padstow, 7 men saved, 8l. 13s.
- 11.—Tremadoc, S.W. ditto, sch. *Scotia*, Carnarvon, Holyhead, helped to bring vessel to shore, 6l. 10s.
- 11.—Northam Burrows, stormy, sch. *Caroline*, Fowey, Appledore (Mermaid), 5 men saved, 5l. 4s.
- 12.—Appledore, ditto, sch. *Clifton*, Gloucester, ditto (Mermaid and Petrel), 2 ditto (six attempts), 33l. 3s.
- 15.—Doom Bar Sands, N.W. hvy gale, sch. *Frederick Wm.*, Ipswich, Padstow, 5 ditto, 5l. 4s.
- 15.—Portmadoc, str. breeze, unknown, Portmadoc, put off, but services not required, 13l.
- 15.—Penmon, W. hard, sch. *Native Lass*, Liverpool, Penmon, ditto, 3l. 10s.
- 15.—Padstow, N.W. gale, unknown, Padstow, assembled crew, 16s.
- 14.—Castletown, E. hard, sch. *Janet*, Liverpool, Castletown, ditto, 1l. 9s. 6d.
- 18.—Fishguard, N.N.W. h. gale, br. *Lord Gough*, Whitby, Fishguard, put off, but services not required, 6l.
- 29.—Cullercoats, N.E. h. sea, fishing-boat, Cullercoats, 4 men saved.
- 29.—Abergele Bay, N.W., sl. *Mary*, Ramsey, Rhyl, put off, but services not required, 6l. 10s.
- April 2.—Sizewell Bank, S.S.W., br. *Velocity*, Sunderland, Thorne, 8 men saved, 11l. 10s.
- 2.—Ditto, ditto, ditto, Aldborough, put off, but services not required, 7l. 15s.
- 15.—Goodwin Sands, W.N.W., sl. *Liberal*, Wisbeach, Walmer, 1 man saved, 13l. 10s.
- 24.—Winterton, E.S.E., bque *Alecto*, Fredrksdt, Winterton, 9 ditto, 24l. 15s.
- 25.—Cresswell Rocks, E. stormy, br. *Quest*, Stockton, Newbiggen, crew assembled, 3l. 8s.
- 28.—Blackwater Bank, hazy, ship *Pomona*, New York, Cahore, put off, but services not required, 8l. 6s.
- Aug. 1.—Ditto, E.S.E. st. gale, ditto, Rosslare, crew assembled, 4l. 10s.
- 1.—Goodwin Sands, W.S.W., barque unknown, Walmer, put off, but services not required, 6l. 17s. 6d.
- 23.—Arklow Bk, S.S.E., bque *Fairy Queen*, Glsgw, Arklw, ditto, 7l. 6s. 6d.
- 30.—Fleetwood, W.N.W. sq., sh. *Sir Colin Campbell*, Glasgow, Fleetwood, ditto, 4l. 10s.
- 30.—Castletown, W.S.W., br. *Opreisingen*, Arndl, Castletown 3 men saved, 11l. 10s.
- Sept. 14.—Dover, S. gale, sch. *Dove*, Seaton, Dover, put off, but services not required, 4l. 12s.
- 16.—Boulmer, N.E. sq., fishing-boat, Boulmer, ditto, 6l. 8s.
- 16.—Bridlington, E.b.N., br. *Eagle*, Sndrland, Bridlington, 6 men saved, 16l.
- 17, 18.—Misner Haven, N.&W. st. gale, br. *Lucinde*, Memel, Southwold, 11 men saved, 31l. 14s. 6d.
- Oct. 24.—Aberdovey, N.N.E., smack *Endeavour*, Portmadoc, Aberdovey, 4 men saved, 11l.
- 25.—Filey, E.b.N. h. gale, sl. *George and Mary*, Hull, Filey, 3 men saved, 15l. 13s.
- 25.—Boulmer, E.S.E., br. *Adelphi*, Shields, Boulmer, put off, but services not required, 6l. 10s.
- 25.—Yarmouth, S.S.E. gale, br. *John*, Shields, Yarmouth, (surf) 7 men saved, paid by owners.
- 26.—Spittal Pt, N.E. strmy, sch. *Majestic*, Dundee, Berwick, 5 men saved, 8l.
- 26.—Rhyl, N. very heavy gale, sch. *Oriental*, Lancaster, Rhyl, 6 men saved, 8l.

- 26.—Lowestoft, S. heavy gale, sch. *Lord Douglas*, Dundee, Lowestoft, 5 men saved, 14l. 10s.
- 26.—Lowestoft, S. heavy gale, sch. *Silva*, Glasgow, Lowestoft, 4 men saved, 14l. 10s.
- 26.—Ditto, ditto, ditto, Pakefield, put off, but services not required, 14l. 10s.
- 31.—Ditto, S.S.W. hard gale, French sch. *Jeune Mathilde*, ditto, ditto, 24l.
- Nov. 1.—Holm Sands, S. heavy gale, st. *Shamrock*, Dublin, Lowestoft, 14 men saved, 19l.
- 1.—Tenby Roads, W.S.W., sm. *Bruce*, Milford, Tenby, 3 men saved, 11l. 1s.
- 2.—Saunton Sands, hurricane, br. *North Eske*, Sunderland, Braunton, 6 men saved, 9l. 2s. 6d.
- 2.—Whitburn, ditto, sch. *Anton*, Denmark, Whitburn, 6 men saved, 12l. 12s.
- 5.—Yarmouth, S.S.E. gale, sch. *Ferona*, Exeter, Yarmouth (surf), 5 men saved, paid by owners.
- 6.—Tenby Roads, S.W. gale, br. *Policy*, Sunderland, Tenby, put off, crew saved by other means, 12l. 16s.
- 6.—Brille Bar, fresh gales, st. *Enchantress*, Hull, Pakefield, assisted in bringing vessel and 14 men into harbour, paid by owners.
- 9.—Berwick, N.N.E., br. *New Astley*, Aberdeen, Berwick, 6 men saved, 6l. 10s.
- 19.—Castletown, Carrick, S.W. strong, brq. *Ohio*, Liverpool, Castletown, 4 men saved, 11l.
- 19.—Sarn Badrig, Cardigan Bay, hazy weather, sh. *Troy*, Boston, U.S., Barmouth, put off, a-sisted vessel to get off, 6l.
- 25.—Winterton, S.E. gale, br. *Cuba*, Whitby, Winterton, 1 man saved, 11l. 6d.
- Dec. 3.—Aldborough, E.S.E. hard, br. *Countess*, Ipswich, Aldborough, put off, but services not required, 15l. 4s.
- 4.—Bideford Bar, gale, sch. *Cygnets*, Cardigan, Appledore (Mermaid), ditto, 4l. 15s.
- 6.—Sathouse Bank, W.S.W. gale, slp. *Barbara*, Almwch, Lytham, put off, 6l. 10s.
- 10.—Sizewell Bank, E.S.E. heavy swell, br. *H. Morton*, Sunderland, Thorpness, 8 men saved, 12l. 8s.
- 11.—Blackwater Bank, S.S.W. hazy, sh. *Sonmouth*, Liverpool, Cahore, 4 men saved, 13l. 18s.
- 14.—Horse Bank, foggy, heavy swell, br. *Robert and Henry*, Dundalk, Lytham, 6 men saved, paid by owners.

Note.—It frequently happens, as shown above, when life-boats put off in reply to signals of distress that vessels either get out of danger, or their crews are rescued by other means.

The Secretary then stated that while we here were doubting a few days back whether there was to be war or peace, and even Liverpool merchants had stepped aside from their counting-houses to question a neighbouring Emperor whether he had hostile intentions or not towards this country, he would with their permission:—

Aye, about those Liverpool merchants, they had their answer, and one that served them right, observed Rodmond. Who ever heard of four merchants assuming the duties of a Secretary of State as to whether an Emperor intended this or that?

Aye, but Liverpool is a fast place; they go ahead there.

Yes, have your teeth out without your knowing it, or an idea from

you before its formed, but sometimes too fast, as in this case, and some others too. But here you see the fast principle of Liverpool was the shrine of Mammon. Could these simple merchants speculate safely without apprehension of war? Running away with the motto—

Fas est ab hoste doceri

they rush from the halls of Mammon to appeal to those of Mars. Peace or War, they ask, and have had for their answer two alternatives, either of which they would be sorry to get. “Une grande crainte *et* une grande confiance peuvent seules expliquer cette demarche.” The Emperor will act towards us as he always has done: it is for a great people to respect not to fear a great people.” These are telling words and will prove a good lesson, learnt only when the principles which it inculcates should have been practised. So much for newspaper intelligence. Yes, they got nothing but contempt for their answer.

But what were you saying about permission?

The Secretary added, with the permission of the Club he would read an extract from a letter he had received, showing how well our officers and those of the Emperor fraternized in the Strait of Gibraltar—

“Her Majesty’s ship *Cæsar*, Gibraltar, November 18,” received in London on Saturday evening:—

“One of our midshipmen went over to the French flag-ship *Bretagne*, at Algeiras, with dispatches, and was invited by the French officers to take wine. An invitation was then given to the officers to dine on board the *Cæsar*, but it was insisted that we should first dine with them. I think the French Admiral knew all about it, for on the following day he sent over one of his frigates to salute our flag with 21 guns, which was acknowledged from on board the *Marlborough*. Eight of our officers accepted the invitation, and a right merry affair it proved. On the following Monday the officers from the *Bretagne* paid us a return visit, including three officers belonging to the *Alexandre*. We had our gun-room holystoned for the occasion, and the place was decorated with French and English flags. Our tables were laid out magnificently, and all kinds of toasts were given and drunk before dinner was half finished. Previous to sitting down to dinner, the band played ‘The Roast Beef of Old England,’ and after dinner the band struck up ‘Rule Britannia,’ followed by ‘Partout pour la Syrie,’ the whole of which were received with the most enthusiastic cheering, which was continued with unabated vigour as the loyal and patriotic toasts were proposed and responded to. The company subsequently retired to the main deck, where dancing was kept up among us for several hours. Before taking their leave the officers of the *Alexandre* invited us to dinner on board their vessel. This visit we paid on Thursday, the 10th, and after dining we repaired on-deck, where preparations had been made in grand style for a theatrical performance. A magnificent chandelier was hung in the centre, constructed with bayonets and revolvers, and every thing passed off in the most agreeable manner.”

This was a state of things which he was sure would be gratifying to the club, and even to the Liverpool merchants themselves—a state of things which all of us desired might continue.

It is stated that the Liverpool Law Society has passed the resolution “That the president be requested to inform her Majesty’s Attorney-General that in case it be the intention of her Majesty’s government to take any proceedings against the four Liverpool merchants who recently made a communication to the Emperor of the French, this committee will be happy to render the Attorney-General every assistance in its power.” But let us hope we shall hear no more of this unworthy act.

By the way, you are aware of the Armstrong gun being afloat. The *Ariadne* has it, but the fact of molten iron having been fired from a ship seems to have been achieved. I have received an account of the experiment last month at Portsmouth, which should appear among our records as making with the appearance of the Armstrong gun a new era in marine gunnery of a formidable description. These are astounding facts which in the days of Rodney would have been considered impossible. Here it is—

“The *Stork* screw gunboat, tender to the *Excellent*, Capt. Richard S. Hewlett, C.B., has been fitted at Portsmouth with a furnace for filling hollow shot with molten iron, and the *Undaunted*, 46, frigate having been prepared with iron plates of such thickness as to render her proof against a 68-pound shot at 400 yards’ range:—

“On Wednesday evening the *Stork* went up the harbour and moored off from the starboard side of the *Undaunted* 400 yards. A little before twelve at noon she hoisted a red flag, another being also placed on board the frigate to warn all boats off.

“At 12h. 30m. the first hollow shot, filled with molten iron, was discharged from the *Stork*, and went clean through both iron plates and wood into the body of the ship, about four feet above the water line.

“A second shot was fired at a short interval, when smoke was perceived to burst through the ports and hatchways, and in a few minutes more a body of flame. The ship was on fire.

“As soon as the fire was observed, the *Stork* slipped her moorings, and steaming up to the head of the *Undaunted*, set the fire-engine to work. Signal was also made to send a body of men from the *Excellent*, to man the large floating fire-engine, and to the *Comet* government tug to tow up with all haste to the rescue. Such, however, was the destructive nature of the molten iron, that the doomed vessel was soon one whole mass of flame, and it was considered by Capt. Hewlett expedient to scuttle the ship. This was accordingly done. After firing six rounds into her between wind and water, down she went at her moorings, leaving only the top rail of her fore-castle deck and poop visible. The wind being fresh from the S.E. caused the poop to take fire, but by this time the powerful floating engine, worked by 100 hands, poured tons and tons of water upon the burning timbers, and in twenty minutes the fire was subdued.

“It is impossible to attach too much importance to this undoubted

proof of what a gunboat fitted like the *Stork* can do against an enemy's line-of-battle ship.

"A ship as large as the *Duke of Wellington*, 131 guns and 1200 men, would have shared the fate of the *Undaunted*. The inventor of the 'furnace' and 'molten iron' poured into a hollow shot, has shown results which are destined to tell with terrible effect wherever his device is brought into requisition."

The Club was about to adjourn when a paper was placed in the hands of the Chairman by a member that produced considerable sensation. It was on a subject, observed that gentleman, which had already been before the Club, one indeed of no mean import. The measure to which it alluded seemed to be generally unwelcome, and "pity 'tis 'tis true." This paper, however, contained no less than expression of sorrow, mingled with threat, from a parent to the child of his affections; but involving as it did an enormous outlay of money, the consequences were here delineated with a disappointment in which might be traced pathos and affliction arising from the waywardness of human nature. The real nature of the lines he held in his hand might be inferred from the extracts by which they were accompanied; one from the "*Nation's Mind*,"* itself, and another from the first chemist of the age. Without further prelude he proposed to read them verbatim—a proposal which met with a speedy and general assent. He would first read the extract from the "*Nation's Mind*," which said—

"The Western District interruption drainage is a series of deep sewers to carry the rain water and feculence to a large reservoir on the bank of the Thames, near Walham Green, opposite to Wandsworth. In this reservoir the solid filth shall subside, the fluid being allowed to overflow into the Thames. * * * This adopted plan is unremediate, offensive, mischievous, and most costly; one of *prevention* would be effectual, salubrious, harmless, and profitable. Reflection enjoins that an island should throw nothing to the sea. We are labouring for the construction of mighty works for casting the very constituency of the soil therein, perverting nature's ordinances, and exposing the wrong-headedness and folly of unreflecting men." So says the *Nation's Mind*, and other drainage there was as would soon be seen; but the next extract was from Professor Liebig, equally apposite, and indeed of a candidly warning nature:—Baron Liebig has in a series of letters called public attention to the system of sewerage in large cities. He directs attention to what Babylonia and Assyria once were, and to what they are now, and urges upon us to learn in time, from their melancholy fate, which he is of opinion we certainly shall share one day, if we do not provide against it, and which, in the case of those ancient seats of civilization, he seems altogether to ascribe to the gradual exhaustion of the soil by a system of agriculture in which care was not taken to replace every atom of fructifying material taken from the field in the harvest.

* A new periodical.

No doubt the Baron was right, and it might perhaps be supposed he (the chairman) was travelling from his purpose, for what had they to do with fructifying fields in harvest. Better *that*, in his opinion than the state of affairs depicted in the paper he would now read called

LAMENT OF FATHER THAMES—*on the Main Drainage Scheme.*

Since then I'm doomed, by cruel man's foul art,
For London's town to do the nightman's part!
Yes, doomed, alas! to take as bosom friends
The filthy things that London daily sends;
To bear them seaward, and deposit there
The stuff which fertilizes fields elsewhere!
Revenge I'll have! 'tis said revenge is sweet;
Myself I'll purify with man's conceit!

Ungrateful town, a father thus to treat,
Who watched your progress, daily washed your feet;
Who brought you up, cherished you, and made,
Aye, placed you on the pinnacle of trade!
See your wide docks with ample stores of wealth,
From friendly ocean brought you by myself!
See your tall ships, a forest grown of masts,
Riding securely from destructive blasts!
Your noble mansions! while your flag unfurled,
Waves o'er the largest city of the world!*
What without me would you e'er have been?
Without my once bright, pure, meandering stream?

Commercial race, yet purblind not to see
Your profit lies in taking care of me!
Where are those quays, those jetties for my banks,
I once was promised? but have nasty tanks
Instead! my shores that should be beautified,
Are rendered noxious by the passing tide!

This the return for my parental pride!

The die is cast; my future state is sealed:
Let the result hereafter be revealed!
If noisome pestilence my bosom bear;
Let London ne'er forget who brought it there!

* From the Annual Report on the Health of the Metropolis during the last year, we learn that the London of 1858 is equal to three Londons of 1801. The population of this growing kingdom of a city amounted, 1858, to 2,362,236; so, if the population keeps increasing at the same ratio during the next fifty years the London of 1901 will number more than 7,000,000 inhabitants. In a century hence, granting the same proportion of increase, the population of cockneyland will have grown to 21,000,000.

Come on, ye bright and sultry summer days,
 Warm up my stream and sickly vapours raise;
 Enfold those ships within your dire embrace,
 With odours fill them as they run their race!
 The *cloaca maxima* I'm become
 For London sewage, and the very scum
 Of every drain which filthy ordure brings,
 In summer's heat to tides of neaps or springs!
 Now, mighty Sun, pour down thy scorching rays!
 Among those ships my foul effluvia raise;
 Nor fail not well t' administer it strong;
 Their fevered crews will not endure it long!
 Nor cease by night my poisons to exhale
 'Midst ships at anchor, and those under sail;
 And perfumes which the ebbing tides retain,
 Let flowing tides pour forth renewed again;
 Spread o'er my breast a pestilential air,
 Producing Cholera in spite of care,
 As my return for London's nauseous ware!

Departed Bards! who oft in walking dream,
 Extolled the beauties of my wand'ring stream;
 Well are ye spared the picture I present
 As *Scavenger* of London's excrement!

Evils, 'tis said, must always be endured,
 'Till at their worst they're certain to be cured.

Prospective.

Time carries not. Some years have passed away
 Since Father Thames once sang his plaintive lay:
 Those ships return'd that once forsook his port;
 For why? impurity's banished from his court!
 That stream is sweet, for sewage never meant,
 Invaded once by Act of Parliament!

The foregoing "Lament" first occasioned much amusement to the Club, but this seemed to fade away

"When calm reflection held her quiet sway,"

and gave place to serious looks and bodings deep for British seamen exposed hereafter to the resentment of Father Thames which they so unmistakably expressed.

"Is nothing to be done?" said a voice. "Nothing! The Board is absolute." "You mean like Guy Fawkes ready for self-immolation." on which the Club separated.

Secretary's Mem.

Dublin University has conferred an honorary degree of L.L.D. on Captain McClintock, R.N.

The dry dock at Mauritius is now open. The Sarah Sands was the first ship that entered it. A ship 365 feet in length can be accommodated there. The dock is 80 feet wide at the top and 40 feet wide at the bottom. Its depth from surface of high water is 23 feet, and it is pumped out in 2½ hours.

The greatest tubular bridge of the world, the Victoria Bridge, of Canada, was completed on the 24th of November, when a train passed over, for the first time, amidst immense rejoicing.

An attempt has been again made to fire Lagos by some incendiaries, whereby two women were burnt to death. Fortunately very little damage was done. Trade has been freely opened by two kings in the interior, consequently business was very brisk; a large quantity of oil coming forward; the production of cotton increasing.

A small tin canister, with some papers inclosed, on which was written, "The screw steamer *Great Britain* foundered off the Western Islands," was found floating near the entrance of the port of Liverpool on Saturday morning. This has been the work of some evil-minded person, as the *Great Britain* only left this port on Sunday, the 11th December, and was left off Tuskar all well at four a.m. on Monday.

A telegram from Queenstown yesterday (Thursday) states that the *Great Britain* screw steamer, for Melbourne, all well, was spoken December 14th in lat. 45° 30', long. 12° 16', by the barque *Gipsey*, arrived at Queenstown from Sulina. This will at once relieve the unfounded alarm created by the diabolical artifice referred to a few days ago.

The story of the foundering of the steam ship *Great Britain* off the Western Islands, which took its rise from the finding of a canister at the mouth of the Mersey, containing a paper that she had foundered, is now looked upon as a hoax. Indeed Messrs. Gibbs, Bright, & Co., the agents of the line to which she belongs, have placarded the town with bills, offering a reward of £100 to any person or persons who will prosecute to conviction the perpetrator or perpetrators. And there is a universal desire and hope that he or they may be discovered and severely punished.—The hoax was so clumsy that it might have been seen at once. *Mem.*: The reward is quite safe from being asked for.

LIGHTS.—*Mem.*: To remember not to forget that next summer the Gull Light (Downs) now two horizontal lights, is to be made a single quick revolving light,—and the Longships Light to be *darkened* in that portion which shows between the Land's End and the Rundlestone, so that ships will be clear of the *stone* as long as the light is kept in view. *Mems* for *Lights in Lyrics*.

THE NAVAL RESERVE.

Following up the Act of last Session, a Reserve of 30,000 seamen has been determined on by the Government, and the terms and conditions on which they are to serve form the substance of a proclamation. There is no doubt that the fleet of England must be manned, and certainly the terms under which that is to be done voluntarily on the part of the men are, as far as they go, encouraging. Much has been done of late years to render the Service popular, the good effects of which show themselves every day where officers of clear views of what the service does and does not require have the management of H.M. ships; but where this is not the case, and where an officer from his domineering habits is disliked instead of having the hearts of his men, no concession will ever make the naval service popular.

The reserve is to consist of volunteers who have been at least five years at sea, one of which he must have been an A.B. with a good conduct certificate. There is much reasonable latitude here; but at the same time there is no doubt that those of the coasting trade are the right sort. They are at hand, and besides are serving as seamen. He is to receive six pounds a year and a pension of twelve if he continue twenty years in the reserve and complies with its regulations; but after sixty years of age is entitled to this whether the twenty years are served or not. For this he must attend a drill (to which his expences will be paid) for twenty-eight days of every year, and he becomes entitled to all the advantages of pension as in the navy, receiving while at drill his pay, victualling, and allowances as a seaman, and when called on for service will enjoy all the advantages of a continuous service man. Once every six months he is to appear before the shipping master; but cannot proceed on a voyage that will keep him away over six months without permission. Another great advantage he will have is that his time served in the fleet will always count as double, thus giving him great additional claim for pension.

Certainly the shipowner has nothing to complain of here. To us the measure appears to adapt itself to the coasting or short voyage trade, with great encouragement to men at home to have an eye to it. The only bugbear to it in the minds of those who have an inherent dislike of the navy, is the discipline to which they will be subject. This no doubt is much exaggerated from long and deep rooted impressions. Those days are happily passed away. It must have been long since evident that all the measures affecting the navy on the part of the authorities are directed to the advantage and comfort of the men, and those acts are invariably discountenanced where officers have used the power with which they are invested with bad discretion and unfeeling rigour. The naval service is in a fair way of becoming the most popular service, while at the same time it will be the noblest service in the whole world.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from xxviii. page 684.)

Name.	Position.	Where.	F. or R.	Ht. in Feet.	Dist in Mls.	Remarks, &c. [Bearings Magnetic.]
52. Portland Bay	Battery Hill, 38° 22' S., 141° 39' E.	Australia, S. coast	F.	116	13	Est. 1st Sept, '50. Red. (a.)
53. Port Fairy	Rabbit Isld., S.E. point, 38° 24' S., 142° 20' E.	Ditto	R.	41	9	Est. 1st Sept., '50. The steady light is red for 1m. 40s., eclipsed for 34s., when a bright light appears for 12s., followed by an eclipse of 34s.,—making a whole interval of 3m.; then the red light appears as before. (b.)
54. Warrnambool Harbour	Middle Isld., 38° 26' S., 142° 32' E.	Ditto	F.	78	13	Est. 1st Sept., '50.
Port Albert	La Trobe Is., 38° 46' S., 140° 31' E.	Ditto	R.	40	9	Est. 1st Sept., '50. Same as Port Fairy light.
55. Cane Rocks	37° 21' N., 10° 4' E.	Coast of Tunis	F.	129	17	Est. 1st Jan., '60.
56. Colombo	.....	Ceylon, East coast	..	..	..	1st Feb. to 1st April light will be discontinued, and replaced by a temporary light from the clock-tower
57. Burnt Coat Head	Basin Minns, S. shore	Bay of Fundy	F.	75	13	Est. 29th Oct, '50.
Marshall Cove	East shore	Ditto	F.	..	..	Est. 27th Oct., '50. At 5 miles is white; at less turns green.
Margaretville	Ditto	Ditto	F.	..	..	Est. 27th Oct., '50. At 5 miles is white; at less turns red.
58. Feisteen Isld.	58° 49' 5' N., 5° 30' 7' E.	Norway coast	F.	68	12	Est. 10th Nov., '50. Red.
Slotterø Isld.	59° 54' 5' N., 5° 5' E.	Ditto	F.	152	18	Est. 10th Nov., '50.
59. Lagskar Rocks	59° 50' 8' N., 19° 55' 8' E.	Gulf of Bothnia	F.	101	14	Est. 30th Sept., '50. Visible from N. 42° W to S. 40° W. (c.)
60. Hogaty Reef	21° 42' N., 73° 51' W.	Bahamas	..	..	..	Beacon destroyed by hurricane of October to be rebuilt.

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

The lights 53 and 54 are called fixed and flashing, but, considering the *duration* of the light separated by intervals of darkness, and even the duration of the flash, as it is originally termed, we have told the mariner to look for a *revolving* light.

(a.)—From the lighthouse the East extreme of Lawrence Rocks bears S.E. about four miles; the extreme North point of Whaler Bluff N.W.b.N. one mile; and the buoy on Whaler Reef N.b.W.½ W. one mile.

Caution.—Vessels bound to this bay from westward, in rounding the Lawrence Rocks must not bring the light on Battery Hill northward of N.W.b.W.½ W. After passing the rocks, steer for the light, keeping it on the port bow, but not into less than six fathoms. When abreast the anchorage, the jetty light (this light when established was altered from red to green) will be visible bearing West.

The bearings are magnetic. Variation 7½° E. in 1850.

See also No. 47 of last December number.

(b.)—The foregoing is presented at six miles distant, and seems to establish the character of a compound revolving light, rather than a “fixed and flashing” one, as it is styled by the foreign authorities. The notice adds:—No stranger should attempt to pick up the Port Fairy light in thick weather, nor enter the port at night. When working in shore West of the port, the light must not bear to the eastward of E.N.E.; nor should it be approached to within a mile until it bears W.b.S., when N.W.b.W. may be steered for the roadstead, and when it bears S.b.W.½ W., anchor in 6½ or 7 fathoms water.

The bearings are magnetic. Variation in Port Fairy 7° 50' E. in 1850.

(c.)—Also, that two rocky ledges, named Wellingham and Kuggholm, were recently found in the entrance of the Gulf of Bothnia. The former, with eight feet on it, in lat. 60° 6' N., long. 21° 8' E., S.W. to S.½ W., one mile, from the Wellingham Islet, its southern point marked by a pole with a red flag on it.

The Kuggholm, with nine feet over it, is W.b.S.½ S. one mile from Bjornholm, in lat. 60° 12' N., long. 21° 35' E. Its N.W. point is marked by a pole.

Also, that the beacon on Hiidenniemi Point, N.W. extreme of Carlon Island, in the N.E. part of the Gulf of Bothnia, the leading beacon for Port Uleaborg, has been rebuilt, and painted red. The beacon is sexangular and has a pointed roof, surmounted by an iron pendant. It is 94 feet above the mean level of the sea, and visible in clear weather distant about 10 miles.

The bearings are magnetic. Variation 11° W. in 1859.

CHARTS, &c., Published by the Hydrographic Office, Admiralty, to the end of December, 1859, and Sold by the Agent, J. D. Potter, 31, Poultry, and 11, King Street, Tower Hill.

England, West coast, Bridgewater Port, Comdr. Alldridge, R.N., 1858, (3s. 6d.)

England, West coast, Holyhead New Harbour, E. K. Calver, Master, R.N., 1859, (5s.)

England, East coast, Orwell and Stour Rivers, E. K. Calver, Master, R.N., 1859, (3s.)

Wales, St. Anns Head to St. Brides Bay, Comdr. Alldridge, R.N., 1858, (5s.)

Isle of Man, Douglass Bay, Capt. G. Williams, R.N., 1846, (2s. 6d.)

Scotland, East coast, Peterhead, Comdr. E. J. Bedford, R.N., 1858, (3s. 6d.)

Scotland, East coast, Fraserburgh, Comdr. E. J. Bedford, R.N., 1858, (3s. 6d.)

Scotland, West coast, Lochs Alsh and Binch, Comdr. Wood, R.N., 1854, (5s.)

Schilde Entrance to Gorishock, 1859, (5s.)

Mediterranean, Gibraltar Strait, French survey, (4s.)

Mediterranean, Egypt, Aboukir Bay, Comdr. Mansell, R.N., 1857, (4s.)

Mediterranean, Marmora Sea and Plans, various, 1859, (5s.)

Mediterranean, Africa, North coast, Ceuta and adjacent coast, 1859, (2s. 6d.)

Africa, West coast, Congo River, Capt. Vidal and others, 1859, (1s. 6d.)

Africa, West coast, Gaboon River, French survey to 1859, (3s.)

North America, Caraqueite, Shippigan, and Miscou Harbours, Capt. Bayfield, R.N., 1838, (3s. 6d.)

North America, Guysborough, Capt. Bayfield, R.N., 1850, (3s. 6d.)

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- West Indies, Virgin Islands, Culebra or Passage Island, Lieut. G. B. Lawrence, R.N., 1852, (5s.)
 Pacific Ocean, one sheet, various, to 1859, (5s.)
 China Sea, sheet 1, S.W. coast, various, 1859, (3s.)
 China Sea, sheet 2, S.E. coast, various, 1859, (3s.)
 China Sea, Canton River, sheets 3, 4, 5, to 1859, the late W. T. Bate, Captain, R.N., (each, 3s. 6d.)
 East Indies, China, sheet 9, Yang-tse-kiang, corrected to 1859, (3s. 6d.)
 East Indies, China, Si-kiang or West River, 3 sheets, the late Capt. W. T. Bate, R.N., 1859, (each, 2s. 6d.)
 East Indies, China, Wusung River, Comdr. Ward, R.N., 1858, (3s. 6d.)
 East Indies, China, Yang-tse-kiang, Nanking to Tungliu, (3s. 6d.)
 East Indies, China, Yang-tse-kiang, Tungliu to Hankau, (3s. 6d.)
 Tartary Strait and the entrance to the Amur River, Russian survey, 1854, (3s. 6d.)
 Mediterranean Lights corrected by Comdr. Dunsterville, R.N., to October, 1859, (1s. 6d.)
 West India Lights, corrected by Comdr. Dunsterville, R.N., to October, 1859, (1s.)
 East India and China Station, corrected by Comdr. Dunsterville, R.N., to January, 1860, (1s.)
Admiralty, December 20th, 1859.

HARBOURS OF REFUGE.

SIR,—The very matter of fact and important letter of the coroner for part of South Wales, recently published, deserves the most serious attention. Whatever may be the dangers of the East coast they are encountered, for the most part, by small vessels laden with cargoes not valuable and manned by very small ships' companies, and they have no passengers. On the West coast our richest argosies from all parts of the world are on the seas. Eighty miles of coast are without such a harbour as they can enter, and as the many screw and clipper ships run against time they will not bear up for Cork or Milford Haven. S.W. and N.W. winds prevail in the winter, which makes Wales a lee-shore. This over-anxiety to get in acted (as is proved) on the captain of the *Royal Charter*, and drove him into danger in search of a pilot. If Fishguard Bay, on the West coast of South Wales, which the coroner shows so well adapted for a refuge harbour were undertaken, a breakwater might be formed at a comparatively small expense, by convicts, as at Portland, instead of paying Welsh and Irish, as at Holyhead, 3s. 6d. a day for the commonest kind of labour. Portland is completed even now far enough to give shelter, and with the moveable iron barracks no real difficulty exists in preventing the escape of prisoners. First, they would be selected; secondly, might incur the penalty of imprisonment for life if they escaped; and thirdly, a line of sentries could be maintained at a small expense. Captain Crofton's experiments in Ireland, and those at Portland and

Dartmoor have proved the possibility of making prisoners work fairly and behave orderly with small encouragements, on Capt. Maconochie's system. We shall be in want of employment for prisoners in a very short time. They are increasing upon us, now that the principle of long sentences for second offences is nearly admitted as a rule. As it seems at last acknowledged that a short separate confinement and a sentence to slave labour under the most improved circumstances is to be the normal state of things, why should not the country have the utmost benefit of the newly acquired experience on the subject? Again, there is another large class of prisoners for whom employment is greatly wanted, and that of a description not degrading—the soldiers sentenced by courts-martial (many of them for six months). Flogging is going out of fashion, but if the soldier or militiaman were sure of hard labour on a public work for eight months, and double as long for a second desertion, desertions would decrease, and the country in a sense benefit by them.

Nov. 6.

I am, &c.,

AN OLD MAGISTRATE.

THE PULU TRADE OF THE SANDWICH ISLANDS.

Perhaps there is no branch of our domestic industry which has grown more rapidly, considering the small amount of capital invested in it, than the pulu trade. Although the use of pulu for pillows, &c., has been known among the natives from time immemorial, and though it may have been exported in small quantities for many years prior to 1851, yet as an article of trade it only dates back to that year.

In going over the records of the Custom-House, we find the following amounts exported each year:—

	lbs.		lbs.
1851.....	2,479	1855.....	82,558
1852.....	27,088	1856 (4,129 bales) <i>est.</i>	247,740
1853.....	12,739	1857 (2,882 bales) <i>est.</i>	260,560
1854.....	34,031	1858 (3,887 bales) <i>est.</i>	313,220

Thus the pulu trade has been steadily growing from 2,479 lbs. in 1851, to its present state of about 300,000 lbs. per annum. It is exported principally to San Francisco, but not confined wholly to that port, some being sent to Australia, Vancouver's Island, and other places. Messrs. A. Harris & Co. are the principal dealers in pulu, and probably furnish three-fourths of the amount exported. It was by mere accident that they became engaged in the trade. In 1854, we believe, they had a suit with a storekeeper in Hawaii, and judgment being rendered in their favor, some 8,000 lbs. or more of pulu were all they could obtain to satisfy the judgment. Pulu was then worth little or nothing as an article of merchandise at this port. They, however,

took the pulu and shipped it to San Francisco, where, after some delay, it realized 28 cents per lb. This circumstance decided them to commence the trade in it.

Few of our readers, although they hear it frequently spoken of, know how pulu is produced. It grows on the fern, a species of the same plant that is found in swamps in the United States. This plant (it is not a *tree*) grows on all the high lands, commencing at an elevation of about one thousand feet, and extending up to about four thousand in height, and in size frequently attains to fifteen feet in height. Though found more or less on the five principal islands, the trade in it is confined chiefly to the districts of Hilo, Hamakua and Puna, on Hawaii. The pulu is produced around the stalk, where the leaf or stem shoots out from the stock of the fern, and only a small quantity is found on each plant, perhaps amounting in weight to two or three ounces. It takes about four years for a plant to produce this amount.

Owing to the large quantities which have been picked in late years, the article is becoming scarce in the Hilo district, though in the Hamakua and Puna districts large quantities still remain. But as it is farther for the natives to go to obtain it, and as more expense and fatigue is encountered than formerly, the cost of the article has been gradually advancing, and the probability is that it must continue to advance each year a cent per pound, or even more. The number of persons engaged in pulu gathering varies much; including men, women, and children, probably from two to three thousand are now dependent on it for a livelihood, receiving generally from five to six cents per lb. on delivery.

The labour of gathering pulu is very tedious and slow. When picked it is wet, and has to be laid out to dry on the rocks or on mats. If the weather is favorable, it will dry in a day or two, but generally in the pulu region, wet and rainy days prevail, so that frequently the natives do not get their pulu dry even after several weeks, and often take it to market in too wet a state. With this inclination of the natives to sell wet pulu, the dealers have constantly to contend, as it makes considerable difference in the weight when dry.

The facilities for drying, packing, and shipping pulu are improving every year, and the article now shipped away is generally in a dry state, and closely pressed in wool bales. The trade in it has become reduced to system, and will probably continue, though there can be no great increase in the amount annually exported.

Sandwich Island Paper.

FRANKLIN'S EXPEDITION: Another Relic.

We have the melancholy gratification of preserving (exclusively of all other periodicals) the following little tale, imparting a touching fact concerning the fate of an officer of Sir John Franklin's Expedition. And it is rendered the more acceptable coming as it does authenticated

by the signature of a well known naval officer celebrated in arctic history as the friend and companion of Franklin in one of his disastrous expeditions. It would also seem that Lieut. Gore after depositing in 1847, the paper that received Capt. Crozier's additions in 1848, under Sir James Ross's cairn, would probably return here to his boat—unable possibly to proceed further, and died in her; the second body might have been that of his companion De Vaux, and the six men mentioned on the paper might then have returned to the ship with the intelligence. They would form a portion of the nine officers and fifteen men mentioned in the same paper by Capt. Crozier, in 1848, so happily found and brought home by McClintock. So that more than ordinary interest belongs to this relic from the painful story it reveals, and the confirmation it affords of the sad end of these officers.

Wcymouth, 12, Belvedere, Dec. 9th, 1859.

A sailor named George Edwards, who was carpenter's mate (but acting as carpenter) of the discovery vessel *Fox*, under Capt. McClintock, called on me about a fortnight ago, and at my request detailed all the circumstances of his having travelled over the ice along the west side of King William Island. Lieut. Hobson, his officer, was so prostrated by scurvy as to be unable to walk and was dragged upon a sledge. While performing this duty, Edwards saw the point or end of a pole protruding above the snow. Where every object, however slight, was of more than common importance, it was immediately examined, and on removing the thick covering of snow a boat was discovered in which were two bodies.

Edwards cut open the garments of one, and by the quality of the under clothing perceived that he was an officer. Between his legs was a small book of daily prayers (Blomfield's) and on the front page was written, in my own hand-writing—"Geo. Back to Graham Gore, May, 1845." So that, if the poor remnant of humanity were not my old friend and officer on a former service, it must have been one of his shipmates.

The book is now mine—a precious relic of the Franklin Expedition.

Yours,

GEORGE BACK.

To the Editor of the Nautical Magazine.

New Books.

THE VOYAGE OF THE "FOX" IN THE ARCTIC SEAS. *Discovery of the Fate of Sir John Franklin and his Companions.* By Captain M'Clintock, R.N. Murray, London, 1859.

One of the most remarkable facts attending the long series of searches made for the Franklin Expedition is the great amount of geographical discovery to

which it led before that search was successfully concluded by M'Clintock. It would almost appear that the several expeditions studiously avoided the scene of his sufferings for that purpose, so extensively has it been followed up. The map left us by Parry, with which Franklin sailed, was a meagre single coast line as far as Melville Island. The loom of Banks Land, the place merely of Cape Walker, and the northern outline of North Somerset, and the South limits of Lancaster Sound, with a portion of Prince Regent Inlet, was all we knew of an extent of some ten degrees of latitude and an abundance of longitude in those regions. Indeed the arctic map in these parts may now be almost considered complete, and a voyager that would now have the temerity to attempt the North-West passage would find a chart ready for him with an account cut and dried of the most approved way of making it,—or rather of attempting it,—for who knows when he would effect that, how long he would have to wait before the powers that lie in the icy barrier would allow him to pass, or would save him the trouble by passing over his ship instead!

That myth, that ignis fatuus of navigation! what a string of expeditions it has drawn in pursuit of it! And in what have they all ended? a splendid addition to geography! and the discovery that that passage is impracticable. The high road has been shown to us; but like other high roads on shore, it is not without interruptions, those toll gates, not five barred but of "thick ribbed" ice; some not to be opened at all, others only occasionally so, when the traveller must be ready to pass through. The barrier found by Parry and MacIure was of the first of these orders, and so was that of Franklin, neither of which were to be moved. And much as we short sighted mortals may be disappointed at it, the wisdom of Providence has ordained for our good that the group of islands forming the N.W. side of Baffin Bay with the Parry Archipelago are happily placed where they are!—or how should we navigate the Atlantic? for the ice which would be continually drifting through Davis Strait and blocking up our ships. It is truly said that

"Man proposes but the Almighty disposes,"

and all our attempts at finding the North-West passage since the time of Cabot have ended in finding the truth of the above, and we are constrained to agree that

"All that is is right."

It is fondly contended for Franklin that the discovery of the North-West passage is due to him. Far be it from us to dispute the assertion, albeit his ships and crews perished at the unfortunate barrier at which they were stopped. The opinion of Captain M'Clintock, however, is a powerful passport for the claim, and if, as he says, the passage lies to the East of King William Island, it is singularly unfortunate that Franklin did not adopt it, for his ships were never there. They were blocked up in a position which was most naturally to be taken, and only thirty miles from where Collinson had been. That distance further S.W. would have all but cleared Victoria Strait, and the passage would have been achieved, while the distance across Bank Strait is within a mile or two of sixty. But neither of them were to be effected, although both were to be discovered,—nor were either of them ever probable; but that East of King William Land, according to M'Clintock, was the one passage to be taken. Would that poor Franklin had taken it, and he and his noble followers might have been among us now.

If we wanted an instance of the imperfection of man's works, we should point at once to the loss of Sir John Franklin. Too true it is, alas, to begin with, that we did not seek him with timely assistance! No less true, that when we did so and pointed to the place where his ships really were, as in the orders to Sir James Ross, that place was not reached. Too late would it have

been had it been otherwise. All was over in 1849,—and that place has ever since been neglected, passed as if searched. Here was the very essence of imperfection. We had not done what was intended! But we did many other fine things,—many a noble act of heroism in exposure of all kinds, of course to no purpose but to that of geographical discovery, not to the discovery of Franklin. It was not to be.

And yet discovery narrowed the limits of Franklin's probable position, and there M'Clintock, well skilled in ice navigation, the most athletic, the most enduring, and among the ablest of commanders, who had signalized himself by his services in the previous searching expeditions, there M'Clintock led a gallant little band, which in a few short months achieved the object of years. The narrative of this remarkable voyage is before us, told with all the winning simplicity of which language is capable, and with a grace that does honour to the head which composed it. We find nothing here of the full weight of troubles—difficulties made light of—narrow escapes thought nothing of—and distances travelled that are almost miraculous. But, instead, we have the one object always in view, and the utmost anxiety to effect it, a disappointed word at not succeeding with the uncertain ice, a joyful content on board, and a determination to leave nothing undone to achieve the grand object of the expedition; and he succeeded to his heart's desire, to the content, shall we say, of Lady Franklin herself, and he well deserved it. He has returned to us safely with his ship, and well is he entitled to all the honour he may receive.

The voyage of the *Fox* has been already briefly related in our last volume, and we must now avail ourselves of the little space we have left to give our readers an idea of Captain M'Clintock's mode of conducting the duty with which he was entrusted.

We are aware that it was his misfortune to lose a whole season locked in the ice, and drifting helplessly South with it down Baffin Bay, losing ground which had been so difficult to pass over. Here is a picture of the condition of his vessel under these circumstances.

"A renewal of ice-crushing within a few hundred yards of us. I can hear it in my bed. The ordinary sound resembles the roar of distant surf, breaking heavily and continuously; but when heavy masses come in collision with impetus, it fully realizes the justness of Dr. Kane's descriptive epithet '*ice artillery*.' Fortunately for us, our poor little *Fox* is well within the margin of a stout old floe. We are therefore undisturbed spectators of ice-conflicts, which would be irresistible to anything of human construction. Immediately about the ship all is still, and, as far as appearances go, she is precisely as she would be in a secure harbour,—housed all over, banked up with snow to her gunwales. In fact, her winter plumage is so complete that the masts alone are visible. The deck and the now useless skylight are covered with hard snow. Below hatches we are warm and dry; all are in excellent health and spirits, looking forward to an active campaign next winter. God grant it may be realized."

The foregoing is a picture outside, here is one of what is going forward inside:—

"December 27th.—Our Christmas was a very cheerful merry one. The men were supplied with several additional articles, such as hams, plum puddings, preserved gooseberries and apples, nuts, sweetmeats, and Burton ale. After Divine Service they decorated the lower deck with flags, and made an immense display of food. The officers came down with me to see their preparations. We were really astonished. Their mess-tables were laid out like the counters in a confectioner's shop, with apple and gooseberry tarts, plum

and sponge cake in pyramids, besides various other unknown puffs, cakes, and loaves of all sizes and shapes. We bake all our own bread, and excellent it is. In the background were nicely browned hams, meat pies, cheeses, and other substantial articles. Rum and water in wine glasses and plum cake was handed to us: we wished them a happy Xmas, and complimented them on their taste and spirit in getting up such a display. Our silken sledge-banners had been borrowed for the occasion, and were regarded with deference and peculiar pride."

Such a display was never before to be seen in the middle ice drift of Baffin Bay since it has been named after old Baffin, the pilot and companion of Davis.

This mode of passing the winter might be termed making the best of things, but the delay was annoying to Captain M'Clintock, and on the 12th of April, when signs of a release had been evident for some days, we find him stating in his journal.

"This morning we drifted ingloriously out of the Arctic regions, and with what very different feelings from those with which we crossed the Arctic circle eight months ago. However, we have not done with it yet; directly the ice lets us go, we will (D.V.) re-enter the frigid zone, and 'try again' with, I trust, better success."

"April 26th.—During our 242 days in the packed ice of Baffin Bay and Davis Straits we were drifted 1,194 geographical or 1,385 statute miles; it is the longest drift I know of, and our winter, as a whole, may be considered as having been mild, but very windy.

"We are steering now for Holsteinborg, where I intend to refit and refresh the crew; it is reputed to be the best place for reindeer upon the coast."

Our space obliges us to defer this very interesting narrative for our next,—one in which good taste is evident in every page, not only on the part of its author, but we are bound to say that his publisher has done his part equally in keeping the graphic illustrations by which it is accompanied.

A gratifying Tribute of Regard in token of his great kindness to suffering humanity has been presented to Mr. William M. Ogilvie, late surgeon on board H.M.S. *Trident*, paid off at Woolwich. The testimonial consists of a massive gold medallion, contributed by the entire ship's company, with the exception of two of the officers. The medallion is stamped, within the two circles of the front and obverse sides, with the following inscriptions:—

"*Palmam qui meruit ferat.* Presented to W. M. Ogilvie, Esq., surgeon, R.N., by the officers and ship's company of H.M.S. *Trident*. Woolwich, November, 1859."

"In gratitude for the noble manner in which he performed his trying duties during the frightful yellow fever that raged on the West coast of Africa in May, June, and July, 1859."

The medallion weighs three ounces of pure gold.

TO CORRESPONDENTS.

All communications for the Editor to be addressed to 21, Poultry.

Errata in our last number.

Page 619, Expedition No. 67, in last column, for P. read G.

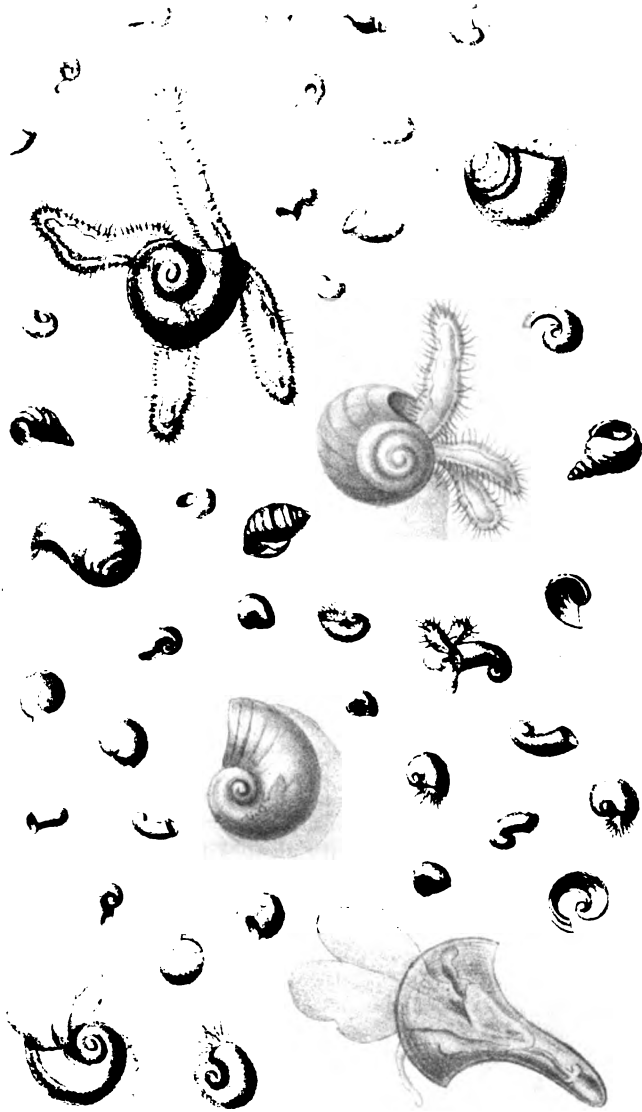
„ 637, line 10 from foot, for Mansfield read Maxwell.

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One drop from the washings of the net after a few hours towing.

As seen through the Microscope.

Lat. 5° 45' S. Long. 86° 00' E. Dec^r 22nd 1857.



- Natural size of the largest shell here shown.
Colours various and exquisite.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle

FEBRUARY, 1860.

ON THE MINUTE INHABITANTS OF THE SURFACE OF THE OCEAN,
By Captain Henry Toynebe, F.R.A.S. With a Plate.

At first sight the following paper appears more suited to the naturalist than to the *Nautical Magazine*, yet few but sailors have the opportunity for making researches into the inhabitants of the surface-waters of the great oceans; inhabitants which, however small and apparently insignificant, may play an important part in the economy of the sea, and, as Captain Maury says of the shells brought up by Brookes's Sounding Apparatus, "be all converted by the microscope into tallies for the waters of the different parts of the sea, by which the channels through which the circulation of the ocean is carried on are to be revealed." And, apart from the scientific interest of the question, any one who has been much at sea will agree with me that on each succeeding voyage the desire becomes stronger to be more and more intimately acquainted with all that concerns so magnificent a friend as old Ocean becomes after many years of companionship. Nor is the sea surpassed in the beauty of its inhabitants by the most favoured spots of earth: South America, with its birds and insects, can alone vie in brilliant colouring with the wonders in the surface waters of the sea revealed by the microscope, where the plumose setæ of the copepods take the place of feathers, and the noble opal itself is equalled by the changing play of the sapphirina. The shells are most distinguished for delicacy of form and colour, nor can there be a prettier sight than a drop of water filled with these minute objects,—a conchological fairyland for a microscopist. The accompany-

ing engraving is a specimen of this: these shells were mere points when seen with the naked eye.

Having paid close attention to this subject for about two years spent on blue water, I wish to make known what we have found, where we have found the individual specimens, which we have sketched and which preserved, together with the state in which they are after the lapse of some months, hoping that it may induce others to occupy the listless hours of a calm with some of the beauties so profusely spread around them. They are not described with minute anatomical descriptions; my time is not my own at sea, but subject to every variety of interruption, nor can a sailor's library contain many books or specimens for reference; therefore I would rather leave that to others by bringing home careful drawings made under the microscope, and the animalculæ themselves preserved in spirits and water, and confine myself to the view in which they first attracted me, viz., their geographical distribution. It may here be added that the specimens and sketches are now in the hands of our distinguished naturalist G. Busk, Esq., F.R.S., &c., who has kindly undertaken their more exact investigation.

For this purpose a bag net, made of twine and lined with white bunting, is towed daily between 6h. and 8h. a.m., unless the ship is going so fast as to tear the bunting, and during calms it is towed both day and night; it is hauled in every ten minutes or so and washed in a bucket of salt water, the bucket being painted white, to make the particles as clear as possible. The animalculæ are taken from it by means of a glass tube; shells are best found by stirring the water quickly round and picking them from the bottom of the bucket as they collect in its centre. Any that appear to be novelties are placed under the microscope, sketched, and bottled in spirits of wine, mixed with one-third of fresh water, in the little bottles of a homeopathic medicine chest; while a list is made of all the rest, with the position of the ship on that day at noon, the current during the last twenty-four hours, and the temperature of the surface water at the time that the net was towed. I have several times tried to keep larvæ and eggs, renewing the salt water repeatedly, but without any success; indeed the marine entomostraca seem to differ completely from their fresh water brethren in being unable to bear the slightest stagnation of water: a bucket teeming with minute objects darting hither and thither in the full enjoyment of life, is in an hour or two unpleasant to sight and smell with the dead and dying.

The order of the copepoda, in its different salt water families, seems to be the most fully represented, yet few days pass without finding also sagittæ and leuciferæ, and we have never yet towed the net when the wind was light enough to allow it to remain some time in the water without finding a large number and variety of microscopic shells.

In cases where notes of interrogation may be seen, the generic name was not known.

Kingdom of the Protozoa.—Class of the Rhizopoda.—Family of the Helicostegida.

Planulina. Found in considerable numbers in the Bay of Bengal in February. Temp. 78·7°.

Again in May.—Ship's position at noon, 30° 33' S., 11° 22' E.; current during the last twenty-four hours, N. 9° E. 6 miles; temperature of the surface water, 64·4°.

Again in June.—3° 29½' N.; 26° 52' W.; S. 51° W. 40 miles; 80·2°.

I could never detect any motion in them, but think that there is a resemblance between them and some of the bright balls hereafter to be described. Many specimens have been bottled, which does not seem to have affected them in any way, and a sketch has also been made.

Kingdom of the Radiata.—Class of the Hydromedusæ—Family of the Medusida.

Pelagia.—8° 15' S.; 80° 49' E.; 80°.

Pelagia, a very small specimen.—0° 11' N.; 82° 41' E.; 83°.

Pelagia.—31° 2½' N.; 45° 6' W.; S. 14° W. 2 miles; 73·3°.

Pelagia.—1° 8' N.; 82° 37' E.; 82·8°.

Medusa (?) of a brilliant ruby colour. The sea, where the sun shone on it, looked as if sparkling with rubies. Several were bottled, but have lost their colour, though they have preserved their shape.—15° 16' N.; 81° 3' E.; N. 43° W. 14 miles; 78·2°.

Medusæ (?). These were sketched, and have retained their shape in spirits.—2° 34' N.; 82° 17' E.; N. 42° W. 34 miles; 83·6°.

Medusa, fringed with cilium.—27° 24' S.; 53° 24' E.; N. 75° W. 36 miles; 74·9°.

Medusæ, with cilium.—26° 41' S.; 52° 17' E.; N. 39° E. 21 miles; 77°.

Medusæ in great abundance. They moved by the motion of the margin of their discs; they had four feelers, and were of a delicate pink. Many seemed to have parts of animalculæ within them.—29° 16½' S.; 44° 53½' E.; N. 37° E. 13 miles; 78°.

Medusa, with four finger shaped feelers set in brown sockets, and within these other rudimentary feelers.—3° 29½' N.; 26° 52' W.; S. 51° W. 40 miles; 80·2°.

Most of these medusæ have been bottled, and the remark is generally applicable that the shape is preserved, while the colours fade.

Family of the Geryonia.

Geryonia. One was found April 20th and another April 21st, and on both occasions there was nothing else found in the net,—the only times at which it has been so empty. Sketched.—27° 4' S.; 8° 54' E.; S. 15° W. 14 miles; 65·2°.

Geryonia, small specimens. Bottled and in good preservation.—7° 42' N.; 26° 49' W.; S. 57° E. 54 miles; 80°.

Class of the Siphonophora.—Family of the Physalida.

The physalia, commonly known as the Portuguese man-of-war, abounds in most warm seas, but we passed an extraordinary number of them during a calm in lat. $30^{\circ} 59' S.$, long. $79^{\circ} 50' E.$; current, $N. 74^{\circ} E.$ 18 miles; temperature of surface water, 68.7° . The sky was brilliantly blue, and the sea, teeming with inhabitants, seemed with them to vie in beautiful tints with the sky above. Some of the gentlemen on board amused themselves boating, and one of them having been severely stung by a Portuguese man-of-war, handed it up to me at my port. After admiring its delicate colouring, I threw it overboard; when it was almost immediately picked up as a fresh treasure by another party of gentlemen, who complained of such painful irritation from its sting that it does not seem that the power is lost by repetition.

Again, in lat. $6^{\circ} 57\frac{1}{2}' N.$, long. $26^{\circ} 29' W.$; current, $S. 63^{\circ} E.$ 31 miles; temperature of surface water, 83.3° , we passed a long line of foam and brown matter, in which, besides much other organic matter, were numerous physalias, discoloured and sickly-looking. These lines of foam are probably caused by the overflowing of rain-water from the calm and rain latitudes, as they are generally seen on the verge of those rainy quarters; and the sickly state of the sea-creatures found in them favours this supposition, for fresh or even brackish water is not their native element. Those who meet with these lines of foam would do good service by trying the temperature and specific gravity of the sea on each side of them; a further test would be to scoop the water from the very surface on both sides, and to try its specific gravity compared with that of a bucket drawn in the ordinary way.

We have also found a very small one, which has been sketched.

Family of the Velellida.

Veella. Many were caught, some of which were covered above and below with small barnacles; in which case the sucking-tubes or feelers had entirely disappeared, leaving only the disc and a torn sail. Do the barnacles attach themselves to the unfortunate veella while it is yet alive? The sail was always placed at the same angle to the disc as are a ship's yards when braced sharp up.— $31^{\circ} 34\frac{1}{2}' S.$; $77^{\circ} 24' E.$; $N. 44^{\circ} E.$ 17 miles; 67° .

Porpita. A small blue one. It has preserved its shape in spirits, but lost its colour.— $6^{\circ} 57\frac{1}{2}' N.$; $26^{\circ} 29' W.$; $S. 63^{\circ} E.$ 31 miles; 83.3° .

Porpita. Yellow. Bottled.— $29^{\circ} 39' N.$; $42^{\circ} 14' W.$; $S. 18^{\circ} W.$ 9 miles; 77.1° .

Family of the Diphyida.

Diphya.— $30^{\circ} N.$; $45^{\circ} 13' W.$; $N. 78^{\circ} W.$ 2 miles; 71.1° .

Diphya.— $39^{\circ} 59' S.$; $63^{\circ} 10' E.$; $N. 70^{\circ} E.$ $21\frac{1}{2}$ miles; 58° .

Diphya. The elegantly shaped ovary was attached by a long con-

tractile thread in constant motion.—1° 5' S.; 85° 13' E.; S. 73° E. 58 miles; 81° 2°.

Diphya.—0° 4' N.; 82° 24' E.; N. 61° W. 57 miles; 82° 7°.

Diphya. Extremely active.—6° 49' S.; 85° 23' E.; N. 52° E. 37 miles; 82° 2°.

Diphya.—26° 48' S.; 57° 55' E.; N. 85° E. 29½ miles; 77° 1°.

Diphya.—29° 16½' S.; 44° 53½' E.; N. 37° E. 13 miles; 78° 5°.

Most of these diphyæ have been sketched and bottled. They are all distinguished by their transparency; so delicate indeed are they that were it not for their rapid darts through the water they might be altogether overlooked, and when placed under the microscope it is difficult, even with a good light, to make out their shape accurately. When bottled, in place of their icy clearness, parts of them become milk-white, but otherwise remain perfect.

Class of the Echinodermata.—Family of the Ophiurida.

Ophiura, larva of (?). One of the arms was seen to move, and a pulsation was going on near the centre. A sketch of one of the arms was made under a high power.—16° 21' N.; 82° 37' E.; N. 17° W. 4 miles; 78° 7°.

Again, motionless, in 0° 57' S.; 82° 49' E.; N. 30° E. 25 miles; 81°.

Again. Distinct pulsation visible in the body. It was kept for several days, but decomposed, though the water was changed very often.—26° 48' S.; 57° 55' E.; N. 85° E. 29 miles; 77° 1°.

These have all been bottled, but have not preserved well; yet their shape is still distinct, and a complete sketch was also made.

Ophiura, larva of (?). This looks more like a larval crustacean, and yet bears a certain resemblance to the above. Bottled.—19° 14' N.; 4° 32' W.; N. 58° E. 15 miles; 72°.

Kingdom of the Vermes.—Class of the Platyelmia.—Family of the Planaria.

Planaria. This small green planaria is sometimes very abundant, and is very active, and the variety of shape almost endless, as they contract their flexible sides and protrude their flexible mouths. They are of very soft consistency, and when touched, or when the water dries away from them, quickly dissolve. Sketched.—3° 30' N.; 88° 55' E.; 80° 3°. 11° 16' N.; 82° 2' E.; 78° 6°. 34° 18' S.; 25° 31' E.; S. 49° W. 37 miles; 65°.

Planaria. These white planariæ when quiet appeared to be a circular disc with nearly a globular centre. It moved by working the edges of the disc, and could bring the two sides together till it was somewhat pear-shaped. There were two in the same tube, and one (the larger) nearly wrapped itself round the other, so that I am inclined to think that the food is caught by encircling it with the margins of the disc, by which means it is pressed into the globular centre.

They were very numerous October 7th.—7° 54' N.; 27° 2' W.; 81°.

Again found in $7^{\circ} 42' N.$; $26^{\circ} 49' W.$; $S. 57^{\circ} E.$ 54 miles; 80° .

Again, sketched and bottled.— $3^{\circ} 49' N.$; $28^{\circ} 2' W.$; $N. 50^{\circ} W.$ 30 miles; 79° .

Planaria. A brown one found amongst the gulf-weed. Sketched.— $30^{\circ} N.$; $45^{\circ} 13' W.$; $N. 78^{\circ} W.$ 2 miles; 71.1° .

Planaria, with rows of cilium about its circumference. Bottled.— $12^{\circ} 48' S.$; $74^{\circ} 30' E.$; $N. 24^{\circ} W.$ 17 miles; 80.8° .

Planaria, with long hairs round the contracted centre of its body, which it raised and dropped with a slow and regular motion. Bottled.— $12^{\circ} 48' S.$; $74^{\circ} 30' E.$; $N. 24^{\circ} W.$ 17 miles; 80.8° .

Planaria. Olive green, having a ring of white hairs round the smallest part of its body. Bottled.— $29^{\circ} 30' S.$; $45^{\circ} 32' E.$; $S. 42^{\circ} E.$ 9 miles; 76.7° .

Planaria, with toothed hairs and very flexible body. Bottled.— $15^{\circ} 33' N.$; $81^{\circ} 20' E.$; $N. 17^{\circ} W.$ 4 miles; 78.7° .

Planaria, with very flexible body and hairs looking like beads strung on a thread and gradually diminishing in size towards the point. Bottled.—Bay of Bengal.

Planaria. Blue, with a few lilac spots. Many were taken from a long line of foam and brown matter. They moved by flapping their sides with vermicular motion.— $6^{\circ} 57' N.$; $26^{\circ} 29' W.$; $S. 63^{\circ} E.$ 31 miles; 83.3° .

These have become round amorphous masses in spirits and water (excepting those with hairs and one or two others); so that, unless the dissecting knife can aid to reveal their peculiar formation, the sketches taken during life are the only useful mementoes we have of them.

Class of the Annelida.—Family of the Nereida.

Nereis.— $35^{\circ} 8' S.$; $18^{\circ} 10' E.$; 63° . $14^{\circ} 29' N.$; $82^{\circ} 32' E.$; 78° . $34^{\circ} 18' S.$; $25^{\circ} 31' E.$; $S. 49^{\circ} W.$ 37 miles; 65° .

These varieties of position and temperature give a wide range to this active annelid. Moreover, in $20^{\circ} 27' N.$; $45^{\circ} 16' W.$; current, $N. 41^{\circ} W.$ 5 miles; surface temperature, 73.9° , we found one amongst the Sargassum resembling these, except that its head was furnished with long feelers. Sketched.

Nereis. Sketched.— $17^{\circ} 57' S.$; $37^{\circ} 7' W.$; $S. 2^{\circ} E.$ 22 miles; 76° .

Nereis. Sketched.— $7^{\circ} 35' S.$; $84^{\circ} 11' E.$; $N. 45^{\circ} E.$ 17 miles; 80.4° .

Nereis. Sketched.— $9^{\circ} 35' S.$; $82^{\circ} 47' E.$; $S. 66^{\circ} W.$ 24 miles; 81° .

Nereis. Sketched.— $5^{\circ} 52' S.$; $81^{\circ} 10' E.$; $S. 31^{\circ} E.$ 18 miles; 80.9° . $30^{\circ} 17' S.$; $79^{\circ} 53' E.$; 68° .

Nereis. In two pieces. Supposed to have been broken in the net. Both parts moved freely. Bottled.— $34^{\circ} 56' S.$; $71^{\circ} 55' E.$; in four days, $N. 80^{\circ} E.$ 138 miles; 59.6° .

Nereis. Bottled.— $24^{\circ} 20' S.$; $62^{\circ} 53' E.$; South 2 miles; 77° .

Annelid, with feet fringed with hair. Bottled.— $27^{\circ} 24' S.$; $53^{\circ} 24' E.$; $N. 75^{\circ} W.$ 36 miles; 74.9° .

Annelid, with peculiar feelers and branched feet. Bottled.— $29^{\circ} 16' S.$; $44^{\circ} 53' E.$; $N. 37^{\circ} E.$ 13 miles; 78.2° .

Annelid. This was bottled, because while watching it in a drop of water under the microscope I saw it put out a long sucking-trunk one-third the length of this piece of its body. This it attached to a dead sagitta near it, and I saw matter passing through the trunk into its body. I watched it do this twice. Now the end of the trunk is visible through the body a little within the eyes.— $7^{\circ} 42' N.$; $26^{\circ} 49' W.$; $S. 57^{\circ} E.$ 54 miles; 80° .

Annelid. A short broad one with a sucking mouth. Bottled.— $7^{\circ} 14' N.$; $26^{\circ} 28' W.$; $S. 45^{\circ} E.$ 19 miles; 81.1° .

These annelids are all tolerably well preserved.

Kingdom of the Mollusca.—Sub-Kingdom of the Molluscoida.—Class of the Ctenophora.—Family of the Beroida.

Under this family I place a great number of little animals, not, certainly because they agree very well with the characteristics of the beroida, but because they seem to approach nearer to that than any other. They are all extremely active, but many of them dissolve rapidly in a drop of water.

Berœ. Two specimens of this delicate creature were caught during a calm. Their cilium and long feelers were kept in very rapid motion, while the sucker-like mouth contracted and expanded. Sketched.— $12^{\circ} 6' N.$; $26^{\circ} 49' W.$; $N. 49^{\circ} W.$ 28 miles; 80° . $11^{\circ} 59' S.$; $82^{\circ} 33\frac{1}{2}' E.$; $N. 43^{\circ} W.$ 17 miles; 81.7° .

Berœ. Sketched.— $36^{\circ} 18' S.$; $20^{\circ} 57' E.$; 65.8° .

Berœ. This white and very flexible creature was sometimes cup-shaped, sometimes drawn out like a leech, till it finally rolled into an irregular ball and died. Then for the first time I perceived little bundles of stiff hairs projecting from its mouth.— $34^{\circ} 59' S.$; $19^{\circ} 55' E.$; $S. 64^{\circ} W.$ 14 miles; 64° .

It will be noticed that this was in cold water on the Agulhas Bank, and not in the warm current which sweeps round it; and yet afterwards, in $15^{\circ} 33' N.$; $81^{\circ} 20' E.$; $N. 17^{\circ} W.$ 4 miles; 78.7° , we found a similar one, in which the hairs were visible while the animal was alive. Sketched.

Berœ. Sketched.— $30^{\circ} 17' S.$; $79^{\circ} 53' E.$; $N. 55^{\circ} W.$ 4 miles; 68° .

Berœ. Though we had been busy with the microscope all day, the sea was so rich in animal life that I threw the net over the side again about 6h. p.m., and, amongst other things, found this berœ, in which a small cyclops was distinctly visible. It was then too dark to draw it, and by the next morning there were no traces of the unfortunate cyclops to be seen. Sketched.— $30^{\circ} 17' S.$; $79^{\circ} 53' E.$; $N. 55^{\circ} W.$ 4 miles; 68° .

Berœ. Sketched.— $30^{\circ} 17' S.$; $79^{\circ} 53' E.$; $N. 55^{\circ} W.$ 4 miles; 68° .

Beræ. Sketched.—7° 55' S.; 81° 10' E.; N. 77° W. 17½ miles; 81·3°.

The ciliated mouth was sometimes at one end of the body, and sometimes when the animal drew itself into a ball it appeared in the centre, with vessels radiating from it like the spokes of a wheel.

Again. Bottled.—11° 51' S.; 74° 38' E.; N. 47° W. 14½ miles; 81·2°.

Beræ. Sketched.—1° 5' S.; 85° 13' E.; S. 73° E. 58 miles; 81°.

Beræ. This is of a beautiful blue and very active, but dissolves rapidly when placed under the microscope. It has been sketched, and out of many that I have tried one specimen has retained its shape when bottled.—1° 5' S.; 85° 13' E.; S. 73° E. 58 miles; 81°. 5° 48' S.; 85° 28' E.; 80·2°. 9° 35' S.; 82° 47' E.; S. 66° W. 23½ miles; 81°. 11° 59' S.; 82° 33' E.; N. 43° W. 17 miles; 81·7°. 3° 2½' N.; 82° 7' E.; 82°. 31° 43' S.; 32° 45' E.; N. 31° W. 10 miles; 74°. 29° 16' S.; 44° 53' E.; N. 37° E. 13 miles; 78·2°. 31° 2' N.; 45° 6' W.; N. 41° W. 5 miles; 72·9°. 12° 6' N.; 26° 49' W.; N. 49° W. 28 miles; 79·2°.

Beræ. Provided with a very large swimming-flap on each side, besides a horn shaped projection: all of which it drew in when it died. The centre was bright yellow. Bottled.—8° 12' S.; 81° 24' E.; S. 74° W. 39 miles; 81°.

Beræ. Two. Part of their bodies was of a beautiful pink.—15° 16' N.; 81° 3' E.; N. 17° W. 4 miles; 79°.

Beræ. Soft and covered with small bunches of hairs. After putting it in spirits I observed that its antennæ were articulated. Sketched.—29° 57' S.; 39° 5' E.; S. 76° E. 26½ miles; 71·5°.

Beræ which drew itself out into a variety of shapes, and had a ring of actively moving cilium.—29° 57' S.; 39° 5' E.; S. 76° E. 26½ miles; 71·5°.

Beræ.—3° 29½' N.; 26° 52' W.; S. 51° W. 40 miles; 80·2°.

Most of these have preserved their shape well, though they have lost their colour.

Class of the Tunicata.—Order of the Ascidiidæ.

This class is interesting from the fact that the outer mantle—which is sometimes grizzly, sometimes like jelly or leather—consists principally of true woody fibre, which does not dissolve in acids or alkalies, and forms the hard constituent parts of plants.

Doliolum. Very numerous. One of these has been bottled, and has collapsed, but its beautiful interior net-work is still visible.—16° 21' N.; 82° 37' E.; N. 61° E. 14 miles; 78·5°.

Again. Bottled.—22° 26' S.; 2° 36' W.; N. 79° W. 6½ miles; 70°. On this occasion the net was towed before and after a thunder-storm, and had very little in it, considering the length of time for which it had been towed.

Again.—3° 49' N.; 28° 2' W.; N. 50° W. 30 miles; 79°

Again.—36° 12' S.; 25° 53' W.; S. 34° E. 26 miles; 59°.

Order of the Biphora.

Salpa. They floated by in long strings, varying from one to several feet in length, but the individuals not above three or four inches long. In each were one or more bright crimson crustaceæ, moving about with perfect ease in the hollow bodies of the salpæ. Sketched.— $32^{\circ} 42' S.$; $76^{\circ} 19' E.$; 62° .

Again. We found great numbers of small ones (of which many were bottled), the nucleus of each shining with its brilliant phosphorescent light. In common with nearly all the sea-animals we have tried to keep through the night, they were dead in the morning, as if the water contained in a bucket did not afford them sufficient change.— $13^{\circ} 46' S.$; $73^{\circ} 41' E.$; $S. 82^{\circ} W.$ 13 miles; 81° .

Again, in May, while fighting a hard battle for two or three weeks against foul winds round the Cape, the bucket swarmed with salpæ while we were on the Agulhas Bank, but when driven down to the edge of it they were rare or wanting altogether. Many were bottled, and, though they have collapsed and lost the colour of their nuclei, the internal structure is still visible. Some of them had yellow balls like eggs inside them, and many of these balls were floating about in the water.

Again, the bucket was crowded with salpæ with blue nuclei.— $2^{\circ} 7' S.$; $23^{\circ} 1' W.$; $S. 30^{\circ} W.$ 21 miles; $78^{\circ} 2^{\circ}$.

Salpa democratica. These were only caught in the daytime, and we did not see whether the nucleus was phosphorescent; it was of a brilliant blue, which is rare amongst the salpæ. The individuals were quite separate from each other. Sketched and bottled.— $0^{\circ} 11' N.$; $82^{\circ} 41' E.$; 83° . $32^{\circ} 42' S.$; $76^{\circ} 19' E.$; 62° . $35^{\circ} 18' S.$; $20^{\circ} 33' E.$; $S. 24^{\circ} E.$ 6 miles; $64^{\circ} 9^{\circ}$. $36^{\circ} 18' S.$; $20^{\circ} 57' E.$; $65^{\circ} 8^{\circ}$.

Salpa. The nucleus was blue in these pretty salpæ, which floated through the water in a long chain linked together by mere adhesion. Sketched.— $36^{\circ} 18' S.$; $20^{\circ} 57' E.$; $65^{\circ} 8^{\circ}$.

Kingdom of the Mollusca.—Sub-Kingdom of the Mollusca.—Class of the Cephalophora.—Sub-Class of the Pteropoda.

Pteropoda criseis. This pteropod has so wide a range that it would be a wearisome task to write or to read all the positions in which we have found it; suffice it therefore to say that it has accompanied us without interruption from $37^{\circ} 30' N.$ lat. and long. $41^{\circ} 53' W.$ to lat. $16^{\circ} 21' N.$, long. $86^{\circ} 35' E.$, through variations of the temperature of the surface water from 67° to 83° . It has been positively asserted that they are nocturnal animals; but, though the net was repeatedly towed at night on purpose to ascertain, they have not been found more abundant than by daylight. Some are straight, others curved like an ox-horn. They have been sketched, and a great number of them bottled; in which way many of the animals are preserved, protruding from the shell.

Pteropoda (?) or Pterodina. This delicate little mollusc resembled pteropoda criseis in the shape of its shell, but had no wings, and in

their place four arms fringed with actively moving cilium. Sketched and bottled.— $16^{\circ} 21' N.$; $82^{\circ} 37' E.$; $N. 61^{\circ} E.$ 14 miles; 78.5° .

Pteropoda with wings, set with actively-moving cilium. Sketched and bottled.— $35^{\circ} 3' S.$; $21^{\circ} 41' E.$; $N. 30^{\circ} E.$ 31 miles; 65° .

Pteropoda (?). In the Bay of Bengal, in February, we found a prevalence of a brilliant amber-brown amongst the shells and pteropods. Amongst others we found two shells with distinct raised and wavy ribs, and, though nothing was to be seen of their inhabitants, one was sketched. The next day, however, we were rewarded with the sight of several of them moving actively through the water by means of their wings, which, with the whole of their body that could be seen through the shell, seemed to ally them with the pteropods. We have since found them in $2^{\circ} 34' N.$; $82^{\circ} 17' E.$; $N. 42^{\circ} W.$ 34 miles; 83.6° . Transparent, with pink lips, in $24^{\circ} 20' S.$; $62^{\circ} 53' E.$; South 2 miles; 77° . $26^{\circ} 41' S.$; $52^{\circ} 17' E.$; $N. 39^{\circ} E.$ 21 miles; 77° . $19^{\circ} 4' S.$; $4^{\circ} 32' W.$; $N. 58^{\circ} E.$ 15 miles; 72° . $7^{\circ} 14' N.$; $26^{\circ} 28' W.$; $S. 45^{\circ} E.$ 19 miles; 81° .

Many of these have been bottled, and both the shell and inhabitant are well preserved.

Pteropoda (?). This was a minute turretted shell, which would seem allied to the pteropods by the wings of its inhabitant. Sketched and bottled.— $15^{\circ} 16' N.$; $81^{\circ} 3' E.$; $N. 43^{\circ} W.$ 14 miles; 78.2° .

Pteropoda. Two specimens of this were found, encased as it were in a glass tube. Their specific gravity seemed great, so that much exertion must be required to bring them to the surface. The net was towed at 10h. p.m. and not examined till the next morning, by which time they were motionless. Bottled.— $2^{\circ} 34' N.$; $82^{\circ} 17' E.$; $N. 42^{\circ} W.$ 34 miles; 83.6° .

Some of them had pretty and uniform marks on their wings.

Hyalea. This beautiful triangular mollusc was found in the Bay of Bengal. Sketched and bottled, and has preserved very well. Others, again, were found near St. Helena and bottled. They are well preserved, and though no feelers are visible, still the grooves in the shell through which they work are there. Some had amber-coloured margins to their shells, and others were finished off by a rounded thickening at the end.

Family of the Clioida.

Clio. This flapped its wings while it swam about with great activity, reminding me of a large bat flying. The cilium were in rapid motion. Sketched and bottled.— $17^{\circ} 11' N$; $83^{\circ} 24' E.$; $N. 64^{\circ} E.$ 15 miles; 78° .

Clio. Two of these were in the bucket; in both of which I detected wings as they flapped quickly through the water, though there was no sign of them when the animal was placed under the microscope: then nothing was in motion but the active cilium and incessant contraction and expansion of the flexible body. Sketched and bottled.— $35^{\circ} 26' S.$; $18^{\circ} 40' E.$; $N. 78 E.$ 2 miles; 65.3° .

(To be concluded in our next.)

A VISIT TO MAUNA LOA,—*Sandwich Islands.*

Our party sailed from Honolulu in the *Kinoole*, on Tuesday, February 1st, and landed at Kealakekua Thursday noon. During the preceding night we had a distant view of the eruption, like a star two thirds up the mountain, with streaks of light branching out below. Friday was spent in preparations for the jaunt, and on Saturday morning we set out for the crater, from Kuapehu, in a direction nearly East.

The first twelve miles of our route lay through a dense forest, which changed its appearance as we ascended, being characterised in the lower part by its tall ferns, then by the abundance of wild raspberry bushes, and opening finally into koa pasture.

As we began to emerge from the woods we had a fine view of the jet, playing at a distance of perhaps twenty-five miles, to the height, as we afterwards estimated, of 300 feet. It was of a deep red colour in form and movement exactly like a fountain, and was accompanied by immense columns of steam. It was soon concealed from our view, however, by the flanks of Mauna Loa. About twelve miles from the coast road we reached a watering place called Waiio, which we found nearly dry.

Here we were obliged to send back our horses and pack oxen, and proceed on foot. Our guide then led us in a direction about E.S.E. across a rugged track of clinkers to a cave, eight miles from Waiio, where we encamped for the night. This cave had formed part of the channel of a subterranean stream, which left a series of deep caverns, fissures, and pits to mark its course.

The pit into which Alexander Smith fell, was not two rods from our camp, being completely concealed by underbrush, and from twenty-five to thirty feet deep. It was quite dark at the time, and few if any of us suspected the existence of such a black chasm only a few steps from our fire.

Fortunately his fall was heard; a lantern was immediately brought, a boy lowered into the cavern with a rope, and the poor fellow was soon drawn up, insensible, but undisfigured and still breathing. He was soon revived by the use of brandy, and seemed perfectly rational, though unable to move. He was carried down the next day in a litter constructed of a bullock's hide to Dr. Herrick's, where he received every possible attention. His case, however, was a hopeless one, for his spine had been injured just below the neck; and after lingering a week he expired on the morning of the 12th. His gentlemanly manners and generous disposition had already endeared him to our party, and the sad accident which befell him threw a gloom over the remainder of our journey.

During the afternoon, the party being in want of water pushed on six or eight miles S.S.E., to a well known watering place called Pua-puawai, where they encamped. At this point the cold was so intense at night, that a crust of ice half an inch thick was formed in our cala-

bashes, and the berries around our camp were frozen hard. As far as we could judge by the horizon, we were about a thousand feet lower than the summit of Hualalai, and, accordingly, 8,000 feet above the sea. On account of the failure of this spring, as well as for other reasons, it was thought expedient to divide the party. Half of them, headed by President Beckwith, returned to Kaawaloa, and went out to the lava flow by Governor Adams' road.

The advance party started again directly for the crater on Wednesday morning, consisting of twelve white men and thirty kanakas, with a week's provisions. During this day's march the rarity of the atmosphere affected us all more or less, but especially our natives, who seemed unable to carry their usual loads. We were slowly ascending nearly all day. The vegetation gradually became more and more scanty, till it almost entirely disappeared.

About noon we crossed a recent flow, perhaps that of 1847, and at four p.m., (February 9th,) after a march of about twenty miles N.E., we suddenly found the two active craters and the lava stream in its whole extent immediately below us. We encamped a mile and a half S.W. of the larger cone, on an eminence commanding a fine view of the whole eruption. Large banks of snow and ice were found within a quarter of a mile from our camp, so that all anxiety on the score of water was soon dissipated.

The sight which we enjoyed that night will not be soon forgotten by any of the party. The jet had ceased to play, but the two craters were blowing off enormous columns of steam, and showers of red hot scoria, with a noise like that of heavy surf, or occasionally like discharges of artillery. Half a mile below the lower crater appeared a cataract of fire, continued for several miles in a winding river of light, which then divided into a net work of branches, enclosing numerous islands. The branch towards Kawaihae still gave a dull red light in a few spots, but the force of the stream seemed to be directed West, towards Kona.

Two new streams seemed to be running a race, as it were, in that direction, and we could see the forest blazing before them. The next day (10th) was rainy, and the fog so dense that we could not travel. We moved down a couple of miles, and encamped on the fresh lava stream, half a mile South of the principal cone. By the heat of the steam cracks we boiled our coffee, roasted meat and potatoes, and melted the snow, which our natives had brought down in sacks, till we filled all our water containers. During the day parties explored the craters.

The two principal cones are about a quarter of a mile apart, the upper one bearing S.E. from the other. They are about 150 feet high, and are composed entirely of pumice and small fragments of lava which were thrown out in a liquid state. The upper cone was a closed crater, enclosing two red hot vent holes or furnaces, several feet in diameter, from which it was emitting steam and sulphurous gas, and now and then showers of light pumice. The suffocating gases rendered it impossible to approach it except on the windward side. The

lower crater, from which the great jet had been playing two days before, was somewhat larger, and a great gap was left open on the lower side, through which a torrent of lava had flowed down the slope.

We found a third crater, above the two we have mentioned, which was still smoking, and in fact we could trace a line of fresh lava and scoria cones two or three miles further up the mountain. The larger cones were in the centre of a still smoking stream, a mile wide, which must have flowed from a source considerably higher up.

It was a subject of regret to the party that they did not bring a barometer to measure the elevation of the source; but, taking all things into account, we think it cannot be less than 8,000 feet, and is probably nearer 10,000 feet above the sea. The elevation of the "heiau of Umi," is given by Wilkes at 5,000 feet, and we think the source of the eruption is certainly 3,000 or 4,000 feet higher.

We slept on the warm lava that night, and early next morning revisited the lower crater, and followed the central flow for half a mile, passing two or three small cones, till we reached the present outlet, to which the stream evidently has found its way from the crater by a subterranean channel. It was in appearance a pool of blood, a few rods in width, boiling up like a spring, and spouting up thick clotted masses to the height of ten or twenty feet. One of our party approached near enough to run his pole into it. On the lower side it poured in a cataract of molten metal at a white heat, down a descent of about fifty feet, with a roar like that of heavy surf. A strong South wind was blowing, which enabled us, by holding our hats before our faces, to get within a few feet of the brink. The lava appeared almost as fluid as water, and ran with a velocity which the eye could scarcely follow. The solid fragments which now and then fell in disappeared almost instantly. For several miles the fiery river was a continuous series of rapids and cataracts. At length we reluctantly returned to our camp, a distance of two or three miles across the fresh lava, which in several places was hot enough to burn our sandals.

After taking our breakfast, and starting our natives over the old "pahoehoe" along the South bank of the stream, we returned to the great cataract. The action had greatly increased during the last three hours; the pool had become a fountain, playing to the height of thirty feet, and the falling pieces were fast forming a crater around it, the rim of which was already ten feet high, but open on the lower side to afford an outlet for the torrent. Two smaller jets were playing above it, which will probably unite with it to form one crater. The upper one threw up light pieces of pumice to the height of sixty feet, and was forming a very regular cone.

It was fortunately a clear day on the mountain, and a strong wind was blowing from the S.W., so that we travelled for three or four hours along the very brink of the stream, without inconvenience. It had worn for itself a deep well-defined channel, so that there was no danger of any sudden change in its course. The canal in which it ran varied from twenty to fifty feet in width, and was ten or fifteen feet deep. But the stream was in reality much wider than this, for

the banks on either side were undermined to a considerable distance. Often we met with openings in the crust, through which we could see the rushing torrent a few feet or even inches below our feet.

To describe the scene is impossible. No epithets in the English language are adequate to the task. For the first time we saw actual *waves* and actual *spray* of liquid lava. As its surges rolled back from the enclosing walls of rock, they curled over and broke like combers on the reef. Its forms, however, were bolder and more picturesque than those of running water, on account of its being a heavier and more tenacious fluid.

There was besides an endless variety in its forms. Now we passed a cascade, then a whirlpool, then a smooth majestic river, then a series of rapids, tossing their waves like a stormy sea: now rolling into lurid caverns, the roofs of which were hung with red hot stalactites, and then under arches which it had thrown over itself in sportive triumph. The safety with which it could be approached was matter of astonishment to us all.

After following it six or eight miles, we halted for dinner on an island, about a quarter of a mile from the largest fall, and then proceeded down the stream until 4h. p.m. As the descent became more gradual, the torrent changed its colour, first to rose colour, then to a dark blood-red; its surface began to gather a greyish scum, and large drifting masses became frequent. It now began to separate into numerous branches, and it became more and more unsafe to follow the central stream, as changes were constantly taking place, and our retreat was liable to be cut off at any moment. We therefore kept nearer the edge of the flow, and at length encamped on an island in the woods. During that night the craters were very active, and the whole plain seemed to be on fire below and around us.

The party were called out by four o'clock the next morning and went up a short distance to observe a new stream which was pouring down through the woods to our camp. It was a shallow flow in a high state of fusion, and was forming smooth "pahoehoe." Its mode of advance through the woods, girdling and slowly consuming the trees, the surface constantly cooling over and breaking up by turns, was exactly the same as that observed at Hilo, and needs no description. Here we were able to take out as many specimens in a liquid state as we wished, to insert coins into them, and if we had carried moulds with us we might have forced the liquid into almost any required shape.

We spent the forenoon in following the stream to the plain, partly crossing it in some places to reach the scene of a new overflow. We had been particularly curious to see how clinkers are formed, and our curiosity was now gratified. The difference between "pahoehoe" or smooth lava and "aa" or clinkers, seems to be due more to a difference in their mode of cooling than to any other cause. The streams which form the "pahoehoe," are comparatively shallow, in a state of complete fusion, and cool suddenly in a mass. The "aa" streams, on the other hand, are deep, sometimes moving along in a mass twenty feet high,

with solid walls; they are less fluid, being full of solid points or centres of cooling, as they might be called, and advance very slowly. That is, in cooling, the "aa" stream *grains* like sugar. At a distance it looks like an immense mass of half red hot cinders and slag from a foundry, rolling along over and over itself, impelled by an irresistible power from behind and beneath. That power is the liquid stream, almost concealed by the pile of cinders which has been formed from itself in cooling. We heard frequent explosions, caused by the lava penetrating caves and blowing them up. The principal stream of running lava which we saw on the plain, was three or four miles S.E. of the extremity of the Judd Road, and was moving W.b.N. At this point we left the lava stream and descended to Umi's temple by a short cut through an open forest of "pahoehoe." We reached the heiau about three p.m., and arrived at Mr. Johnson's about eight o'clock the same evening. The other division of our party had already visited the flow by way of Governor Adams' road and had returned. We sailed again from Keaouhou the following Tuesday, and arrived in Honolulu Sunday morning. In future, parties would do well to keep to the usual route as far as the temple of Umi, and then strike directly for the source, through the belt of open woods by which we descended. The distance of the source from the heiau is twenty miles, by a very moderate calculation.

Before closing, I cannot forbear to express our obligations to Mr. Thomas H. Paris, for the able manner in which he led our party, and to which its success was chiefly owing. Nor must I fail to express our deep sense of the generosity and unbounded hospitality of our friends in South Kona, and of Captains Hazard of the *Manuel Ortez*, and Molteno, of the *Maria*, who supplied us liberally with provisions, and would accept of no return.

W. D. ALEXANDER.

THE STRAIT OF BANKA.

Seamen are indebted to the assiduity of Mr. W. Stanton, Master, R.N., in command of H.M.S. *Saracen*, for the following description and directions for Banka Strait. This intricate pass, in the high road of shipping to the China Sea, left unheeded to the present time, has been consigned to the care of Mr. Stanton, who has constructed an elaborate chart of the southern portion of the strait, to which the description and directions herewith apply, and he is still closely employed in completing his survey of the whole strait. The portion sent home we understand will soon be in the hands of seamen, and will well illustrate the barrenness of a chart of that strait to which they have had and still have in some part to trust in navigating their ships. They will not be surprised at finding names mentioned in those

directions that this chart does not contain. Mr. Stanton's survey has shown that we knew but little of the strait, for we find a channel even discovered by him, which has very justly received the name of the Stanton Channel, that will become the high road of the strait. The work which he has sent home of it does him much credit.

The Banka Shore—Southern Entrance of the Strait.—Vessels from South for Banka Strait by the Stanton Channel will recognize Mount St. Paul by its flattened summit, with nipples on it of nearly the same elevation, and Gadong and Toboe Ali lama by their high peaks. The first has a gradual acclivity on its South-eastern shoulder to a peak 990 feet in height, with two others nearly as high, the western one terminating in a lower spur in the direction of Gadong Hill.

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

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

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

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

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

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

There is anchorage off Toboe Ali Fort in 4 fathoms, mud, with Toboe Ali lama Peak S.E.b.E. $\frac{1}{2}$ E., and Gadong Peak on with the fort N.E. $\frac{1}{2}$ N. Small vessels may anchor inside this berth, as the soundings are regular; but southerly and south-westerly winds throw

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

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

in a heavy swell and landing is then difficult. Toboe Ali Point is marked by white rocks, and a conspicuous tree on its summit, which is 213 feet high, and visible 14 miles off.

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

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

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

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

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

At Dahun Point the land becomes higher, with sandy beaches and rocky points; at four and a half miles to the N.N.E. $\frac{1}{4}$ E. of the point, is Wooded Hill, (round,) 315 feet high, conspicuous from the trees on it, and no other hills near it. The rocks West of Dahun Point, excepting Pulo Dahun, are covered at high water. The latter is thirty feet in height, and remarkable from its solitary tree, whence its name Dahun, in Malay meaning leaf or bough.

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

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

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

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

* More probably Labuh—an Anchorage. See Glossary.

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

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

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

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

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

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

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

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

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

Banks and Channels.—The Stanton Channel, between Lucipara and Banka, nearly three miles wide in its narrowest part, and with a depth varying from 7 to 20 fathoms, will be found to possess many advantages over that of Lucipara, being a mile wider, easy to ap-

proach by well defined hills on Banka, and adapted for the largest ships at any time of tide; advantages which Lucipara Channel does not possess. The island of Lucipara also is only a mile long, and no marks can be given to avoid rocks to the southward and eastward of it.

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

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

The depth between the Sumatra coast and the Lucipara shoals varies but little; and it is stated that in January, February, and March, when the N.W. monsoon is at its full strength, the southern current runs from fourteen to eighteen hours at 2 to 2½ knots, which an indifferent sailer could scarcely stem. It is also said, that in the latter part of the S.E. monsoon S.W. winds are frequently strong, with much rain; being against vessels bound southward through the Lucipara, but fair in the Stanton Channel.

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

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

Smitz Bank is a narrow ridge formed of four smaller banks, and is fifteen miles long, with 3 feet at six miles, 9 feet three miles from the N.W. end, and two patches of 3 and 2½ fathoms to the S.E. of them.

Panjang Hill, bearing N.E., leads N.E. of Smitz Bank, between it and the Nemesis Bank, in 6 fathoms at low water. Gadong Peak on with Toboe Ali Point N.E. ½ E., or Lucipara S.W., clears the S.E. end in 4 fathoms; and Lalarie Point N.W.b.W., or not approaching the bank in a less depth than 10 fathoms, clears the N.E. side.

Melvill Bank, five miles long, and nearly half a mile broad, is a quarter of a mile East of the S.E. part of Smitz Bank, with 7 and 8

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

† Lama, Old, Former. See Glossary.

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

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

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

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

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

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

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

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

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

Winds and Tides.—In the S.E. monsoon it is H.W. at F. & C., at Toboe Ali Point, on the Banka shore, at 8h. 30m. p.m. The ordinary

rise at springs is $10\frac{1}{2}$ feet, but sometimes 12 feet. The highest tide is generally two days after full and change, and the rate at springs $2\frac{1}{2}$ knots. The flood stream sets N.W. for about twelve hours, and the ebb the same period in the opposite direction, but both are sometimes influenced by the strength of the monsoon. A strong breeze from S.E. lengthens the flood stream to fourteen hours.

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

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

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

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

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

Navigation of the Strait.—Directions for Stanton Channel from the Southward.—Vessels entering Banka Strait by the Stanton Channel from South, on recognizing Mount St. Paul and Toboe Ali lama Peak, should approach the latter on a northern bearing, and when about three miles South of the Dapur Islands should steer N.W.b.W. to abreast Banka Point; then run along the Banka shore, passing Lalarie Point at above a mile and a third's distance on to Second Point. When Pulo Dahun bears North be very careful to avoid the spit extending S.E. from the shore mud flat, between that island and Banka Point. The Mamelon or Hummock, N.W. $\frac{3}{4}$ N., well open West of Pulo Bezar, clears this spit and the whole mud bank along the Banka shore; thence to the Tambaga rocks the bank may be avoided by not shoaling the water to less than 10 fathoms.

Vessels working through the Stanton Channel may approach the Dapur Islands on the South to half a mile. Between them and Toboe Ali the mud flat of the shore may be approached until Pulo Dapur bears S.E.b.E. $\frac{1}{2}$ E.; but when Gadong Peak is N.E. $\frac{1}{2}$ N., or on with Toboe Ali Fort, Pulo Dapur must not come southward of S.E.b.E. $\frac{3}{4}$ E. to clear the S.W. part of the Eastern Bank.

By not opening Parmassang Peak further West of Banka Hill than

N.W. $\frac{3}{4}$ N., the Melvill Bank will be cleared, and when Laboh Point is N.E. $\frac{1}{2}$ N., by keeping in more than 10 fathoms will clear all the banks on both sides. Lalarie Point N.W.b.W. clears the N.E. part of Smitz Bank.

The shoals of the Nemesis Bank should not be approached to less than 10 fathoms until Casuarina Point opens of Lalarie Point; and in rounding the latter be careful not to shoal the water under 10 fathoms, as the bank is here steep. Avoid the 'Tamabga Rocks by the same rule, and, until a more complete examination of the Banka shore is made, now work up from Second Point along the Sumatra shore.

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

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

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

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Glossary of a Few Malay Words of Frequent Occurrence in Maps, Charts, and Sailing Directions.

MALAY.	ENGLISH.	MALAY.	ENGLISH.
<i>Amas</i>	Gold.	<i>Banchah</i>	Marsh, morass.
<i>Anak, anak ayer.</i>	Child, rivulet.	<i>Barat, barat tapat</i>	West.
<i>Ang-in</i>	Wind.	..... <i>daya</i>	South-west.
..... <i>darat</i> ..	Land wind.	..... <i>laut</i>	North-west.
..... <i>laut</i>	Sea breeze.	<i>Batang</i>	River.
<i>Api</i>	Fire.	<i>Batu</i>	Rock, stone.
<i>Arang</i>	Charcoal, coal (?)	..... <i>barani</i>	Loadstone.
<i>Ayer</i>	Water, river.	<i>Bedil</i>	Gun, musket.
..... <i>baku</i>	Ice, hail.	<i>Belantara</i>	Forest, desert.
..... <i>dang kal</i> ..	Shallow water, ford	<i>Bender</i>	Port for trade.
..... <i>masin</i>	Salt water.	<i>Benhok, bungkok.</i>	Crooked, humped.
..... <i>sung-ei</i>	Rain water.	<i>Besar</i>	Large, great.
..... <i>tavar</i>	Fresh water.	<i>Besi</i>	Iron.

MALAY.	ENGLISH.	MALAY.	ENGLISH.
<i>Beting</i>	Sand-bank.	<i>Lang-it</i>	Sky, heavens, roof.
<i>Biduk</i>	Boat, Great Bear.	<i>Lang-kong</i>	Arch, crescent.
<i>Bintang</i>	Star.	<i>Lapong</i>	Gap, wide.
..... <i>kutab</i> ..	Pole-star.	<i>Laut, laut besar</i> ..	Sea, the ocean.
<i>Bras, nasi, imei</i> ..	Rice, boiled rice.	..... <i>solatan</i> ..	Southern ocean.
<i>Buah</i>	Fruit.	<i>Layen</i>	Sail.
<i>Buaya</i>	Alligator, crocodile	<i>Lembah</i>	Valley.
<i>Bukit</i>	Hill.	<i>Lichah, Lumpun</i> ..	Mud.
<i>Bulan, bulan baru</i>	Moon, new moon.	<i>Lima, lima blas</i> ..	Five, fifteen.
..... <i>purmana</i> ..	Full moon.	<i>Lubok</i>	Bight or recess.
<i>Buluh</i>	Bamboo.	<i>Mata</i>	Points of compass.
<i>Burong</i>	Bird.	<i>Merah</i>	Red.
<i>Damie</i>	Peace.	<i>Nang-ha</i>	Jack fruit(<i>artocarpus integrifolia</i>)
<i>Danau, tasek</i> ..	Lake, small lake.	<i>Nagri</i>	City, town, country
<i>Dapur</i>	Cooking place.	<i>Padang</i>	Plain, open space.
<i>Datu, datuk</i>	Chief of a tribe.	<i>Padi</i>	Rice in the husk.
<i>Da-un, dahan</i> ..	Leaf, bough.	<i>Padoman</i>	Mariner's compass.
<i>Dayong</i>	Oar, paddle, to row.	<i>Pahah, lembah</i> ..	Valley.
<i>Etam</i>	Black.	<i>Pahau, pasar</i> ..	Market pl., bazaar.
<i>Gading</i>	Ivory.	<i>Palamban</i>	Bridge.
<i>Gadong, godong*</i>	House.	<i>Panjang</i>	Long, tall.
<i>Gajah, gajah mina</i>	Elephant, whale.	<i>Panchuran, trusan</i>	Channel, passage.
<i>Gosong</i>	Shoal, sand-bank.	<i>Pasang</i>	Tide.
<i>Gamong</i>	Mountain.	..... <i>besar</i> ..	Spring tide.
..... <i>api</i>	Volcano.	..... <i>kadang</i> ..	High water.
<i>Jambatan, pa-</i>		..... <i>kring</i> ..	Low water.
<i>lamban</i>	Bridge.	<i>Paya, rawah</i> ..	Marsh.
<i>Jurang, churang</i> ..	Creek.	<i>Pendek, korang</i> ..	Short, wanting.
<i>Kalang an</i>	Dry dock.	<i>Pikul</i>	Weight of 133 lbs.
<i>Kampong</i> †	Enclosure, village.	<i>Pinang</i>	Betel nut.
<i>Kamudi</i>	Rudder, helm.	<i>Pisang</i>	Plantain, banana.
<i>Kapal</i>	Ship.	<i>Ponchak, haman-</i>	
<i>Karang</i>	Coral reef.	<i>chak</i>	Peak of a hill.
<i>Karra</i>	Monkey, ape.	<i>Prigi</i>	Well.
<i>Karsik</i>	Gravel, sand.	<i>Pulau, Pulo</i>	Island.
<i>Kayu, kayu api</i> ..	Wood, firewood.	<i>Putih</i>	White.
<i>Kilat</i>	Lightning.	<i>Rachun</i>	Poison.
<i>Korong</i>	Cabin, poop.	<i>Rakil</i>	Raft.
<i>Kota</i>	Fort, castle, tower.	<i>Rantau</i>	Plain, flat sea coast
<i>Kuda</i>	Horse.	<i>Rata</i>	Flat, level, low.
<i>Kuku</i>	Fluke of an anchor	<i>Rawang, rawah</i> ..	Swamp, marsh.
<i>Kuning</i>	Yellow.	<i>Rumah chuhei</i> ..	Custom-house.
<i>Kwala</i> †	Mouth of river.	<i>Rumpak</i>	Pirate.
<i>Labuh-an</i>	Anchorage, harbor.	<i>Sakat</i>	Bar, barrier.
<i>Lama</i>	Former, old, ancient	<i>Salat, sellat</i>	Strait of the sea.
<i>Lamong</i>	Buoy.	<i>Salatan</i>	South.

* Godong, corrupted to Godown.

† Kampong, corrupted to Compound.

† Kwala, written Qualloe.

MALAY.	ENGLISH.	MALAY.	ENGLISH.
<i>Salatan daya</i> ..	South-south-west.	<i>Timor</i>	East.
<i>Sampan</i>	Canoe, small boat.	..... <i>laut</i>	North-east.
<i>Sapah, sippah</i> ..	Quid of betel.	..... <i>tung-ara</i> ..	South-east.
<i>Sudugan</i> (Ar.) ..	Merchant, trader.	<i>Ubat bedel</i>	Gunpowder
<i>Sung-ei</i>	River.	<i>Ujong tanah</i>	Promontory.
<i>Tambaga</i>	Copper.	<i>Utara</i>	North.
<i>Tambang</i>	Mine.	<i>Utan, rimba</i>	Forest.
<i>Tanah, benua</i> ..	Land, country earth	..... <i>timor</i>	North-east.
<i>Tanda</i>	Beacon.	..... <i>sa-mata</i>	North-north-east.
<i>Tanjong, tapat</i> ..	Cape, point, cliff.	<i>timor</i>	
<i>Tasek</i>	Inland sea, lake.	..... <i>barat laut</i> ..	North-north-west.
<i>Teluk</i>	Bay.		

The vowels are to be sounded as in Spanish and Italian, or as in the following English words:—*a* and *i* as in ravine, *e* as in there, *o* as in go, *u* as in rule, *ai* and *ei* as in height, *g* hard as in get, *ny* as in singer not as in finger.

THE RELIGIOUS CONDITION OF SEAMEN.—*Conclusion.*

Theoretically, it seems unnecessary to do more than explain to a man what is his duty and what is contrary to it; but, as lessons for the intellect must be many times repeated before they are mastered, so religious truths must be brought constantly before the mind ere they gain their proper influence over us. Hence the argument for one more of these papers, that the sailor may be again reminded of well-known but forgotten, or rather neglected, facts; viz., that he is immortal; that as the tree falls so it lies, and that the rule is for the tree to fall in the direction towards which every day life has been inclining it; therefore, the proof of our being prepared for eternity is the style of our every day life; not that good works save us, but because those whom Christ saves He sanctifies and fits for Heaven, so that they gradually acquire heavenly tastes and bring forth holy fruits: hence, the older the Christian grows the more he realizes that he is preparing for eternity. That man is grossly deceived who thinks that the study of religion is not the highest employment of the mind, and that a fair proportion of our time should not be devoted to it. Surely all will allow that no man can be called really happy who cannot say, "I have made peace with God; I am relying on Christ's righteousness; I have asked for and feel the progress of sanctification in my soul, if it should please God to take me at this moment, through Christ I am prepared to die." Say, reader, is this the state of mind which true Christianity requires? Do not look at this friend, or that acquaintance, or at the hundreds of fellow-creatures whom your memory can quickly picture to your mind, but look to the Bible, the only communication we have from God, and it will compel you to answer, "Yes." Then the view of friends and acquaintances whom the most liberal judgement cannot

say are in this state, only adds to the internal evidence of the truth of the Bible, which tells us, that "straight is the gate and narrow is the way that leads to life and few there be that find it." A disinclination to look into this unpleasant subject is keeping its millions in the broad road. Will not my reader be persuaded then to go to Christ; He can put him into the right path and keep him in it, be his position the most difficult to be found on earth: whereas, without Christ any one of the millions of temptations around him can master him. This being my view, the young sailor cannot wonder at my pressing him to study his religion in spite of internal and external opposition. He, above all men, has the warning of danger staring him in the face, and will often have the fact forced on his notice that in a few hours he may be required to meet his God.

It is on this ground that I have previously hinted that it might be difficult to find a profession less opposed to vital Christianity than that of a sailor. Whilst at sea he is removed from temptations by which the young man on shore is always surrounded. He has before him God's works in all their grandeur; the heaven above and the sea below when acted upon by storm and cloud are awfully magnificent, and may well lead him to reflect that in a few short years he must appear before the Great Maker of all, when he will be called to account for the way in which he has spent his life. He will have many hours of night-watch alone, when it is his duty to keep awake, and when his mind must be employed on some subject or other. Surely he will sometimes think,—What am I? where am I? and whither am I tending? This too is at times when he could not be increasing his professional knowledge; for this latter must not be lost sight of, as God is honoured when the best Christian is also the best seaman in the ship. We must bear in mind that at the same time that we are told to be "servent in spirit, serving the Lord," we are taught to be "not slothful in business," and it is a very high Christian attainment when whatsoever a man does he does all to the glory of God, remembering—

"All may of Thee partake,
Nothing can be so mean
Which with this tincture—*For Thy sake*
May not grow bright and clean."—*Herbert.*

This makes religion part and parcel of the man instead of a mere Sunday employment. Yet this state is not to be attained by turning Sunday into a mere week day, as is the case with some; but by introducing more of religious thought, reading, and practice into our week-day life. How true it is that man in his natural state does not like religion, and therefore seeks out any invention to escape it, instead of falling at Christ's feet, confessing his dislike of it, and begging Him to work the necessary change in his heart. Oh! that every human soul was convinced that Christ is willing and able to do this for the very worst of sinners, and therefore for him.

These many advantages which the sailor has whilst at sea, are very much counterbalanced by the increased temptations which assail him when he comes into port. But he should bear in mind that the Power

which can preserve his body from danger afloat, can preserve his soul from moral danger ashore; and if he does not learn this at once, frequent failures will soon teach him that no other power can. In a foreign port the duties of his ship will give the zealous sailor full employment; and if he fills up his spare time by practising the necessary observations and calculations for rating chronometers, &c., he will not be often seen kicking his heels about on shore. Very soon, if he studies his profession carefully, he will rise to a position which will require his attendance there, so that he will eventually see as much of the shore as he can wish.

Whilst on the subject of foreign ports, a word or two may be said respecting the conduct of those whose national religion is the Christian, during their stay in places where Hinduism, Mohammedanism, or some other mistaken tenets are professed by the inhabitants. They, like all other human beings, are much more affected by example than by precept. Hence they judge of Christianity by its effect on the character of those who are supposed to believe its doctrines. So that the sailor who feels any regard for the will of his Maker, and for the spread of that perfect religion taught and illustrated by his Saviour, and shown forth in the Bible, will be very careful that nothing in his conduct shall in any way interfere with its progress. On the contrary, he will strive to help by his example to show what true Christianity can do towards repairing the fallen state of man, and thereby help missionaries in the good work to which they are devoted of striving to introduce it into the hearts of the benighted people around them. What do missionaries say on this subject? or, indeed, what does each sailor say from his own observation? Is it not too commonly seen that men born to the name of Christian, but not affected by Christian principles, take advantage of this relief from the restraint of custom in their own country to neglect religion entirely, so much so that they are glad of the opportunity opened to them for carrying on work the whole of Sunday, paying the natives to secularise the day which they themselves profess to keep holy, and often keeping their European crews at work also, or giving them money and liberty to waste their time in sensual enjoyment on shore; showing to the native population that Christians (for so they call themselves and such the natives suppose them to be) can surpass them in almost every vice. Such as these are the dead weight on a Christian country, helping by every action towards its downfall. But as ten righteous men would have saved Sodom, so the number of practical believers in Jesus is the true support of the greatness of their native land. May their number be increasing in England, for believers in the teachings of the Bible must feel that this alone is our real strength. "The righteous is bold as a lion, whilst the wicked flee when no man pursueth."

Commanders of ships must remember that the conduct of their crews in foreign ports is very much the result of their style of management. If they took care that all unnecessary labour was avoided, and headed the articles of agreement with a requirement that each man should attend Divine Service, provided themselves with a few clear,

simple, and short sermons to read to their men, and with a library, and also forbade Sunday liberty, they would do much, if their own conduct were consistent, towards giving their crew a start in the right direction. What is more beautiful than the Church of England service; it speaks words which ought to express the feelings of every Christian. If we do not feel with them, let us not quarrel with them and call them monotonous, &c., but let us go to Jesus in earnest prayer for new hearts and right spirits. Our human nature leads us to find fault with anything rather than with ourselves; while Christianity teaches us that our nature must be changed by a new birth; so that the actual state of the question is:—must the requirements of religion be lowered to suit man's natural tastes, or must man be lifted up to the spiritual life in Christ so plainly set forth in the Bible that "he who runs may read it." This bringing down of religion to the natural tastes of unchanged man, may be observed in much that is taught by the Romish Church; with what effect on the hearts and lives of men let the state of Europe at the time of the Reformation show.

It is, however, more especially on a ship's return home that the sailor (and here I include all classes) is so likely to be led into wasting his time and money in practices which injure him temporally and eternally. Freed from anxiety or restraint, he suddenly finds himself without employment and with plenty of money in his pocket. In this most trying time, if he has learnt to take a truthful view of all things so that he sees the Father, Son, and Holy Spirit in their true relations to fallen man; if he truthfully appreciates his soul, Heaven, and eternity in comparison with his body, this world, and time; if he has learnt what the Bible teaches of our being opposed by spiritual wickedness, and of the danger we are in of an eternity of misery; I say, if these truths have become actual facts to him by his religious studies and prayers whilst at sea, he will have foreseen his coming danger, and will go to Christ, confessing his weakness, and begging for that strength which is given to fallen man through Him alone. If he does this, the combined powers of world, flesh, and devil *cannot* master him, because He who is with him is stronger than all his enemies. Unfortunately, numbers like their sins too well to wish for any change, and as they have a kind of secret feeling that religion would require them to alter their mode of life, they avoid its every approach, trying to hide from their minds the very idea of death and judgment; knowing that they have in no way prepared for eternity, their only happiness consists in keeping it out of their thoughts; and it is really wonderful to the reflecting mind to think how well they succeed.

But we must remember that God's word is truth: Christ it was who said, "Thy word is truth," and that though heaven and earth shall pass away, not one jot or tittle of God's word shall pass away. Therefore, if men will be so blind to their eternal interests as not to live by what God's word teaches, they must bear in mind that if they leave this world unchanged, they must suffer the misery which it declares will come on those who neglect it. It will be no answer then to say, "I am better than others;" or, "It was customary to do thus

in the time I lived." Our great Judge will not ask us what others did; but He will ask if it was in our power to learn what His word teaches, and if we used the means He promised to bless, by which alone man can be saved. Then why do we not throw away every other rule of life, and take the pure word of God, for by it alone shall we be tried.

It is a sad argument for the fallen state of man, that with such a book as the Bible before us, so small a proportion of its readers are guided by its teachings. Who would think that all the nations of Europe are professing to be taught by a book the very essence of whose doctrine is that we should "love God with all our hearts and our neighbours as ourselves:" that we should be "meek and lowly in heart:" that we should be "poor in spirit:" that we should "love our enemies:" when in a generation which comes after this creed has been published for nearly 1900 years, the only way in which we can feel safe is by teaching every man in the land how to defend his fireside against the very possible, if not probable, attacks which may be made on it by some one or other of his *Christian* neighbours! Such being the case, the best way to prevent war is by being prepared for it. Let every Englishman act on the principle that the nation's strength lies in the number of her righteous men. But as our Saviour would not tempt God by casting Himself from the pinnacle of the Temple, so we have no right to neglect the common means of preserving our independence, even though quite sure that it is in God's power to defend us without a single soldier, if He had expressed it as His will that we should not have one. On these grounds let every Christian Englishman learn how to use the rifle, and pray to God that he may never be called upon to use it in deadly earnest; but that he may grow more and more in that spirit of true Christianity by which man is made to love his enemies, to bless those that curse him, and to pray for those that spitefully use and persecute him. When the majority of every nation shall act on these principles, we may turn our swords into plough-shares and pruning-hooks; but until that blessed time has come, it would be presumptuous folly not to keep up with the rest of the world in means of self-defence;—it would not be one iota more foolish to do away with the police force, and leave the ill-disposed of our own country to gain the upper hand unrestrained.

We have now hurriedly gone through the religious trials and difficulties of a sailor's life, and if it appeared that the slightest good would be done by an attempt to continue these papers, it should be made. I should be heartily glad to see the subject taken up by others more able than myself to place these all-important truths in an attractive light; for it seems very necessary that religion should be brought constantly to our notice; not, as has been said more than once, that the writer on religion brings, or wishes to bring, anything new to the notice of his readers; but that he wishes to make them notice old and neglected truths, which in millions of awful cases make no impression until death, as it were in the midst of mental thunder and lightning, awakens them to the fact that they are immortal beings stepping perfectly unprepared

into eternity, with neglected means of preparation on all sides of them. It is on these grounds that we beg our brother sailors to read their Bibles, and pray to God in Christ to help them to practise its teachings. Let a man be once convinced that the Bible is God's word, and he may shake off those enslaving rulers, *custom and inclination*, by taking the Bible as the rule of his life. Then our Saviour's masterly answer to Satan, "IT IS WRITTEN," would with him, also, overcome every opponent.

NAVIGATION OF THE PACIFIC OCEAN.

(Continued from vol. xxviii., p. 661.)

Outer Route.—Captain Blackwood, in recommending the outer route when a ship is making for the passages of Raine Island, says,—Ships taking the outer route, on leaving Sydney should make for the Cato Bank or Wreck Reef, and on no account pass West of the meridian of 153° E. South of 17° lat., so as to avoid the Alert Reef. The current is variable in these parts, but may generally be expected to set West about one mile per hour, or sometimes a little more.

Having passed Alert Reef a ship must not allow herself to be set over to the Barrier, but be careful of the Osprey Reef. But having rounded it, a course should be shaped so as to make the Great Barrier Reef in $11^{\circ} 50'$ S. and $144^{\circ} 10'$ E., to avoid being set North of Raine Island Entrance.

Raine Island.—Raine Island is situated nearly in the middle of a large opening in the Barrier, with a safe channel on either side of it. It is composed of coral and is deficient of fresh water. It is covered with a thick grass, and a reef extends from it about a mile E.S.E. A stone beacon in the form of a lighthouse stands on its East point, about sixty feet high, painted in vertical stripes of black and red. In clear weather it is visible eight or nine miles from a ship's deck. It is in $11^{\circ} 35' 49''$ S. and $144^{\circ} 6'$ E. High water at full and change is at 8h.; the rise and fall seven feet, or nine at the high tides. The flood sets W.N.W. and the ebb East about $2\frac{1}{2}$ miles per hour, full and change. In the interior of the Raine beacon is a small stock of provisions and water.

The outer points of the reef forming the entrance of the Raine Island Channel are S. 26° E. and N. 37° W. of the beacon. No bottom is found with 125 fathoms in any part of this opening, nor in the immediate neighbourhood of the island.

The reef, which continues to E.S.E. from Raine Island, (and on which the sea breaks heavily,) and curving towards the West, affords shelter to a small space, where boats may land and, when the weather is moderate, small vessels may anchor in four fathoms at a stone's throw from the shore.

South Channel.—A vessel entering by the South Channel of Raine Island may run to the westward, keeping half a mile from the reef which extends from it, and continue on until the beacon bears North, distant $1\frac{1}{2}$ mile; then steer W. 26° S. nine miles, taking care to allow for tide and current setting to the northward, when soundings will be found.

North Channel.—To enter by the North Channel, when half or two-thirds of a mile from the North shore of Raine Island steer S. 44° W. for five or six miles, or until the beacon bears N. 52° E.; then a course W. 26° S. for about three miles will reach the same position in soundings as if entering by the South Channel.

Having gained soundings from 26 to 30 fathoms, a look-out must be kept from the mast-head for several low coral reefs near the edge of soundings. They will be easily discovered by their white appearance contrasting with the strong colour of the surrounding water.

In entering the Barrier no alarm should be occasioned by the sea breaking when in soundings, arising from the East wind blowing against the ebb. The ebb stream is always weaker than that of the flood, which latter joins the general current setting North along the edge of the Great Barrier. This northerly current is the effect of the Trade wind, and must be carefully considered not only in making the Raine Island Channels, but when they are cleared, so as not to be set northward to the parts which have not yet been examined. Should a vessel take either of these channels on the flood at springs, there will be much risk of her being set to the northward by the current, and, should it be evening and getting late, anchorage should be got as soon as soundings are found. But if there is still plenty of daylight, a course may be steered for the Middle Banks, which are covered at half tide.

A course W. 26° S. 16 miles would reach the Middle Banks if assisted by a good ebb tide, but under all circumstances it will be proper to compensate for the effect of the northerly current by steering a point or a point and a half more southerly.

A ship having entered Raine Island Channel when the day is advanced should steer for the Middle Banks, which will be seen to starboard after having run twelve or thirteen miles from the edge of soundings; and at the same time Sir Charles Hardy Islands will be seen ahead. Anchorage may then be taken for the night abreast of the Middle Bank, in 12 to 16 fathoms. At daylight all the dangers of the route will be clearly seen from the mast-head, and care should be taken at all times to have the ship under handy canvas, with an anchor ready for letting go.

From the anchorage of the Middle Banks there are three channels for reaching Cape York: these are the North Channel, Pollard Channel, and Middle Channel.

North Channel.—If Raine Island be passed early in the morning and Middle Banks are reached towards noon, the North Channel is the shortest route for the Bird Islands, and by keeping West of these islands a good anchorage may be had in 10 fathoms, mud. In this route

steer W. 1° S. nine miles, allowing for the tide, so as to pass between the spit extending N.E. of Cockburn Reef and several detached banks North of it. The reef always breaks, and may be rounded even within half a mile. When abreast of its eastern extreme we may run W. 1° S. for five or six miles for the Cockburn Islands, as well as the edge of the Cockburn Reef, which, when it does not break, shows by the change in the colour of the water. This may be passed at a distance of half a mile until abreast of its N.W. extreme. Here the course should be altered to W. 18° S. for three miles, to avoid the rock, marked awash, W. 10° N. at $2\frac{3}{4}$ miles of the North extremity of Cockburn Reef. When this is passed the course should be shaped to go South of Bird Islands, passing South of Low Island, or run W.N.W. North of these islands for the Inner Route of Captain King, already described, and which leads to Cape York.

Pollard Channel.—A ship abreast of the Middle Banks may take the Pollard Channel for the Bird Islands, as it is perfectly safe, although narrow. In doing so, the East point of Cockburn Reef must first be recognized. A ship should then run along the edge of this reef at the distance of half a mile, that being always visible. The channel is formed by this bank on the North, and on the South by another long bank continuing nearly parallel to Cockburn Reef, which is equally perceptible by the change in the colour of the water; and in skirting the edge of Cockburn Reef care must be taken to avoid a small isolated coral rock which is near its southern point.

Tide rips will be generally met with in this channel, but the least depth in it is 25 fathoms. When the Hardy Islands are well open of each other and the northernmost bears E.b.N. and the southern one East, and when the largest of the Cockburn Islands is N.N.W., all the dangers of the Pollard Channel will be cleared, and a course may be steered so as to pass on either side of the Bird Islands. When these islands are gained all possible sail should be made for the Inner Route of Captain King to Cape York. It may be as well to observe that near the shore the bottom is mud, and that there are no hidden dangers. Bird Islands should be reached as soon as possible, for a ship once arrived at these islands may be considered to have passed all the dangers of Torres Strait.

In case of having passed far South of the Middle Banks in taking Raine Island Channel, a vessel might find herself near the Ashmore Banks. These banks (three in number) are not covered, but always visible at the distance of three or four miles. It may be advantageous, perhaps, in this case to take the channel leading to the Hardy Islands, and should water be required it may be had at South Island, where there is an abundance of it, especially from March to July. The spring will be found on the South coast, opposite a small rocky islet, which is about half a mile from the shore.

The Hardy Islands may be distinguished at a great distance, and are excellent points with which to determine the ship's position. They are separated by a narrow but safe channel, in which there is a depth

of 6 to 8 fathoms. These islands are inhabited, and anchorage may be taken up in the same depth on a bottom of coarse sand.

It is high water at full and change at 9h., and the rise and fall about 10 feet. The flood, as before observed, sets N.W., and with strong S.E. winds runs about $2\frac{1}{2}$ miles an hour.

Ships from the anchorage at the Hardy Islands have reached the Bird Islands without accident, but the routes they have taken have not yet been sufficiently examined, and Captain Blackwood considers it best to steer N.E.b.N. in leaving these islands for the Pollard Channel.

Middle Track.—With a certainty of fine clear weather, a vessel not drawing more than 13 or 14 feet of water may safely adopt the Middle Track. In which case pass South or North of the Middle Banks, steering .N. 18° W. thirty miles, keeping a good look-out for several low coral reefs near this route, and which will be distinctly seen if the sun is not ahead. Having run this distance, then steer N.W. twenty-five miles, and a sandbank will be observed to port and the wooded Arnold Island. Several sandbanks and reefs will be passed in this track on either hand. Ten miles E.b.N. of Arnold Island there are three sandbanks, surrounded by reefs. In this part the bottom is mud, and there is nothing to fear from hidden dangers. Pass between Arnold Island and the three banks abovementioned, and then steer towards Mount Adolphus, the summit of which is flat and can be seen at the distance of eleven leagues. Then make for Cape York, passing through a safe channel, four miles wide, between the *x* and *y* reefs of Captain King, the Brothers Islands, and several reefs to the eastward of them.

Pandora Entrance.—North of the entrance of Raine Island, in $11^{\circ} 26' 40''$ S., there is another opening in the reef, called the Pandora Entrance. A vessel intending to take this route across the Barrier Reef, as soon as in soundings should run between the banks, the shores of which are visible towards a sand covered with bushes, situated in $11^{\circ} 19' 30''$ S. From this bank, South of which several others are visible, she must run forty-eight miles to N.W., keeping between the banks, and thus gain the Middle Route, and stand on for Arnold Island.

So far, says Captain Blackwood in his two publications; and, in order to make the directions for Torres Strait as complete as possible, we shall add the contributions of the *Astrolabe* and *Zélée*, under Admiral Dumont d'Urville.

Route of the Astrolabe and Zélée.—The route that these ships took led them to the entrance of Bligh Channel. They passed North of Anchor Cay; then between the reef extending N.E. of Darnley Island and the detached reefs abovementioned. From thence North of of Nepean Island and near Stephens Island; then North of Dalrymple Island: that is to say, as far as this island the route takes Bligh Channel in its northern part.

From Dalrymple Island pass West of Rennel Island; then, skirting

the southern edge of the Great Warrior Reef, cross this reef East of Warrior Island by Mauvais Channel, which is extremely narrow. The large channel here, between Warrior and Dungeness Islands, in all cases is much better than Mauvais Channel, which well deserves its name. At the outlet of this channel the route lies directly North of Brothers Hills, and South of the small Nicholls Cays, which are about $4\frac{1}{2}$ miles North of those hills. From this island—composed of two high hills—it becomes nearly W.S.W. $\frac{1}{2}$ S. for the North coast of Mulgrave Island, leaving Orman Reef to the northward, which this navigator intended to cross in 1816, but could not. Passage Island, Jervis, and several smaller islands fringed with reefs, mark the northern edge of this channel, the westernmost of which is Farewell Island; and leaving to the South the Watson Cays, Possession Island, Black Rock, and the reefs which show along the North side of Mulgrave Island. As soon as this and Farewell Island are passed the ship is free of the strait, and enters the Indian Ocean.

We will now state Captain Bannatyne's opinion on the Outer Route, which he made from Sydney to India, passing Torres Strait by Bligh Channel. He left Sydney on the 1st July. On the 6th passed between Wreck and Kenn Reefs. On the 12th, towards midnight, he was between the Eastern Fields and New Guinea. At 10h. the following morning he saw the breakers of Portlock Reef; at 4h. in the afternoon he rounded their N.E. point, and about 10h. was steering for the entrance of Bligh Channel. The lead at 4h. in the morning gave 50 fathoms, sand and coral; at 8h., 40 fathoms, black sand. At 8h. 30m. he saw Bramble Cay, distant seven or eight miles N.W. At noon Stephens Island was three miles South, and at 4h. in the afternoon he anchored in 15 fathoms, on mud and sand, a cable's length from Rennel Island. The next morning at 7h. he was under sail; at 8h., abreast of Arden Island; at 10h. he rounded the North sides of Village and Cocconut Islands, and then the South side of the Sisters Bet, Sue, and Poll. At 4h. in the morning he passed between Double and Wednesday Islands, and at 6h. 30m. the West Point of Goode Island was one mile South. Thus by this route the strait was passed in thirty-four hours, fifteen of which were at anchor under Rennel Island; and it occupied only thirteen days from Sydney.

This channel, says Captain Bannatyne, one of the best that I have seen, appears to me to be destined to become the high road for ships running both ways between India and the eastern coast of Australia, and especially steamers. The New Guinea or Bligh Channel, according to Captain Bannatyne, is the best that can be taken, either from the Indian or the Pacific Ocean, and either with the N.W. or S.E. monsoon.

We have shown how opinions differ with regard to the routes that may be taken in these parts, and shall now leave captains to choose one from among them. Captain Robson, who has long studied this question, has thus summed up the advantages of both routes:—

The advantages of the Inner Route are:—First,—That this passage has been completely surveyed; that we have excellent charts of it,

accompanied by directions (those of Admiral King) which include its whole extent. Second,—That the entrance of the channel presents no difficulty, and there are no dangers in the vicinity of Breaksea Spit. Third,—That in this part of the channel (under favourable circumstances) a considerable distance may be navigated even at night. Fourth,—That anchorage may always be had when necessary. The inconveniences which this same route presents are those of navigating the narrow passages from Cape York to Sandy Cape, while the other route is made in an open sea. In fact, for the first 500 miles from Cape York the greatest care is required in the navigation, and the ship must anchor every evening. This occasions much trouble and loss of time. The remaining 300 miles may be run during the night, but only when it is very clear and easy to make the land. Another disadvantage of this route is the additional distance to be run, amounting to about 700 miles.

The advantages of the Outer Route are;—First,—That it is shorter than the Inner. Second,—That as far as 12° S. the ship is in an open sea. Third,—That the openings in the Barrier are now well known. Fourth,—That the distance from the Barrier to the Bird Islands, where the routes unite, is little, so that a vessel entering by either of these openings is not generally obliged to anchor more than two or three times, or four at most.

All this, says Robson, may be considered as true. It now remains to look to the Great Barrier itself. Commencing South and going North, we find the first and second passages, where in 1780 Bligh's launch entered, Captain Cook in 1770, and the *Hibernia* in 1810. Further North are the Nimrod, Brown, Winter, Stead, and Grove Passages, and others without name, which are also considered safe. These passages are well known. Then North of Raine Island there are the Yule, Fly, Cumberland, and Flinders Passages, the two latter near the Murray Islands.

Although, says Robson, everything appears to be in favour of the Outer Route, I consider the Inner one as the best on account of the single fact, which is of the greatest importance, that the weather during the S.E. monsoon is very changeable, and a clear sky is full often suddenly clouded by the breeze freshening and bringing rain and fog! A ship approaching the Barrier under these circumstances is exposed to considerable danger. She has no anchorage or shelter to run to, and must take her chance under the influence of a strong lee current and a strong wind blowing directly on the reef.

Robson then gives several instances in support of this opinion that need not be repeated here. He then compares the length of the passage by the Outer Route with that by the Inner one, the length and trouble of which latter he says are exaggerated. Thus, by the Outer Route the *Flora* made the passage from Sydney to Torres Strait in 22 days; the *Bentinck* in 28 days; the brig *Winter* in 22 days. By the Inner Route, a convoy of eight vessels, led by the steamship *Crocodile*, from Sydney, reached Booby Island in 23 days; the brig *Helen* and *George Hibbert*, both leaving Sydney and being obliged to anchor

several times, reached Booby Island in 29 days, 11 days of which were passed at the anchorage on account of bad weather, quite unusual. And then he concludes with directions for Stead Passage.

Stead Passage.—In some directions, he says, for Stead Passage it is recommended to make Yule Reef in lat. $12^{\circ} 2' S.$, and to pass round North of it for the Barrier. Notwithstanding my respect for the able seaman who has given these directions, I do not agree with him here, on account of the prevailing E.S.E. and S.S.E. winds. Stead Passage is situated at the end of a deep bay in the edge of the Barrier curving in to the West between lat. $11^{\circ} 57'$ and $12^{\circ} 7'$, and with S.E. winds a vessel passing North round Yule Reef, and from thence running for Stead Passage, would be in the bay to leeward, and would not find an entrance through the Barrier to leeward of this nearer than Grove Passage, if circumstances obliged her to enter it North of Stead Passage. Besides, Stead Passage is tortuous, and if the wind hauls southerly it would be difficult to cross the Bank. Moreover, there is a rock in the middle of it, and although it is considered to have sufficient water on it, such things are dangerous to pass when we have any doubt concerning them.

On the contrary, a ship should pass South of Yule Reef; then she would approach the Barrier from to windward, and the more to windward or southward the smoother the sea, because it is sheltered by that part of the Barrier Reef which projects to the S.E. By keeping to windward a ship would have the advantage of choosing which of the two channels would be most convenient. Thus, in approaching the Barrier the Nimrod Passage will be seen, and supposing that she does not desire to take it, she may run along the reef and will see successively those of Stead, Grove, and Raine Island to leeward, and may adopt either of them. But this opinion, adds Robson, is not only mine; Captain T. Johnson, of the *Recovery*, thinks so likewise.

The opinion of Captain Mackenzie on the Outer Route is also entitled to respect, he having much frequented these latitudes. The *Gambia* made the passage from Sydney to Booby Island in twelve days by Bligh Passage. Some observations which he made on it are also important.

The Prince of Wales Channel to Endeavour Strait, he says, seems to be preferable under all circumstances, for it is studded with islands, which are good marks. It is also safe, has no sunken rocks, has moderate depth, allowing of anchoring at any time and anywhere. But in Endeavour Strait the four known rocks there, as well as those discovered between Entrance and Little Woody Islands by H.M.S. *Rattlesnake*, make the navigation less safe, and do not allow of stopping through the night.

The route here followed, again says Captain Mackenzie, has all the advantages of the Inner and Outer Routes. The coast of New Guinea, as well as the Portlock and other reefs, do not admit the heavy sea that is found outside the Barrier. Besides which, here we have the lead to guide us. The sun is never ahead in Bligh Channel to dazzle with its light, allowing the reefs to be easily seen. It is not necessary

to keep further to windward than S.S.W., and should the wind fail there is plenty of room for working in. If a fog or bad weather obliged a ship to stop, anchorage may be had anywhere with convenient depth; and having gained N.N.E. of Darnley Island, all danger is over with a fine night, although without the moon a vessel should keep under handy sail as far as Wednesday Island, with a moon she would press all sail to get through. In conclusion, says Captain Mackenzie, this is the route which all merchant ships should adopt. He also blames those captains who from prejudice still adopt Stead Passage or any other in preference to that of Raine Island, especially since the beacon has been established on this island.

In the West monsoon, he says, when coming from the Indian Ocean, the best route to take for Raine Island is the Inner one of Captain King.

In favour of the Inner Route the opinion of King is very important;—that of Robson, and even Blackwood, also, who consider it as being the safest. For the Outer Route we have broad facts, in spite of the objections of Robson. This route is evidently the shortest, as Captain Blackwood admits. It is right that seamen should have these different opinions on the advantages and disadvantages of the two routes. Without deciding the question, they are good illustrations of it, and assist them in deciding on either when necessary. Perhaps when a ship is not pressed for time the Inner Route might be adopted; and the Outer Route when the saving of time is important. Hence the latter may become the route most generally adopted by merchant vessels, as a quick passage is the first consideration. In this case we should be for reaching Torres Strait by Bligh Channel and then the Prince of Wales Channel, and reverse it, according as we were going East or West.

(To be continued.)

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

So Vesuvius is to have an extinguisher at last.

A what?

An extinguisher, replied Arion to the incredulous look of Albert, as they were repairing to the Club. Not heard of the new company? Companies do everything now a days,—“Union is strength,” you know, as the old man told his sons over the faggot! And engineers, you know,—engineers stop at nothing! bold imitators, as they are, of Archimedes, who only wanted a fulcrum to move the world. That was not money, was it, that fulcrum?

No, replied Albert, that's the by-word of these vulgar days, without which nothing is done. 'Tis money moves the world now—“Qui fait le monde a la ronde,”—and right well does the engineer know it

in this island country of ours! But what is he going to do with Vesuvius?

Well, here's the plan, said Arion, reading the following statement:—"It is announced that a company of English capitalists have made an application to the King of Naples for a concession for the extinction of Vesuvius. The principal seat of the fire of that volcano is situated several thousand feet below the level of the sea. By cutting a canal which would carry the water into the crater, the fire would be completely extinguished, and the operation, which would only cost two millions of francs, would restore to cultivation land of ten times that value." There, what think you of that?

Think of it?—Why, that they'll burn their fingers with lava if they can! I suppose Mr. Lesseps is to be the engineer, and then he can turn the waters of his canal into the crater too! When the Mediterranean fails, he can drain the whole Red Sea, you know!

When his canal is made you mean? You have seen Spratt's investigations in the *Nautical*, and Stephenson's report?

Aye, yes, when—

Ho! here 's the boy!—Why down cast, Arion?—Coming to Club with long looks, eh? What's the matter now? All the world's troubles on your shoulders, besides your own?

Troubles, indeed, said Arion, to these remarks of Rodmond. Look here, see how emigrants and passengers are disposed of at sea in these days. See this extract which I have made. Aye, here it is!—"Buenos Ayres, November 26th.—The *Griffon*, Davis, arrived here, reports that on the 16th and 17th November, when about 200 miles N.E. of Cape St. Mary, she passed several bodies floating in the water. Nine were counted, and probably more were passed during the night. All, with one exception, were undressed or in night clothes,—among them a woman and a child; and all were of light complexion, apparently English or northern Europeans. No traces of wreck were seen."

No, added Rodmond, that ship had been run foul of,—perhaps run down—most likely,—and the other ship may have gone down too, and no one left to say anything about it.

But that's not all, said Arion. This letter, which appeared in the *Daily News* of the 17th of January, reveals an unfeeling state of things in a British merchant ship that could scarcely be credited. It is from a woman to her parents at Woolwich:—

Ship Accrington, at Sea, November 19th, 1859.

I now take the opportunity of writing these few lines to let you know some of the troubles I have experienced since I left your dear, happy home, on board of this dreadful ship. I can't tell you all, for my heart fails me to describe the hardships and most cruel treatment we have received since we left England: every day some poor mother lamenting for her child, and some of the women have lost three children each. It is a dreadful sight to see the poor children put overboard morning and evening, one after the other, day after day. We have not been two months on board yet, and we have lost fifty-six children! and mainly owing to the inattention of the doctor, who was known to be drunk for four days together, and not able to attend upon the dear little sufferers.

The captain is a most dreadful man; he does beat the poor sailors in a cruel manner. One poor fellow was sick in his bed, and he made him get up, and because he was not able to work, he beat him, and knocked him down and jumped upon him, and has almost killed him, and the crew say he will never get over it. Another instance of his cruelty,—we had a pig died the other day, and he blamed the steward and black cook for being the cause of its death. He flogged the steward, and then put the cook and him (the steward) in the pigstye, and chained the one on the one side, and the other on the other side, for punishment.

Another case of the cruelty of the captain and doctor,—one of our women's children was taken ill with scarlatina; it was ordered on deck with all the others, and kept there till late in the evening. A violent storm having come on, we were dripping wet. We were sent below; and the woman's child was so ill, she sent for the doctor. He came, and the captain with him. He ordered her to put the child into the wet bed that had been on deck during the greater part of the storm. She of course refused to do so, her child dying. They cursed and swore at, and the captain attempted to strike her, ordered her child to be taken from her, put her in confinement, placed a sentry over her, and kept her dear child from her all night! When crying for her child it was given to her. The doctor sent for it again, but this time it was too late, for she died in two hours afterwards.

I have just heard that the captain has been poisoned, and also the first mate, and they seem to say it was the steward that did it.

AGNES ELVIN.

The statements in the following extract from the log of the *Accrington*, reporting the death of the captain and mate, wear a remarkable coincidence with the foregoing; and if it be the same ship, relate a piece of retribution that is seldom met with in cases of ill treatment by the commanders of merchant ships:—

The ship *Hermione*, Captain Towill, which arrived at Liverpool on January 19th, left Macao 10th November. On the 17th November fell in with the ship *Accrington*, hence for Calcutta, in lat. 1° 40' N., long. 31° 31' W. This vessel made signals to the *Hermione*, and requested the latter to heave to, and the *Accrington* would send a boat on board her. The *Hermione* hove to, and a boat came on board her with the second officer, who was in charge of the ship. He reported that the master and first officer of the *Accrington* had died two days previously; that the vessel was taking out soldiers' wives and children to Calcutta, and that many children had died on board; and that the belief on board the *Accrington* was that the master and mate had been poisoned. Captain Towill requested this officer to make a written report for him to take to England. but he declined to do so. Captain Towill then sent on board the *Accrington* to know if the doctor of the vessel had any report to make, and for the log-book of the *Accrington*. The doctor sent a letter, which he requested Captain Towill to post on his arrival. The log-book was brought on board the *Hermione*, and the following extract is taken from it:—

Tuesday, November 15th.—10h. a.m., the captain came on deck and inquired what course the ship had made for the last two hours, and was answered E.b.S. He then gave orders how the watch was to be employed. The captain went below, the wind being light and variable; sail made (or sails trimmed) to the best advantage. The captain still below. 11h. 35m. a.m.—Observed the sun, and thought it very strange the captain did not come on deck, as was his usual custom. I then proceeded to take the sun, and found it dipped. I then inquired of the steward if he had called the mate, when he answered that the mate was sick and could not be seen. The doctor

coming on deck at the time, I told him to tell the captain that the sun had dipped, and he said he would do so.

At 1h. p.m. I was called down into the cabin, and found the captain lying in the water-closet. The doctor had him removed into the saloon, where the doctor's orderly (Scott) was ordered to attend upon him. The doctor and chief officer also very ill, affected in the same way as the captain—severe cramp, attended with vomiting and purging. The steward also taken ill in the same way, but not to such an extent as the doctor, captain, and mate. There were mustard plasters and hot tea immediately applied to the captain; and any prescription that the doctor ordered was carried out. At 2h. p.m. captain worse, and gradually sank, having lost his speech for the last half-hour, till 3h. p.m., when he expired, the doctor and first mate still suffering very severely from cramp, purging, and vomiting.

I then thought it advisable to confine the cook and steward, as I did not think it safe to keep them at liberty, as I had strong suspicion that something had been put in the cabin breakfast, as the captain, doctor, and mate were affected a short time after breakfast, which took place at 10h. a.m.

At 6h. p.m. the captain was washed and cleaned and laid out, and at 8h. p.m. prepared coffin (told the carpenter and joiner to prepare a coffin), as, after consulting with the doctor, the captain was to be buried at 8h. a.m. next morning.

At 8h. p.m. the doctor and mate were slightly better, but between the hours of eight and twelve the mate had a relapse for the worse, and although all that human skill could do for him was done, he gradually sank till a quarter past six, when he expired.

At 8h. p.m. (supposed 8h. a.m.) the captain was buried in presence of the whole crew, the doctor being assisted on deck to read the funeral service. After consulting the doctor, it was decided that the ship should put into Rio Janeiro to get assistance.

Five p.m., committed to the deep the body of Mr. Walter Bevan Cooper, chief officer, in presence of the ship's company, the service being read by T. Cunningham, officer in charge.

The above statement is a correct account of the occurrence that happened on board.

SAMUEL M'CUNE, Third Officer.
HENRY HALE, Boatswain.
CHARLES BAYTON, Quartermaster.

Mr. Cunningham reports upwards of fifty deaths (the foregoing letter says fifty-six) among the children by measles and scarlatina, the disease at present abating.

THOMAS CUNNINGHAM.

Bad, indeed,—very bad, remarked Albert, as the account was concluded. There's "something rotten in the state of Denmark," and it is to be hoped that some searching inquiry will be made into this subject before long. The characters of these shipmasters ought to be known. Something of their antecedents should be ascertained before they are entrusted with the lives of her Majesty's subjects to be disposed of thus. But in point of feeling, friend Arion, what think you of him who left his ship, the *Flora Temple*, the other day, wrecked on a reef in the China Sea, with no less than 850 coolies on board, while he and his officers and crew made a passage in his boats to Touron; and when the French authorities sent a steamer (the *Gironde*) with him to save them, they are stated to have found the ship,

but not a single coolie alive or dead! 850 is a large number to dispose of! Where were the captain's feelings then? asked Rodmond.

Why, I suppose nature and human nature are two different commodities sometimes, continued Albert. For you see the ship had been six days from Hongkong, and the coolies had already risen and had been put down. Then there was still a long voyage to be made, and mutiny once begun might be looked for again,—not a pleasant feeling for the captain to retire to rest with. *Cura quietem* implies trouble at best, and “care in rest,” and by a maritime casualty of this kind, as it is called, the evil is disposed of, leaving all feelings out of the question.

Scarcely credible, responded Arion, as they entered the Club. I hope this will be looked into.

Not a bit of it, rejoined Albert, as they took their seats.

The business of the Club now commenced, and the subject of wrecks was one of much remark;—the loss of the *Blervie Castle*, a distressing fatality close to our own shores. This ship left the Downs for Australia on the 17th December. It was concluded that she had got on the Ridge, one of those dangerous shoals in Dover Strait, for out of a crew and passengers of more than fifty not a soul had been saved; but some of her lower timbers had been seen on the Ridge Shoal, while other portions of her wreck had been found about Ramsgate and Dunkirk, and the adjacent coasts. It is supposed that she went to pieces soon after striking, and fell off the steep side of it into deep water, the weather at the time being so bad, and the sea so heavy, that no boats could have lived in.

This is one of those cases, observed the Chairman, of which he hoped it may be said that “out of evil there comes good.” It is very well known that a short time ago the Trinity Board placed a buoy to warn ships of their being near those dangerous shoals called the Varne and Ridge. Now this was virtually acknowledging that they should rather have been lighted instead. For if the buoy would be of service by day when there was a chance of seeing their breakers, surely a light was likely to be more serviceable at night when there was no chance of seeing them! What use, for instance, would the Foreland or Cape Grisnez Lights be in stormy weather, to a vessel near these shoals, when all around is black darkness; and continued storms of sleet and rain or snow prevent a ray of their light being seen? It is then that a light close to these dangers would be really serviceable to the mariner,—it is then where it is really wanted, and in his opinion would have prevented the unhappy loss of the *Blervie Castle*. He should be very glad when he was in a position in which he could state that this was the opinion of the Trinity Board, and that the position which that light should occupy was all that remained to be determined on the subject. He fully agreed with an opinion he had met with in a little book entitled “Lights in Lyrics,”—that even “if a light-vessel had been placed where the buoy is, that dangerous shoal (the Varne or Ridge) would be indicated to ships passing by night,

and the fatal wrecks on the Boulogne shore would be in future prevented,"—and he might add also those on the shoal itself, although he would not go so far as to say that a better position for a lightvessel than that of the buoy might not be chosen.

The Chairman then observed that wrecks of British shipping for the past year seemed to be as abundant as ever, whatever the Shipping Interest might be! Whether they should go on thus or not for the interest of the country, might be right in a certain point of view. On the authority of the *Shipping Gazette* for the past year the aggregate amount of each month appears to be as follows:—

January ... 177	April ... 159	July ... 81	October ... 269
February .. 165	May ... 110	August . 127	November . 305
March 151	June ... 94	September 140	December . 257

making a total of wrecks of British shipping for the year amounting to the enormous number of 2,035. This number, great as it was, he would not propose to look into now.

That much vexed question of what is termed the Shipping Interest, combining those great and numerous subjects affecting the profit and loss of trade carried on with ships, as well as in ships themselves, is to come before Parliament in the present session; and it is to be hoped will undergo a searching investigation, so that the causes of its deterioration may be removed, the real effect of certain proposed measures may be seen, and it is to be hoped that those only may be adopted that will tend to place British shipping in a fair and equitable position in reference to the carrying trade of foreigners. The subject, however, is one surrounded with difficulties, affecting great interests, and likely to meet with opposition in every stage of its progress. Mr. Lindsay (a well known name) had just published a little work in which the several points of this subject were fairly and openly stated. In his (the Chairman's) opinion, one of the great causes of depression was that the market was overdone. British merchant ships were too numerous. True, the number of wrecks was great;—the consumption, great as it was, was less than the supply; and even the building ports were beginning to find this out, as will be seen by the following from the *Wear*, which says,—

“The annual return of vessels built at this port during 1859, has just been completed, and shows a considerable falling off, even as compared with 1858, when it was thought the lowest point had been reached in ship production. Last year the number of vessels built was 100, with a total tonnage of 36,184. In 1858 the number built was 110, with a total tonnage of 42,003. In 1853, when the Australian gold discoveries had stimulated the trade to an extraordinary extent, the number of vessels built was 152, representing an aggregate tonnage of 68,479. The average then was 454 tons per ship, while last year the average had decreased to 361 tons. In 1853, London purchased 40 sails; last year, only 16. As a natural consequence of this state of things, prices have gone down to a corresponding extent. In 1853, a ship classed for ten years, with East Indian outfit, could

not be purchased for less than £15 per ton; at present, such a vessel may be had for £12 per ton. The following table will show the state of trade during the last seven years:—

Year.	No. of Ships built.	Total Tons.	Average Tons.
1853	152	68,479	454
1854	151	66,929	443
1855	151	61,159	405
1856	154	63,049	409
1857	143	54,780	383
1858	110	42,003	381
1859	100	36,184	361

The number of vessels building on the 1st inst. was 72, (including five iron ships,) with an aggregate tonnage of 27,210. Of these 18 are sold, and 54 unsold. On the same date last year there were 78 vessels building, with an aggregate tonnage of 32,789, showing a decrease of six vessels, or 5,579 tons this year."

There was no doubt but that such evils would gradually correct themselves.

The Chairman continued, considering that a brief report on two disastrous cases of wreck would be desirable, he had called for one from a Committee which he had appointed from among the members of the Club; and previous to some observations which he had to offer on them, with permission the Secretary would now read the report he had received, which was done accordingly.

The report stated that the loss of the two steam ships, *Paramatta* and *Indian*, were, in the opinion of the Committee, two nearly parallel cases of wreck, inasmuch as that neither of the vessels knew her true position; and that both might have been saved had they adopted a course quite open to them,—but here the parallel ceased.

With reference to the *Paramatta*, an entirely new vessel of the Royal Mail Company, wrecked on the Anegada Reef at the entrance of the Carribbean Sea, the Committee concurred in the opinion which seemed to be nearly general that her loss was to be attributed to an error in judgment. Every possible vigilance was exercised in her case: the low island of Sombrero could not be seen. Nevertheless the vessel, in conformity with practice, and desirous of making her destined port, shaped a course westward, which had been fatal to her. The Sombrero Channel was a well known entrance to the Carribbean Sea, but rendered somewhat dangerous by the current, and the low character of Sombrero Island on one side, and the Anegada Reef on the other. But in all other respects it was perfectly safe, and had a light been placed on that island, this and many other wrecks might have been avoided.

In respect of the *Indian*, your Committee find the published information is very scanty, but two leading facts appear that are not to be mistaken; one is the loss of the ship; and the other, the fault found with the charts. However, it seems certain that the *Indian* was bound to Portland, U.S., from Liverpool, and having made Cape Race,

(Newfoundland,) shaped her course to pass North of Sable Island: then, as she approaches the scene of her disaster, commences blame of the charts for giving wrong soundings.

Now it is admitted that the *Indian* did make use of her lead when she was running to the westward, South of Newfoundland; but did she do so on the coast of Nova Scotia? this does not appear. She is stated to have found the Banquereau Bank of the old charts, but that it had been omitted from hers, and although she found soundings, they did not agree with her chart,—on which account the charts are considered faulty, or, in other words, not trustworthy.

But it does not appear on what grounds this decision has been arrived at. It does not appear whether the *Indian* really knew her own position sufficiently well to accuse the charts thus, or even to assert that she had been influenced by currents at all. These are statements which can only be received as genuine where they are supported by a good reckoning,—when the position of a ship from a careful well kept dead reckoning is compared with her position deduced from astronomical observation,—then indeed, as the position from astronomical observation is always indisputable, (under good observations and good rating of chronometers,) and that deduced by reckoning after every allowance has been made, including the deviation as well as the usual variation, and drift, then the difference in these positions may be fairly attributed to current. Yet on all these points nothing appears in the *Indian's* case. The deep sea lead, it is allowed, was used, and as the soundings obtained differed from those of the charts,—the charts are *said* to be wrong. When the authority appears on which this is asserted by the *Indian*, we may then judge of its value. Meanwhile your Committee believe that there are many soundings laid down by scientific officers on the Admiralty chart of the part in question that are not to be doubted on any authority that the *Indian* could produce.

It appears that the *Indian* stood on to the westward, and nothing is said about her lead going as she approached the dangerous coast of Nova Scotia; but she was surprised by seeing Whitehead Island Light; and it appears also that this light was not marked on her chart! If the *Indian* was so confident of her position as to find fault with the charts in deep water, although her chart did not tell her this was Whitehead Island Light, she ought at least to have known by her course and distance run from Cape Race, that it was a light on the northern part of the Nova Scotia coast, for making which her deep sea lead would have warned her to get her hand lead ready, so that if she came suddenly into shoal soundings (as might have been expected) she would have felt her way before her. But nothing of this kind appears, and on goes the *Indian* still to the westward, and the account says at the rate of eight and a half knots.

Here the temerity of the *Indian* seems indeed to have been marvellous. On making Whitehead Island Light, whether it was in her chart or not, she should have known by her distance run from Cape Race that this must have been a Nova Scotia light, particularly as she

is so certain of her position in deep water as to say the chart is wrong; and then, bound as she was to Portland, her duty was evidently to *get an offing* from that dangerous coast as soon as possible, and then to have stood to the southward (allowing for a *decreasing* variation, as there is a change of about a whole point along that coast,) and to have kept at a safe distance from it for rounding Cape Sable for her destination.

But the *Indian*, according to her own story, persists in steering a W.b.N. course. Now, a W.b.N. course, even from Sable Island, would run a vessel on the Nova Scotia coast somewhere; for it would not clear Cape Sable on account of the change in variation, and therefore from anywhere North of the island that course must be still more certain of running a vessel on shore. And the *Indian* does consider herself North of Sable Island, for she alludes to her soundings and the Banquereau Bank not being in the charts. And therefore steering that course, as she did, she runs on shore, as might have been expected. So that neither the light she saw, nor her compass, was sufficient to keep the *Indian* from becoming an unhappy wreck!

The course which the *Indian* steered after seeing the Whitehead Island Light does not appear,—but it seems that the notice she had from this light to keep off the shore, and the chance she had of doing so from the wind drawing to the northward before she struck, and thus of shaping a proper southerly course to keep clear of it, was unheeded by her,—and the next we hear of her is that she struck on the Seal Ledge, not far from the harbour of Marie et Josef!

Now in the case of the *Paramatta*, it is generally allowed that a single light on Sombrero Island would have saved her from running on the Anegada Reef. In her case there was the most anxious look out. The lead was of no use, as is well known near coral reefs; but a nervous anxiety was most properly felt for her safety. Now in that of the *Indian* nothing is said of look out or hand lead, and even a first rate sea light is not sufficient to save her from destruction on the northern part of Nova Scotia *on her way to Portland!* Unhappily loss of life follows in this case, from which that of the *Paramatta* was entirely free. The misfortune of the *Paramatta* arose from over confidence and an error in judgment, (no loss of life,) and palliated by being often successfully followed before; that of the *Indian* from something very different, (with great loss of life,) and without the least claim for excuse about it. In fact, it appears to your Committee that she cast herself away in a manner discreditable to any ship that pretends to navigate the ocean.

Before concluding their report your Committee would make an observation on the charts of the part in question. They have been much calumniated,—yet on what grounds by the *Indian* herself has been herein shown. Such an opinion on her part stands unsupported by any published evidence. Had the *Indian* been in possession of a chart of the Nova Scotia coast, (No. 267 of the Admiralty catalogue,) corrected as it is, *not monthly* as somewhere stated, but whenever correct data are supplied; and if the *Indian* had made a proper use of it, she might have

navigated that coast in safety. She would have seen by it that the light of Whitehead Island is a flashing light. Indeed, this information she might have obtained for the cost of sixpence in the pamphlet of "British North American Lights," in which that light appears to have been established since 1853. But as the *Indian* was not bound to these places, neither this chart nor those on a larger scale, No. 2,517 of the Admiralty catalogue, nor No. 2,396, containing Beaver and Marie Joseph Harbours, with the scene of her disaster, could be expected to have been found on board her; nor were they necessary. Still, these were available, having been published in February of last year, on the large scale of one inch and a quarter to the nautical mile! In fact, notwithstanding the outcry that has been made for correct charts of the Nova Scotia coast, your committee find that the admirable surveys of Captain Bayfield and his successor, Captain Orlebar, including the whole coast from Cape Canseau to Halifax, are *already published*, and well might the former officer remark, as he has done, on the inaccuracy of the *previous* charts, when not only were the off-lying dangers of that coast miserably out of position, but also many others were added, being discovered by him, of which we knew nothing. These excellent charts could not be looked for on board the *Indian*, but a correct general chart might have been, and one not deficient of a light, as hers is stated to have been. But it suited her purpose to asperse not only the charts of the coast, but the character of the people of Marie Joseph, on charges of plunder, which are stated after inquiry to be not proved.

The Chairman in moving the thanks of the Club for these contributions to their papers, and concurring, as he did, entirely with their contents, observed that with regard to the *Indian's* wreck the public prints of the day had betrayed a more than usual amount of ignorance on the state of the charts. One had gone so far as to attribute her loss to "erroneous charts," and mentioned "the harbour of Halifax, where we have an admiral in command, with a fleet lying comparatively idle, whose duty it should have been to have employed some of his officers in surveying." The report just read would be sufficient to show how much knowledge of his subject this writer had! But, unfortunately, such wholesale exoneration of all blame on one vessel, the *Indian*, in cases where the law pressed unequally, as it did in that of the two vessels mentioned in the report, this unworthy exoneration from blame was not without its ill effect: it really contributed wrongfully to aggravate the fault of the other! It could scarcely be supposed possible that in these two cases of wreck the *Indian* had a first rate light to keep her off shore,—indeed, a second was almost within sight of her wreck,—while had the *Paramatta* had even one, where it is acknowledged it should be, *that* would have been sufficient to have saved her; for such a look out had been kept by this vessel that there can be no doubt the *Paramatta* would now have been a tight ship, new indeed as she was.

It is at all times painful to witness the suffering of our fellow men, and our sympathy is increased when this is produced by an unequal

pressure of the law. In the cases of these two wrecks, that of the *Paramatta* would not have occurred had there been a light on Sombrero; while the *Indian* was really warned by a light but did not profit by her warning to prevent her wreck. Which, now, was the most to be blamed? Whichever it might be, the *Indian* has been held blameless, while the *Paramatta* has been visited with severe censure. Such was the unequal pressure of the law. The reverse indeed of this might have been looked for.

He need add nothing further. The charts had been impugned, but only with effect among those who knew nothing about them; and if the remarks on them ever reached Admiral Sir Houston Stewart at Halifax in connection with his name, there can be no doubt that he would be highly entertained at the ignorance there displayed. However, in cases of this kind our sympathy for suffering from an acknowledged fault of erroneous judgment producing the loss of a ship, (where no loss of life has ensued,) increases with our surprise at seeing another considered blameless where the means of avoiding wreck were available, and yet where that ship and several lives are lost.

Much sensation was occasioned by these remarks of the respected Chairman, a deep feeling of commiseration for the effect of the *Paramatta's* wreck being general in the club.

The Chairman in conclusion alluded to the circumstance of the *Great Eastern* having been mentioned in the papers of the club, and stated that the recent loss she had sustained in her commander, Capt. Harrison, could not be permitted to pass unrecorded by them, not only on account of the conspicuous station which he held, but also of his high character as an officer and a British seaman. He was drowned by the upsetting of his boat in the Southampton Water on the 21st of January. His loss was deeply deplored, and the Mayor and people generally at Southampton had united in expressing their sense of it by every possible mark of respect to his memory, as well as affectionate condolence with his widow. The Chairman concluded by recommending that the following be registered among the papers of the Club in token of respect to departed worth.

“Borough of Southampton,—Death of Captain Harrison of the *Great Eastern*. At an assembly of the council of the borough of Southampton, held this day at the Audit House, in Southampton, Frederick Perkins, Esq., Mayor, in the chair, it was resolved unanimously:—‘That, in order to testify the respect of the inhabitants of the town to the memory of the late lamented Captain Harrison, this council recommend that the tradesmen of the town, will, on Thursday the 26th inst. close their establishments during the time Captain Harrison’s remains are being conveyed to the railway; that the church bells in the town do ring a muffled peel at eight in the morning, and again at eight in the evening of the same day; that the bells do toll a muffled knell from half past one to three on the same day, during which time the body of Captain Harrison will be conveyed from his late residence to the railway terminus; that minute guns be fired from the Platform Battery, from two till three of the said day.’—By order,

Charles E. Deacon, Town Clerk, Audit House, Southampton, January 24th."

Secretary's Mens.

The steam navigation on the Tigris, organised by Englishmen, is in full activity. A new steamer, the *Bagdad*, has commenced plying, and has numerous passengers.

The mammoth four-masted ship *Great Republic*, arrived at San Francisco on the 28th, in 120 days from New York. She had made one previous voyage in 91 days.

An order of her Majesty in council appears in Tuesday's *Gazette*, extending the time limited for payment of bounties of four pounds to able seamen, and two pounds to ordinary seamen, from the 1st of February to 31st of March.

The accounts from both the Atlantic and the Channel speak of most boisterous weather on the French coast during the last three or four days. Some of the steamers have remained in the English ports, not finding passengers willing to cross.

The U.S. surveying ship *Fennimore Cooper*, has been wrecked in the harbour of Kanagawa, Japan. All hands saved,—but the ship totally lost.—New York, 11th December.

Nautical Notices.

DIRECTIONS FOR THE COASTS OF SIND, ETC., AND APPROACH TO KURRACHEE HARBOUR.

(Concluded from vol. xxviii., page 685.)

Description of the Winds and Weather on the Coasts of Sind, Kutch, and Kattywar,—By Commander Grieve, I.N.

January.—Steady land and sea breezes between N.N.W. and N.N.E. The North-Easters on the coast of Sind and Kutch frequently blow fresh for three or four days at a time. Southerly winds are rare, but the sea breeze occasionally veers to S.W. Squally weather, with rain, sometimes occurs near Kurrachee.

February.—Winds become more variable. The North-Easters less frequent, and of short duration. Sea breezes between W.S.W. and W.N.W., and towards the end of the month you may get a hard blow from the westward for two and three days, particularly on the northern part of the coast. A heavy sea always accompanies these breezes, and renders the anchorage off Kurrachee, in the outer roads, very unsafe.

March.—Land winds become less regular. Sea breezes are gene-

rally moderate, between West and N.W., but blow very hard at times, with thick, misty weather.

April.—Winds much the same as last month. Weather generally hazy, with a very damp atmosphere. Swell from the westward at times.

May.—Winds moderate, West to W.S.W. Weather hazy, with very heavy dews. Clouds begin to gather, and much swell prevails from the westward.

June, July, and August.—The S.W. monsoon prevails, blowing moderate, and fresh breezes from West to S.W.b.W., with passing clouds and hazy weather. It becomes very cloudy as the season advances. Rain is uncertain, but may be looked for in the latter half of July; and when it falls it is generally accompanied by variable winds and thunderstorms. A heavy swell prevails during these months.

September.—Winds light from West to W.S.W. Squalls from the land may be expected. The weather is generally hazy, and the monsoon swell not quite subsided.

October.—Winds West to N.W., light, with occasional calms. Land winds begin to get steady about the latter end of the month. Weather generally very clear and pleasant, but occasionally dense fogs come off the land. Sea smooth.

November.—Land and sea breezes become steady, veering from West to N.E., the land winds towards the end of the month often lasting two days at a time, but not very strong. Weather generally very clear, and objects visible at a great distance. Remarkable terrestrial refraction prevails this month and the next, making distant objects appear much closer.

December.—Winds and weather the same nearly as described for January. North-Easters prevail, and the weather is cool and pleasant, with a remarkably clear atmosphere.

Commander Grieve's Report on the Currents along the Kattywar Coast.

Of these I have little knowledge except for short periods during the months of November and December, 1853. The current sets always to the N.W., from 1 to 1½ knot per hour, but liable to checks, particularly at night, when there is sometimes a drain in the opposite direction. After the middle of January I found no current; but again, from the end of March to the beginning of May the current frequently set to the S.E. at the rate of twelve to twenty miles per day; and there is no doubt that the S.E. current prevails along this coast throughout the whole of the S.W. monsoon, many navigators having experienced it as strong as thirty and thirty-six miles per day all along the coast from Kurrachee to Bombay.

Directions for Making Kurrachee Harbour in all Seasons, and for Leaving it in the S.W. Monsoon.

In the fair season, if coasting it up from the southward, after passing the Muneja Bank in 10 to 12 fathoms, the coast may be approached

anywhere to 5 fathoms, and good anchorage is always available. Manora Point will generally be seen from 15 to 16 miles off, and you may steer for it on any course between East and N.b.W. Anchorage off the port (in fine weather only), with the lighthouse N.E. to N.N.W., in soundings from 7 to 5 fathoms, sand and mud.

N.B.—It is not safe to anchor in the outer roads, off Manora Point, whenever there is a westerly wind blowing or expected.

During the S.W. monsoon, sailing vessels should make Ras Muari (Cape Monze), which is 18 miles W. $\frac{1}{2}$ N. from Manora Lighthouse, and keep to windward of the port if the weather is thick or if the tide does not suit for crossing Kurrachee Bar. Allowance must also be made for a strong set to the S.E., which prevails more or less throughout the S.W. monsoon. Do not bring Manora Point to the southward of East, or go under 15 fathoms near Ras Muari.

Nearer Manora Point a vessel may stand in to 10 fathoms. Vessels should not anchor off Kurrachee if it can possibly be avoided, as in many cases vessels have lost their anchors; but should it be actually necessary to anchor, the best anchorage is with the lighthouse N.E.b.N. to N.E.b.E., 1 to 1 $\frac{1}{2}$ mile off, in 7 or 8 fathoms, sand and mud; and care should be taken to veer to a good long scope of cable at once.

Manora Light is "Fixed," and may be seen 15 to 17 miles off in clear weather. Off the entrance of the harbour, the flood-tide sets to the westward, and ebb to the eastward, about three-quarters of a mile per hour. High water at the full and change of the moon 10h. 30m.; rise and fall 9 $\frac{1}{2}$ feet.

If leaving Kurrachee in the S.W. monsoon, a sailing vessel, as soon as she is clear of the bar should work off to the W.S.W. into above 15 fathoms, or ten miles from the lighthouse, before shaping a course to the southward. For although a vessel might lay along shore from the mouth of the harbour, yet the probabilities are that the current which sets to the S.E. would set the vessel in shore towards the mouths of the Indus, and she might get into inextricable difficulties; for it often happens that close in shore the wind lulls to such an extent that no vessel could beat off with it. In passing the Muneja Bank, she should not be in less than 20 fathoms, or about two miles East of the meridian of Manora. If bound to Bombay, it is well to know that a line from Diu Head to Bombay Lighthouse is the 20-fathom line; so that a vessel, by her lead and soundings alone, could make Bombay from the northward, by simply keeping in the 20-fathom line.

To Enter Kurrachee Harbour.

The lighthouse at Kurrachee is in lat. 24° 47' 21" N.; long. 66° 58' 14" E. Variation 0° 55' E.

On arrival of ships off Kurrachee, the water on the tail of the bar is signalled from a small staff to the right of the high flagstaff on Manora Point; this may be reckoned as the least water in the fair channel leading to the inner anchorage. It is high water on the bar at full and change of the moon at 10h. 30m., and the rise and fall of

the tide is $9\frac{1}{2}$ feet. The light at Kurrachee is "Fixed." It is 119 feet above the level of the sea, and may be seen fifteen to sixteen miles off.

No attempt should be made by strangers to cross the bar at night; only steamers do it with old practised hands.

If the weather permits, a pilot usually comes off to take the ship in; but in case one does not, the following directions will, if attended to, enable the master of any ship to take his vessel in himself.

For the Eastern Channel, steer up with the Middle Island and church in one, or bearing N.N.E. $\frac{1}{2}$ E. till the little staff on which the bar soundings are signalled is in one with the high flagstaff; then haul up North, passing between the two red buoys* off the tail of the bar, till you get the old beacon on with the right side of the coal-shed, which will lead clear up channel in not less than 14 feet, low water spring tides.

The western, or inner channel, which is not used by large ships, runs over the bar in a N.N.E. direction, a few hundred yards from the cliffs of Manora Point, and in all weathers is a very safe channel; and it makes a short cut to the anchorage compared with the eastern channel. The least water in the inner channel at low water spring tides is 10 feet. The channel, as yet, has not been buoyed, but the following are safe marks for using it:—Bring the triangular beacon (which is a mast fifty feet high, with a triangular grating on the top of it), on the eastern end of Keeamari Island, on with the centre of Jacob's Rifle-butt (a dead wall 100 feet long and 60 feet high on Scandal Point); and any vessel with these marks on will go clear over the bar by the western, or inner channel. It must be borne in mind that in crossing the bar it is advisable to keep two hand-leads constantly going, and as soon as you get a deep cast on the other side of the bar you must have everything in readiness, and haul the vessel up for Deep-water Point at once.

Sailing vessels having to cross the bar should have all their gear clear, and ropes coiled down clear for running, as the quick working of a vessel will often save her from running aground.

Deep-water Point is the first sandy point on the left, at the slope of the cliffs, and is easily distinguishable by a small battery, which is erected on it to command the entrance of the harbour. The small beacon near it, marked "Stump Beacon" on the chart, is now called Battery Beacon. Off Deep-water Point the depths are 6 to 9 fathoms, with rocky ground in some parts.

When once fairly into the inner harbour, that is to say, clear over the bar, whether by the eastern or the western channel, vessels should make for Deep-water Point, after which the anchorage can be selected at discretion, aided by a look at the chart.

* N.B.—The large red buoy off the tail of the bar is in the fair channel. The small red buoy, with a staff on the top, marks a nine-foot patch at the extreme tail of the bar, so do not come too close to it.

The flood-tide between the inner and outer buoys (of the bar) sets across the channel to the N.N.E., and the ebb to the S.S.W., for which due allowance should be made in crossing the bar.

To reach the extreme end of the harbour, there are two buoyed channels, East and West, round a large sandbank, dry at low water spring tides, called the Middle Ground. If bound up to Keeamari Point, the western channel is generally used. Both the lower buoys may be passed at a distance of 150 yards, and the upper one at about 250 yards, and then haul across N.E. for Keeamari. The depths in the channel are from 24 to 17 feet, but hauling across to Keeamari is little as 11 feet. The soundings off Keeamari Point are 3 to 3½ fathoms, and 4 fathoms close to the jetty. The eastern channel to Keeamari is considered by some to be the best, there being an average depth of 13 to 15 feet all the way up. After passing Deep-water Point, keep to the eastward of the mooring buoy (red), with the upper black buoy just open off Baba North Point. When at the tail of the Middle Ground you will have Battery Beacon between Manora Flagstaff and Lighthouse; then stand upon that line, hauling a little to the northward when abreast the upper buoy, so as to bring the beacon to the right of the lighthouse, and anchor in any convenient position.

The general strength of the spring-tides within the harbour is about two miles per hour; on the neaps about three-quarters of a mile, and sometimes scarcely perceptible. The tides set fair up and down the channels and creeks, except, as noted, at the bar, buoys, and Keeamari Spit (*vide* chart). Over the flat, to the eastward, they are very weak at all times.

Several charts of Kurrachee Harbour have been published from time to time, as the alteration of the bar seemed to necessitate: for instance, there is an old one by Carless, but now gone out of date; there is another, a skeleton one, just showing the bar, by Campbell; but the latest is on a very large scale, in two sheets, by Lieutenant Grieve, I.N. But even since this was published the bar has been found to alter, and luckily, as heretofore, much to its improvement, as the length of the bar appears to be shortened, and the inner channel to have washed deeper. But all above the bar remains as before, and a more precise or beautiful survey of it could not be desired.

E. F. T. FERGUSSON, *Lieut. I.N.*,
Indian Naval Draftsman.

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

Ireland, West Coast, sheet 12, Ballyheige Bay to Ballinskellig Bay, Comdr. Beechey, R.N., 1858 (2s. 6d.)

Admiralty List of Lights for the African Station, corrected by Comdr. Dunsterville, R.N., to February, 1860 (6d.)

Admiralty List of Lights on the South American and Pacific Stations, corrected by Comdr. Dunsterville, R.N., to February, 1860 (6d.)

Admiralty List of Lights for British North America, corrected to February, 1860, by Comdr. Dunsterville, R.N. (6d.)

Admiralty, January 21st, 1860.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 48.)

Name.	Position.	Where.	F. or R.	Ht. in Feet.	Dist. in Mls.	Remarks, &c. [Bearings Magnetic.]
61. Ostende	51° 14' 0" N., 2° 55' 9" E	Belgium	F.	189	20	Est. 1st Jan., '60. E. 9° N. 180 yards of former.
62. Craney Isld. Shoal	United States	Elizabeth River	F.	52	12	Est. 15th Nov., '59. West side of entrance. (a.)
Holmes Hole	Mass., U.S.	Martha's Vineyard	..	..	..	Discontinued 1st December last.
Long Wharf	Conn., U.S.	New Haven Harbour	..	..	..	Discontinued 1st December last.
63. Paredon Cay Grande	22° 29' 4" N., 78° 9' 7" W.	Cuba	Ff.	159	20	Est. 1st Nov., '59. Flash once a minute.
64. Maldonado Bay, E. pt.	34° 58' S., 51° 56' W.	La Plata	F.	152	20	Est. 1st March, '60.
Lobos Island	.....	Ditto	..	..	..	Discontinued 1st March, '60.
65. Point Rosseolo	37° 16' 8" N., 18° 27' 1" E.	Sicily, S. est.	Ff.	..	..	Est. 1st Dec., '59. Particulars not given.
Marsala	37° 48' 1" N., 12° 28' 7" E.	Sicily, W. ct.	Ff.	55	12	Est. 1st Dec., '59. Flash every three minutes. Present light altered.
66. Crookhaven, North side	51° 28' 0" N., 9° 42' 0" W.	Ireland	altered	..	..	Est. 1st Feb., '60. (b.)
67. Rudha Mhail	Islay Sound, N. entr.	Scotland	altered	..	..	Est. 8th Dec., '59. (c.)
68. Callela	41° 36' 5" N., 2° 39' 0" E. W. of village	Barcelona	Ff.	106	18	Est. 15th Dec., '59. Flash once in two minutes. (d.)
69. Grindstone Island	45° 43' 2" N., 64° 37' 4" W	Bay of Fundy	F.	60	12	Est. not stated. (e.)
70. Skuw Light Tower	.....	Kattegat	..	..	..	Ice in the Kattegat.—Signals from the lighthouse. (f.)
1. Port San Carlos	41° 46' 3" S., 74° 1' W.	Chili	Ff.	197	12	Est. 1st Nov., '59. Flash every minute once. (g.)
2. Porto de Barri	41° 6' 5" N., 16° 52' 7" E.	Adriatic	F.	21	5	Est. 15th Dec., '59. Red. At the outer end of the mole.
3. Columbretes	30° 54' N., 0° 44' 5" E.	Spain, Medit.	F.	190	21	Est. 30th Dec., '59. On Monte Colibre.
Barcelona	41° 22' 2" N., 2° 11' 2" E	Ditto	Ff.	190	21	Est. 30th Dec., '59. On Eastern Mole Head. A red flash once in four minutes. (h.)
4. Pancha Isld.	43° 34' 7" N., 7° 4' 2" W.	Spain, Atlan.	F.	79	9	Est. 30th Dec., '59.
5. Tenerife	.....	.....	..	..	..	Rock off East end. (i.)
6. Rockabill	53° 35' 7" N., 6° 0' 5" W.	Skerries, Ireland, B. ct.	Ff.	148	18	Est. 1st July, '60. Flash every twelve seconds. On the largest Skerry. (k.)
St. John Pt.	Dundrum Bay	.....	..	..	..	Will appear red on and after 1st July, 1860.

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

(a.) 62.—The lighthouse is on an iron octagonal screw pile foundation, 214 feet above high-water ordinary springs, and painted red.

A fog bell and horn are sounded alternately from the lighthouse in foggy weather.

(b.) 66.—This *fixed* light will continue to show *white* towards Long Island Bay and towards the inner part of Crookhaven; but it will appear *red* in the direction of the Alderman Rocks and Streek Head, or when seen bearing between N.W.½ W. and N.b.E. Vessels, therefore, entering Crookhaven, when passing these rocks should keep northward of the northern limit of the red light.

A beacon is to be erected on the outer eastern point of the Alderman Rocks, of which due notice will be given.

Bearings are magnetic. Variation 26¼° W. in 1859.

(c.) 67.—The present *fixed* light shows *red* from about N.N.E.½ E. to N.½ W. in the direction of Colonsay; but no light is seen over that island, being intercepted by it. The light is masked from about N.½ W. to N.b.W.½ W. in the direction of Oronsay; and shows *white*, as formerly, from about N.b.W.½ W. round westerly to N.N.E.½ E., excepting where intercepted by the land.

Caution.—Mariners are *again cautioned* that the white light when seen in any direction from the westward is a *warning light*, not intended to encourage them to pass between Islay and Oronsay, but to show a vessel her position, so as to enable her to keep off. The red light, which shows in the direction of Colonsay, shows they are within the line from the light to that island when navigating the northern part of the Sound of Islay. The white light when seen from any direction eastward of it is a leading light for the Sound.

Bearings are magnetic. Variation 26¼° W. in 1859.

(d.) 68.—Also, that the East point of Buda Island, at the mouth of the River Ebro, has advanced about four miles to the eastward since the year 1833.

From the East point of the island Coll de Balaguer castle bears N. 13° E.; Merla tower, N. 10° W.; Vendrell, N. 54° E.; and the South part of the Sierra de Monsia, N. 54° W.

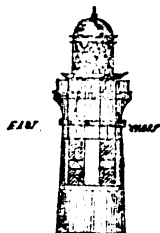
Bearings are magnetic. Variation 18° W. in 1859.

(e.) 69.—From it Cape Enrage lighthouse bears N.E.b.E.½ E. 10 miles.

Bearings are magnetic. Variation 19½° W. in 1859.

(f.) 70.—*Signals Exhibited from the Skaw Light Tower for Drift Ice in the Kattegat.*—The Danish Royal Marine Board has given Notice, that, this winter and in future, instead of the signal for ice in the Kattegat hitherto given by a white and blue flag on the Skagen or Skaw old lighthouse, signals will be made for drift ice in the Kattegat, in the Vinga Skærgaard, and in the entrance to the Sound, by means of a signal apparatus on the Skaw new light tower, as soon and as long as the ice is supposed by its extent or quantity to obstruct the navigation of these waters.

The signals will be made by four *black* tables on a *white* board set up towards the Sleeve or Skagerak in the wall of the light tower beneath the gallery, as shown in the following Table of Signals, and if we call the four black tables *a, b, c, d*, they will thus represent the position of the tables, the meaning of which stands against them. The stops are used here to indicate the tables not shown.



Telegraph Apparatus
on the
Skaw Light Tower.

1.	<i>a</i> <i>b</i>	Ice at the Skaw.	3.	.	Ice in the entrance to
	<i>c</i> <i>d</i>			<i>c</i> .	to the Sound.
2.	<i>a</i> .	Ice in Vinga Skærgaard.	4.	.	Ice at Frederikshavn.
	

5.	.	.	Ice in Læso Channel.	12.	a	b	Ice in Vinga Skærgaard,
	.	d			c	.	at the entrance to the
6.	a	.	Ice in Vinga Skærgaard,				Sound, and at Fre-
	c	.	and in entr. to Sound.				derikshavn.
7.	a	b	Ice in Vinga Skærgaard	13.	a	b	Ice in Vinga Skærgaard,
	.	.	and at Frederikshavn.		.	d	at Frederikshavn, and
8.	a	.	Ice in Vinga Skærgaard				in Læso Channel.
	.	d	and in Læso Channel.	14.	a	.	Ice in Vinga Skærgaard,
9.	.	b	Ice in entrance to Sound		c	d	at the entrance to the
	c	.	and at Frederikshavn.				Sound, and in Læso
10.	.	b	Ice in Frederikshavn				Channel.
	.	d	and in Læso Channel.	15.	.	b	Ice at the entrance to
11.	.	.	Ice in Læso Channel and		c	d	the Sound, at Fre-
	c	d	at the entr. to Sound.				derikshavn, and in
							Læso Channel.

On the Hanstholm Lighthouse in future no signal will be given for ice in the Kattegat.

If the light-vessel in the Læso Channel leaves her station for other reasons than on account of the ice, a large *red* ball, as hitherto, will be hoisted on the Skaw old lighthouse until the vessel has again resumed her station. This signal will be repeated from the Hirstholm Light tower.

For ice in the Great Belt and in Aarhus Bay will for the future be signalled by a *white* flag with a *blue* perpendicular stripe on the flagstaff at Forness Lighthouse; and for ice in the northern part of the entrance to the Great Belt and in the fairway West of Hielm Island, a similar flag will be hoisted on the flagstaff at Hielm Lighthouse.

(g.) 1.—*Caution*.—The mariner will observe, that the above bearing from the light to Huachucucuy Head, W.b.S., passes to the southward of Huapacho Point and Corona Head: vessels therefore approaching Port San Carlos from the southward, after rounding Huachucucuy Head, should continue steering to the north-eastward (keeping Corona Head to the southward of East to avoid the Huapacho shoal) until the light bears S.E.b.E., when they can haul to the southward and act according to circumstances.

Bearings are magnetic. Variation 19° E. in 1860.

(h.) 3.—In addition to the above light, and at the distance of 295 yards from it, another light of a *green* and *white* colour is shown at the extremity of the glacis, or ledge of stones, now being placed to protect the pier head.

(i.) 5.—CANARY ISLANDS,—*Sunken Rock off East End of Tenerife*.—The Mail Steamer *Cleopatra*, passing the N.E. end of Tenerife on the 8th of December last, observed a breaker on a sunken rock at about one mile and a half East (true) from Anaga Point, or E.b.S. from the part known as La Mancha Blanca. It appears to be known to the pilots of Santa Cruz as the Bajo de la Mancha, carrying 18 feet at low water (21 feet at high), and that the breaker only shows itself occasionally.

Caution.—As this danger lies in the track of vessels bound from the northward to Santa Cruz, the mariner must give it a wide berth, either by passing well inside or outside of it.

(k.) 6.—When seen from landwards bearing between N. $\frac{1}{4}$ W. and S.W.b.S. the light will appear red, and between the same bearings round eastward, or from seaward, it will appear of the natural colour.

Bearings are magnetic. Variation in 1860 $26^{\circ} 40'$ W.

New Books.

THE VOYAGE OF THE "FOX" IN THE ARCTIC SEAS. *Discovery of the Fate of Sir John Franklin and his Companions.* By Captain M'Clintock, R.N. Murray, London, 1859.

We left the *Fox* just escaped from her winter prison in the middle ice of Baffin Bay, and Captain M'Clintock bent on carrying out his plan for again proceeding to the North and trying his fortune at crossing from Melville Bay to Lancaster Sound. He succeeded in reaching Beechey Island, and had the satisfaction of performing an important part assigned to him of landing a tablet sent out by Lady Franklin to the memory of Lieutenant Bellot and our unfortunate countrymen who perished in the ice in Wellington Strait.

This duty performed, the *Fox* pursued her course in open water down Peel Sound, but found her progress soon checked by fixed ice, which obliged Capt. M'Clintock to proceed round North Somerset and by Port Leopold down Prince Regent Inlet to Bellot Strait, which, after some difficulty, he entered, and found a snug harbour on the North side of the strait, which he named Port Kennedy, after Captain Kennedy, who had first discovered the strait. Here was the grand point of M'Clintock's operations, where his ice journeys were planned, while the *Fox* was made as snug as fixed ice and snow embankments could make her. Nothing could be better in point of security and facility of access; besides which, when the time for departure arrived, the rapid current of seven knots per hour ensured the channel being open and an easy departure.

Still Bellot Strait was by no means a place to be selected for its quietness. From its very nature it was always under a high wind. It is about a mile wide, the shores mostly precipitous and high, and is formed by a huge chasm extending across the neck of the isthmus through which the water of the Western Sea is always rushing into Prince Regent Inlet, so that with this perpetual movement of sea and air it is one of the most trying to the mariner that could have been found in the arctic regions. Still, convenience of position and the safety of the vessel were main points thus secured by it, and certain duties being performed in the way of observations, the month of February last found the ice parties planned and ready to start on their important travels. To Lieutenant (now Commander) Hobson was assigned the western part of King William Land, and to Captain Young Prince of Wales Land from Lieut. Brown's furthest and from Bellot Strait northward, while M'Clintock himself proceeded to the Boothian shores towards the magnetic pole, all starting together on the 17th of February. The mode of conducting the travelling on these searching expeditions, by which the greater part of the shores in M'Clintock's map have been explored, and the interest in the proceedings at this part of the journal increases with every step. Near the magnetic pole an Esquimaux party is encountered, and relics are obtained, Montreal Island is again explored, and it is a remarkable fact that in the immediate neighbourhood of a point of land previously named in the chart Cape Lady Franklin, was found the important paper,—one of those bottle papers used for determining the currents of the ocean,—that revealed the long looked for tale of the fate of Franklin's party. The contents of that paper appeared in our last October number, and are well known everywhere now. The great object of the voyage was completed by the information which it imparted. The spell of years was broken. The sufferings of Franklin and his followers had long since terminated, and nought remained but to preserve this the only really authentic document of the fate of Franklin, and the vestiges obtained of his party for their sorrowing friends and countrymen. And thus to termi-

nate all prospect, not to say possibility, but certainly all necessity, for pursuing any further inquiry into this melancholy subject.

In taking our leave of this painful subject, one which has been followed through many a page of this journal with feelings of anxiety to do justice to the devotedness of Franklin and his party to their duty, let us not fail also to do justice to the services of one who has been his companion. In our last number, in alluding to Admiral Sir George Back, we inadvertently observed that he was with Franklin in one of "his disastrous expeditions." We should have rather said three,—for we find that Sir George Back served in the *Trent* in 1818, the land expedition of 1819 to 1822, when he saved the life of Sir John Franklin, and in that of 1825 to 1827, from the Mackenzie River to Bhering Straits, numbered respectively 45, 47, and 52 in our last December number, p. 619.

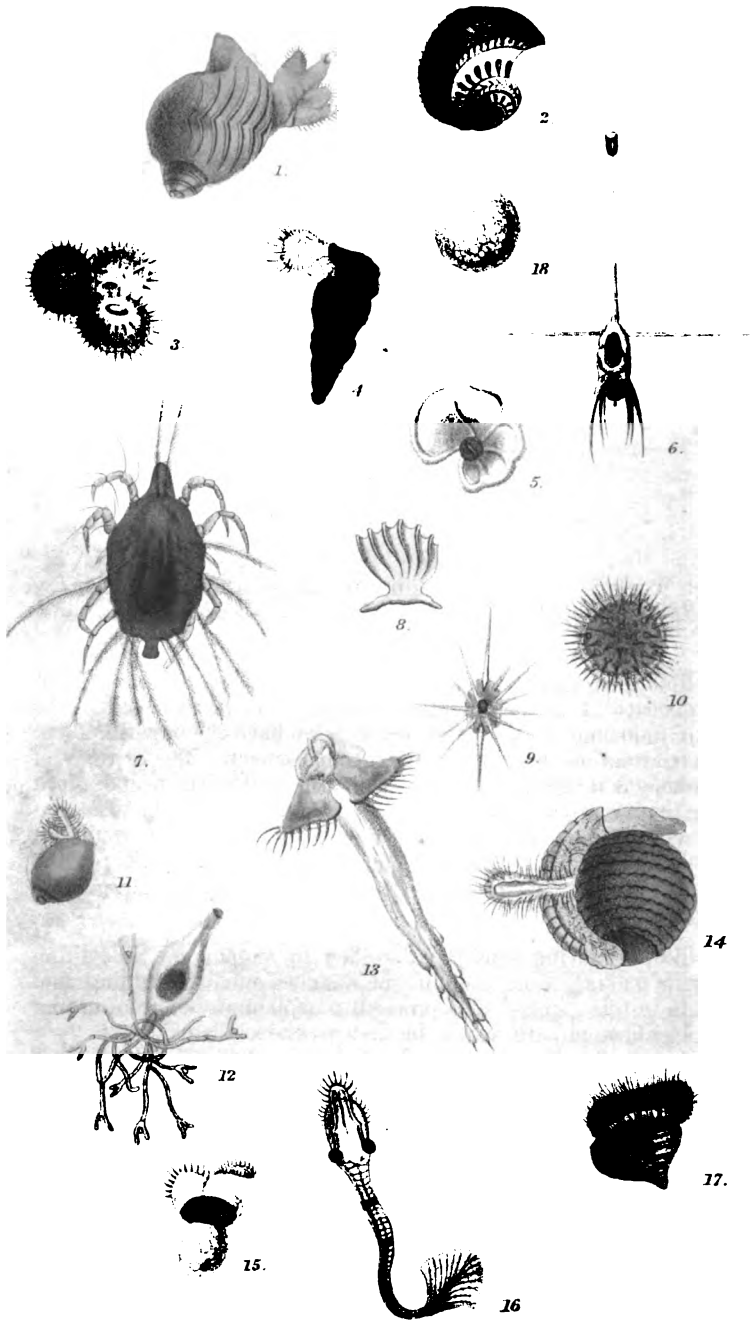
CHART OF THE N.W. COAST OF SOUTH AUSTRALIA.—The colony of South Australia has a busy officer in the person of Mr. B. Douglas, the naval officer of the province, and his works are of that valuable nature which must tend towards its intrinsic improvement. What for instance can be more important than a good correct knowledge of the hydrography of its shores, that will enable ships to approach them with confidence, and to make use of those harbours for purposes of trade or refuge that are to be found on the coast, but which have been hitherto unknown. We have already had occasion to mention Mr. Douglas' survey of the shores of Kangaroo Island,—Encounter Bay and its adjacent estuaries, with Spencer Gulf,—all of which reflect much credit on this officer, and we have now before us his chart of about 270 miles of the North-West coast of his colony, in which several bays, harbours, and islands appear hitherto unknown, but the knowledge of which must be important on many accounts, and this chart is accompanied by a description of the coast that renders it still more valuable. We cordially wish success to Mr. Douglas in his useful labours, and hope he will long be able to render them to the colony,—and through the colony to the scientific world in general.

OBITUARY.—In the *Lyttelton Times* of New Zealand, 5th October, 1859, we regret to see the death of a promising young officer, Lieutenant George Blackley Cooper, R.N., the son of the Rev. G. F. Cooper, M.A., of Yetminster. He served for several years on the coast of Africa, whither he again volunteered his services at a time when there was a scarcity of subordinate officers, which was considered so creditable to him that it was recorded in his favour at the Admiralty. He had previously served in China, and latterly in the Black Sea, during the war. His health being broken, he proceeded on half pay to New Zealand, where he died of consumption in a few months. He was a good officer and most amiable, honourable, and upright young man.

TO CORRESPONDENTS.

Mr. Hebden's communication shall appear in our next.

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THE
NAUTICAL MAGAZINE

AND

Naval Chronicle

MARCH, 1860.

ON THE MINUTE INHABITANTS OF THE SURFACE OF THE OCEAN.
By Captain Henry Toynbee, F.R.A.S. With a Plate.

(Concluded from page 66.)

We should be very glad indeed if this interesting paper, and that which preceded it in our February number, should prove to be the means of inducing those of our readers who have the opportunity to turn their attention occasionally to this amusement. The expence of a microscope is no great sum, and while this instrument would afford them in the leisure of a voyage a pleasurable pastime in the examination of what a single drop of salt water will show them, it would fill many a vacant hour with that admiration for the works of the Creator that cannot fail to elevate the mind and tend to improve the Christian.—ED.

The Editor* having kindly undertaken to employ his able lithographer in making some more of our sketches public by adding another plate to this paper, I will proceed to explain it before returning to the classification with which the first part concluded.

No. 1—was found on July 10th, 1858, in lat. $34^{\circ} 58' N.$, long. $38^{\circ} 17' W.$, the current during the preceding twenty-four hours had been $S. 79^{\circ} E.$, nine miles. The temperature of the surface water 74° . Two specimens were caught at that time, but no more were seen during the voyage, though, odd to say, in the end of July, 1859, we were passing the same part of the sea, and caught large numbers of them there.

* Through the liberality of the Board of Admiralty.

It is about the size of a large grain of sand. On looking into the mouth of the shell, the microscope revealed numbers of air bubbles, which looked like foam. Hence it probably derived its extreme lightness, for it floated lighter than cork on the surface of the water. This float would seem to ally it to the *Ianthinas*, though in this case it is inside instead of outside the shell. The shell was most fragile, so that most of the specimens are slightly broken; still their exquisite colours and beautiful wave-like markings are well preserved. The last specimens that were caught seemed to be remarkably phosphorescent. It was the brightness of the sea which induced a passenger to throw in my net; but I only saw a large number of dry ones sticking to the net next morning; unfortunately it was not washed in a bucket of clean salt water immediately after being towed, according to our usual custom.

No. 2—was found, January 1st, 1858, in $2^{\circ} 17' N.$, $84^{\circ} 50' E.$ Current in the last twenty-four hours N. $75^{\circ} W.$ 51 miles. Temperature of the surface water 81.8° . This is about the size of a small grain of sand. It is one of those cases where extreme modesty and great beauty are combined, for we had not a peep at the inhabitant, though its shell proves it to be a creature of great taste: the rich simple colouring and exquisite markings recalling to mind the Etruscan vases. We have specimens of it in three different bottles, and probably in many more, for we frequently had only time to bottle what was caught, so that a thousand shells may have been dropped into one homœopathic bottle, over which we could only spend a few minutes in examination.

Nos. 3, 5—seem to be related, I therefore speak of them together. They resemble the *Globigerinæ* brought up from the bottom of the Atlantic by the deep sea soundings lately made for finding the best bed on which to lay the telegraphic cable. This resemblance soon attracted the attention of our eminent naturalist, T. Huxley, Esq., F.R.S., &c. On my showing him the drawings and specimens, he said, that they might aid in solving the question as to whether the *Globigerinæ* brought up by the deep sea soundings lived at the depths in which they were found, or merely sunk there after death. No. 3 is about the size of a small grain of sand; its lobes are covered with spikes: it showed no signs of life, and I had supposed it to be the egg of some larger creature. No. 5 is about the size of a large grain of sand, though others much smaller were found; its colour was in some specimens brown, in others sea green; the marginal rim and curved lines dividing it into segments are transparent; its specific gravity is so great that I often wondered how it kept afloat, but suppose that in dying it parts with a small amount of air. Amongst the smaller crustaceans there are so many armed with jaw feet of immense relative strength, that probably much of their food consists of these small shellfish; if so, countless millions of these little creatures may sink to the bottom each day. The resemblance between No. 5 and some of the shells represented by Mr. Huxley in the specimen illustration sent by him to the Hydrographer of the Admiralty, of what

the deep sea soundings brought up, would lead those who judged by the unassisted eye to decide at once that they were the same; but he with his microscope will soon detect the real facts of the case.

No. 4—was found December 14th, 1857, in $9^{\circ} 35' S.$, $82^{\circ} 47' E.$ Current S. $66^{\circ} W.$, $23\frac{1}{2}$ miles. Surface temperature 81° . If mathematics will allow of such a term, this is a mere elongated point. Not much of the inhabitant was seen, though a drop of water was quite a large enough field for it to have gone through all its evolutions: its long cilium were in active motion. The exquisite shape and delicacy of the shell is beyond all praise: no refinement of labour has been spared to make the little creature comfortable, for the mouth of the shell seems to have been curved here and pointed there so that were it the most fantastic of beings it must be satisfied. Specimens of this shell have been seen in eleven bottles; but as they were frequently put in in a hurry, it is possible that amongst the hundreds in some of the bottles some of these lie unnoticed.

No. 6—was found March 6th, 1857, in $0^{\circ} 57' S.$, $82^{\circ} 49' E.$ Current N. $30^{\circ} E.$, 25 miles. Surface temperature 81° . Also on October 23rd, 1857, in $17^{\circ} 57' S.$, $37^{\circ} 7' W.$ Current S. $2^{\circ} E.$ 22 miles. Surface temperature 76° . The chief part of this creature was covered with a gelatinous matter, which, by the aid of a high power, was seen to be spotted alternately red and orange, with a thorny projection between each spot. The part rising or rather dropping from the centre of the cross, was exactly like the upper half of a wine-glass, even to its transparency, with a deep blue flower in it; one of the rectangular arms had part of its gelatinous coat torn off, which exposed a hard centre; particles of fluffy matter stuck to them with great tenacity, proving the coating to be thorny or gelatinous, or both; it floated lightly in the water, but did not remain upon the surface.

No. 7—was found and sketched by my friend, E. M. Wrench, Esq., Assistant Surgeon to H.M. 12th Lancers, who worked most ably during the time he was on board the *Gloriana*. At that time our researches were in their infancy, and we had to invent substitutes for our wants; tubes for catching he made from quills, until a broken hydrometer supplied one in glass. We commenced by examining a white glass bottle full of salt water. In this we saw the most minute particles in motion, and our great aim was to get one into our power; at last Wrench succeeded, and No. 7 is the revelation made by the microscope. I have not succeeded in catching another. Mr. Wrench commenced on the fresh water animalculæ in India, and though the Indian mutiny stopped his labours, I have no doubt now that peace is restored, the scientific world will soon hear from him on the subject. To return to No. 7, Mr. Wrench says, "November 11th, 1856, in $36^{\circ} 9' S.$, $73^{\circ} 13' E.$ Surface temperature 57.7° . This minute creature, which was very active, with a rapid darting motion, is here sketched as seen by transmitted light; by reflected light it looked of a pale yellow colour, and the body seemed to be covered by a tuberculated shell." I may add, that transmitted light was used for all the sketches given.

No. 8—was found December 17th, 1857, in $8^{\circ} 12\frac{1}{2}'$ S., $81^{\circ} 26'$ E. Current S. 74° W., 39 miles. Surface temperature 81° . This singularly shaped matter was found on this day only, but there are several specimens which have preserved perfectly. It is a mere speck, transparent, and did not show any signs of life. Mr. Huxley suggests that it may be a peculiarly shaped scale.

No. 9—was found October 10th, 1857, in $6^{\circ} 22'$ N., $25^{\circ} 20'$ W. Surface temperature 81.5° . It is very minute; its spikes are transparent, they have preserved well, but its centre has dissolved in the spirits and water.

No. 10—was found October 2nd, 1857, in $20^{\circ} 13'$ N., $25^{\circ} 43'$ W. Current N. 78° W. $13\frac{1}{2}$ miles. Surface temperature 77° . It is the size of an ordinary grain of sand. We once found something similar to this with the outer crust broken away, and a young crustacean exposed to view, resembling a sketch of an egg in Baird's work on the British Entomostraca.

No. 11—was found May 22nd, 1857, in $31^{\circ} 2\frac{1}{2}'$ N., $45^{\circ} 6'$ W. Current S. 14° W., 2 miles. Surface temperature 72.9° . And again, July 7th, 1858, in nearly the same place. This was our first shell, for although the net had been carefully towed from Madras to this place, and we must have had many thousands in the bucket, their minuteness prevented our seeing them. The bright colour of this attracted notice as it lay at the bottom of the white bucket. The next day, whilst making more minute search for shells, I happened to stir the water quickly round, when several small particles settled into the centre, and to my astonishment and delight they proved to be shells, so that five different kinds are dated May 23rd, 1857. From that time to the present the net has scarcely been towed for an hour without finding microscopic shells in abundance, even in the English Channel. On mentioning this to a friend, he said, why this might be turned to account by the Cornish pilchard fishers, for they keep numerous look-out men, employed to report when a shoal of these fish is in sight. Now it is probable that these fish do not make their appearance until preceded by the creatures on which they feed, which food might be discovered by examining the stomach of a pilchard, (if not already known,) then one of these nets and a cheap microscope would forewarn the fishermen that the food having come the pilchards are likely soon to follow: and we may suppose that the coming of other fish might be similarly foretold. Three sketches were taken of different specimens found May 22nd, they resembled each other in colour but not in shape; some seemed to have the active little creature (which was as pink as its shell) working through an opening or slit in the back of the shell. The shell has preserved well in spirits and water, though its colour has faded.

No. 12—was found February 1st, 1858, in $15^{\circ} 16'$ N., $81^{\circ} 3'$ E. Current N. 43° W., 14 miles. Temperature of the surface water 78.2° . This creature is about the sixth of an inch long: it contracted and expanded its flexible mouth, and kept its feelers in constant motion.

No. 13—was found October 10th, 1857, in $6^{\circ} 22' N.$, $25^{\circ} 20' W.$ Surface temperature 81.5° . This creature was about the tenth of an inch long; the shape and colour of its head reminded us of some kinds of fungi. Its cilium moved rapidly, and it had a vermicular motion throughout its whole body.

No. 14—was found April 15th, 1858, in $23^{\circ} 15' S.$, $62^{\circ} 53' E.$ Current South, 2 miles. Surface temperature 77° . It is about the size of a moderate grain of sand, and seemed to surpass all we had previously found in beauty of shape and colour. Its cilium were in active motion, and it was difficult to discern whether it had five or six arms; but its characteristic was the well finished slit formed in the outer lip of the shell through which one arm of the creature protruded; I suppose a kind of look-out station, from which its cilium could detect the approach of an enemy. We have found turreted shells and atlantas with a similar slit.

No. 15—was found December 17th, 1857, in $8^{\circ} 12' S.$, $81^{\circ} 24' E.$ Current S. $74^{\circ} W.$, 39 miles. And again, May 8th, 1858, in $33^{\circ} 37' S.$, $28^{\circ} 44' E.$ Current S. $82^{\circ} W.$, $8\frac{1}{2}$ miles. Surface water 72.7° . This latter position was in the warm water which comes down the East coast of Africa, and brings with it the inhabitants of tropical seas,—for the same reason flying fish are often seen off the Cape. This is the smallest creature we attempted to bottle, and I have spent a few minutes in examining a homœopathic bottle before finding it, so we may say it beats homœopathy. Its cilium were kept in motion and it has preserved its shape in spirits and water. The first specimen showed no cilium, so that it may be a lava progressing to maturity.

No. 16—was found April 17th, in $25^{\circ} 39' S.$, $69^{\circ} 58' E.$ Current in two days N. $9^{\circ} E.$ 26 miles. Surface temperature 76° . It is about one third of an inch long. Its mouth would lead to the idea that it belongs to a minute family of sharks, its tail resembling that of the sagitta. Be it what it may, such a mouth and eyes seem sufficient to paralyze its food. We may hope that, like Dr. Livingstone's lion, it causes no sensation of pain or fear after the first grip, and from the size of its mouth one would think that at any rate it left but little time for either.

No. 17—was found February 4th, 1858, in $17^{\circ} 11' N.$, $83^{\circ} 24' E.$ Current N. $66^{\circ} E.$, 15 miles. Others were caught in the southern Indian Ocean, one with a foot as well as cilium. They are mere specks; the shells have preserved well, and kept their colour. Near the Azores, in the North Atlantic, July, 1858, we found a large number of pecten shaped shells very similar to these, but a little larger. They were partially transparent, and we could see granular particles within, but none showed any signs of life, even in cases where the shells were broken. It is also remarkable that although the net was towed during the whole of a calm day, no other creature was caught, whilst there were thousands of this dormant pecten shell. It has preserved well. May it be that some creature provides a separate shell for an ovary, the diphyda seems to do something of this kind.

No. 18—has been lifted out of place in the sketch, it being put in after the others were numbered. It was found in *great abundance*, November 23rd, 1857, in $39^{\circ} 52' S.$, $59^{\circ} 12' E.$ Current S. $54^{\circ} W.$, 30 miles. Surface temperature 58° . It was the size of a small grain of sand, containing green granules; the number of these varied very much in the different specimens, some had none, being merely transparent balls; others were more than half full. They floated freely in the water without remaining on the surface, but showed no signs of having the power of locomotion. The sea was particularly green, may it not have taken its colour from them. They are probably eggs.

We will now proceed with the classification where we left off in the last number.

Sub-Class of the Heteropoda.—Family of the Atlantida.

Atlanta Peronii. This exquisite heteropod, with its clearly defined eyes, is too well known to require description; yet, repeatedly as it is to be met with, I could never resist the temptation of putting it under the microscope to admire its delicate colouring and graceful curves. To the East of the Cape they are almost invariably lilac, but in sailing westward there is a marked change to rich yellowish-brown. In some of the specimens which I have bottled both the animal and the fragile keel are well preserved. It is one of the most widely spread and abundant molluscs: from $31^{\circ} 39' N.$, temperature of surface water 72.3° , into $38^{\circ} 10' S.$, temperature of surface water 59° , and up to the Bay of Bengal, temperature of surface water 83.3° , not a suitable day for towing the net passes without producing some.

Family of the Sagittida.

The sagittæ are among the most common of the inhabitants of the sea. We have found them in the greatest abundance in the tropics, where the temperature of the surface water varies from 78.2° to 83.6° ; but we have found them also in $34^{\circ} 59' S.$, temperature of surface water 64° ; the rough weather of high southern latitudes affords comparatively so few opportunities for towing the net, that our finding fewer there may be thus accounted for. Some are much thicker than others, and seem to have lobes of eggs in them; others look more like the shed skin than a living animal. Some have been sketched and some bottled; in which state they preserve well, though they lose their transparency. In some cases we have found parasitic distomæ in them, and in $7^{\circ} 42' N.$; $26^{\circ} 49' W.$; current, S. $57^{\circ} E.$ 54 miles; temperature of surface water, 80° , we found sagittæ with a bright blue line along the centre, but the colour was gone when I put one under the microscope. From their fan-tails to the first sectional line in their bodies there was distinct circulation of large white globules down both sides and up the centre. In the smallest one bottled, just above the two side flaps near the tail were two small greenish spots, in which there was a quicker circulation of small granular particles. Again, in one I noticed a small spot in the centre of

the body, just below the jaws, where there was a quick revolving motion.

Sub-Class of the Gasteropoda.—Order of the Branchiata.—Family of the Eolida.

Glaucus. Was too opaque for the internal structure to be visible. It floated on the top of the water without apparent motion, but when placed under the microscope the cilium fringing the appendages at the side were working rapidly. Sketched and bottled.— $1^{\circ} 5' S.$; $85^{\circ} 13' E.$; $S. 73^{\circ} E.$ 58 miles; 81.2° .

Again, bottled.— $29^{\circ} 16' S.$; $44^{\circ} 58' E.$; $N. 37^{\circ} E.$ 18 miles; 78.5° .

Again, very large. They emitted much matter when put into spirits of wine and water, but have preserved well. They were taken from a long line of foam and yellow matter, and closed up when touched.— $6^{\circ} 57' N.$; $26^{\circ} 29' W.$; $S. 63^{\circ} E.$ 31 miles; 83.3° .

Family of the Planorbis.

Seven different kinds have been found all the way from England to India, through all varieties of temperature, on any day that the sea was smooth enough to allow of the net being towed. In $0^{\circ} 47' S.$; $86^{\circ} 35' E.$; temperature of surface, 81° ,—

“Day after day, day after day,
We stuck, nor breath nor motion,
As idle as a painted ship
Upon a painted ocean.”

and the net brought us in such myriads of shells that they afforded unceasing interest in their extreme beauty both of form and colour. All the varieties are sketched, and many specimens of each bottled. The brown shells keep their colour well, but the delicate lilacs and pinks fade. In some the inhabitants are preserved; in others they have vanished, and thus show the mouth of the shell more clearly than when the animal was alive. Some have proved themselves far more abundant by night than by day.

Family of the ?

Twenty different kinds have been found, with the same wide range of position and temperature. The inhabitants vary much; sometimes they have long arms richly ciliated, sometimes a distinct foot and operculum, and sometimes a flexible mouth, which waves to and fro as if in search of food;—while in the shells themselves the variety of graceful markings is endless. All the varieties are sketched, and many specimens of each bottled. No. 14 seems to explain how it is that one arm often seems as if protruded through the shell, for the shell has a well formed slit in it.

Pecten (?). These have not been so commonly found as the other shells, and are extremely minute. They have been sketched and bottled in $30^{\circ} 59' S.$; $79^{\circ} 50' E.$; $N. 74^{\circ} E.$ 18 miles; 68.9° . 8°

12½' S.; 81° 24' E.; S. 74° W. 39 miles; 81°. 17° 11' N.; 83° 24' E.; N. 64° E. 15 miles; 78.5°. 35° 3' S.; 21° 41' E.; N. 30° E. 31 miles; 65°.

From some we have seen a long fleshy foot and a few cilium protruded; from others a complete coronet of cilium working rapidly (see No. 17); but in 40° 46' N.; 31° 5' W.; temperature of surface water, 67.8°, where we found them in extraordinary numbers, and scarcely anything besides them, the shells gave out no signs of life, and when I cracked a few there was nothing to be seen inside but a heap of little granules,—these were visible inside the shell before it was broken.

Family of the Ianthinidæ.

Ianthina communis. This beautiful shell is common in warm seas in smooth weather, and was found in particular abundance in 34° 34½' S.; 77° 26' E.; current, N. 44° E. 17 miles; surface temperature, 67°. The whole surface of the sea was spotted with their swimming floats, and some shells we found without floats, attached to the lower surface of velellas. Those which were swimming free were almost always accompanied by a small crab of the same lovely lilac as themselves.

Again, near St. Helena, temperature of the surface water, 72°, they abounded. Sketched and bottled.

Ianthina No. 1 (?). I am inclined to place this exquisitely marked shell in the family of the ianthinidæ on account of its swimming float. It has only been found in 34° 58' N.; 38° 17' W.; current, S. 79° E. 9 miles; temperature of surface water, 74°. Sketched and bottled. It has retained its rich colour in spirits and water, but the mouth of the shell was accidentally broken.

Again, near the same spot, when several specimens were bottled. (See explanation of No. 1 at the commencement of this paper.)

Kingdom of the Cephalopoda.

Cephalopods (?) with bodies shaped like a beehive and ten finger-shaped appendages at the larger end; they appeared ciliated, and within them was a smaller circle with five appendages of the same shape also ciliated. Bottled and well preserved.—29° 30' S.; 45° 32' E.; S. 42° E. 9 miles; 76.7°.

Kingdom of the Articulata.—*Class of the Crustacea.*—*Sub-Class of the Entomostraca.*—*Order of the Cirrhipedia.*—*Family of the Lepadida or Anatifida.*

Anatifa lævis. Found many swimming free.—30° 17' S.; 79° 53' E.; N. 55° W. 4 miles; 68°.

Anatifa lævis attached to velellas; in which case the sucking tubes of the latter had entirely disappeared. Bottled and well preserved.—31° 34' S.; 77° 24' E.; N. 44° E. 17 miles; 67°.

Anatifa lævis. A larva in its second stage of development.—34° 43' N.; 41° 53' W.; S. 28° W. 37 miles; 69.1°.

Family of the Balanida.

This was opaque white, and caught in the net as if swimming free, though generally seen attached to the seaweed. The tendrils were not visible to the naked eye, but under the microscope were shot out suddenly with the operculum at intervals, and worked rapidly while exposed. Sketched and bottled.— $29^{\circ} 39' N.$; $42^{\circ} 14' W.$; S. $18^{\circ} W.$ 9 miles; 77° .

Order of the Parasita.

Caligus. This parasite was found swimming free, though the way in which it clung to the side of anything in which it was placed seemed to indicate its parasitic habits. Sketched.— $3^{\circ} 49' N.$; $28^{\circ} 2' W.$; N. $50^{\circ} W.$ 30 miles; 79° .

Parasita. This creature was new to me. It seemed to have the habit of remaining for a long time motionless, so that its uniformity of colour was the only cause of my picking it out of the bucket. It is provided with a large spiral (?) sucker under the centre of its head, and immediately above it are two eyes on a black formation, which turned from side to side with great ease, carrying the eyes with it. On each side, and a little before its eyes, it has two very strong claws. About two-thirds along its body from the head are four rows of feet; the two foremost rows it moved to as great an angle forward as they now are backward. When I wished to return it to the water it held so firmly to the slip of glass that I could not wash it off. The part of the body behind the feet, together with the colour, reminded me of a fox. Bottled and perfectly preserved.— $12^{\circ} 48' S.$; $74^{\circ} 30' E.$; N. $24^{\circ} W.$ 17 miles; $80-8^{\circ}$.

Order of the Copepoda.

This order is by far the most numerous of any that we have found at sea. In all weathers and temperatures they abound; even without towing the net, a bucket of water drawn fresh from the sea frequently contains some of them. They may probably form a large ingredient in the food of the magnificent ocean birds, for we found considerable numbers of the red pontella (described as whale's pasture by Roussel de Vauzème) in a whale-bird shot off the Cape. Baird's name for them of *cetochilus* seems appropriate, for an old whaler on board my ship professed to recognize them directly as whale's food. To give the latitudes and longitudes of the most common kinds would induce so long a string of figures that I think it enough to remark that scarcely a day passes between England and India without seeing some of them. The only exception, indeed, was in $40^{\circ} 46' N.$ and $31^{\circ} 5' W.$, where the net was towed during a whole day of calm without one crustacean being found.

Family of the Pontellida.

Anomalocera. The anomaloceræ are placed by Baird in the family of the cyclopida; but here was a copepod agreeing in all other

spects with his account of *A. patersonii*, yet possessing two large and compound eyes. There was a dark spot near the beak where the eye is usually placed, but also between the antennæ two distinct eyes, the circles on which moved regularly to and fro like a piece of machinery. This has been remarked also by another observer, who says—"Eyes arranged in threes." I watched it for a long time with a small lens in a glass tube filled with water, when the antennulæ kept up a very rapid motion, throwing the water towards the third pair of foot jaws, whence it passed on towards the tail, which it evidently used for propelling itself through the water. In these, as in *A. patersonii*, the male has the swollen hinge-joint on one horn, and the large horn on the fifth pair of feet.

Corycæus orientalis. This pretty little copepod varies in its colouring, only remaining constant to being always brilliant and always numerous.

Corycæus (?). This brilliant copepod has two large and distinct eyes, in which it resembles *corycæus orientalis*, but there are points which incline me to think it only a larva.

Copilia mirabilis. $0^{\circ} 57' S.$; $82^{\circ} 49' E.$; current, N. $30^{\circ} E.$ 25 miles; temperature of surface water, 81° . Dana has a figure of this caught near the Kingsmill Islands in the Pacific.

Copilia (?). A dark and sluggish copepod, not quite so common as the rest of the family. We have found some specimens with a large bag of mulberry-coloured eggs on each side; others shine with a metallic lustre.

These have been sketched and bottled. They have preserved their shape well, but their beautiful blue colour turns to a dirty red in spirits and water.

Family of the Cyclopida.

Calanus pellucidus well deserves to be placed at the head of this family from the quantities in which it has been found in all parts of the voyage. It is highly phosphorescent, so that even by daylight I have caught it by its own light, which it emitted at regular intervals, and when it was placed under the microscope could distinguish a brilliant blue light, situated about the first pair of thoracic feet. They are generally light blue,—the colour of the sea, in fact,—but vary in colour without my having remarked a difference in any other particular.

Calanus. The light from this yellow cyclops was very brilliant, while the scarlet marks on its back, shaped like a candle-stick, might have supplied some fanciful comparisons to the writers of older times.— $25^{\circ} 14' S.$; $83^{\circ} 47' E.$; $72^{\circ} 3^{\circ}$.

Calanus. A brilliantly coloured copepod, in which I watched some of them eject the colouring matter, which was probably their food.— $3^{\circ} 25' S.$; $82^{\circ} 30' E.$; $79^{\circ} 8^{\circ}$.

Calanus. A minute blue calanus with a few eggs attached to its tail setæ. We have found them of all colours, and, so far as I remember, the setæ were delicately plumose in those that bore eggs.

Calanus. This extremely small cyclops deserves especial mention from its beauty. The tail setæ are remarkably long and delicately feathered with yellow plumes.— $15^{\circ} 32' N.$; $82^{\circ} 25' E.$; $N. 15^{\circ} W.$ 26 miles; 76.9° .

Twelve more individuals which have been sketched and bottled might here follow, but they vary so little that it would be a mere repetition. They lose their beautiful colours when bottled, but otherwise preserve well.

Anomalocera patersonii is very frequently to be met with; but was found in extraordinary abundance and many specimens bottled in $34^{\circ} 18' S.$; $25^{\circ} 31' E.$; 65.8° .

Again in $25^{\circ} 39' S.$; $60^{\circ} 58' E.$; $N. 9^{\circ} E.$ 26 miles; 76.2° .

Harpacticus acutifrons. This singular little cyclops attracted my attention from being able to move both in the water and out of it. In the water it ran along the bottom of the bucket and the side of the tube by which it was caught; and when put on a slip of glass in a drop of water it worked its way out of the water and ran along the glass. It is one of the most minute of these little organisms. Sketched.— $15^{\circ} 19' S.$; $7^{\circ} 54' W.$; $S. 7^{\circ} W.$ $4\frac{1}{2}$ miles; 73.7° .

Canthocamptus virescens. While in the Sargasso Sea, in the North Atlantic, I had many pieces of gulfweed caught and washed in a white bucket of salt water. Hundreds of this little creature were found creeping about the sides of the bucket, some with bunches of purple eggs, some without. Sketched.— $30^{\circ} 0' N.$; $45^{\circ} 13' W.$; $N. 78^{\circ} W.$ 2 miles; 71.1° .

Canthocamptus. This little calanus had a bunch of eggs attached to it, but moved with extraordinary rapidity, probably from the great length of its legs. Sketched, bottled, and well preserved.— $24^{\circ} 20' S.$; $62^{\circ} 53' E.$; South 2 miles; 77° .

Canthocamptus (?). We have never found this when the temperature of the surface water was very low. Its motion in the water is peculiar, creeping along rather like a small animal than the sudden darts of most of the cyclopidæ. They seem longer lived than most of their family, for not only did one bear remaining thirty-six hours in a glass of salt water, but if left dry for five or even ten minutes a drop of water re-animated them to full activity. They have been sketched and several have been bottled very successfully. In some cases a few light brown eggs were attached to the hind feet, and in one some of the larvæ. One of the young ones was swimming free, and resembled the young of the cyclops engraved by Vøgt.

Miracia efferata. This is one of the copepods most generally found. We have caught them both with and without eggs, and their brilliant colours also vary very much. Sketched and bottled.

Alteutha (?). These brilliant crustaceæ are common in all latitudes. Even their eggs partake of their bright colouring, being of a rich blue. Sketched and bottled.

Euchæta communis we have found several times, but by no means so universally as to justify the name of communis. Sketched.— $3^{\circ} N.$; $27^{\circ} 2' W.$; $N. 42^{\circ} W.$ 14 miles; 80° .

Euchaeta diadema is far more common than *euchaeta communis*, and is often found with its pretty bunches of blue eggs. In February last, in $16^{\circ} 21' N.$; $82^{\circ} 37' E.$; current, N. $61^{\circ} E.$ 14 miles; temperature of surface water, 78.5° , we found a perfect living specimen which appeared brown to the naked eye instead of red as usual, but the microscope revealed that it was covered with a most minute alga (?) with white stalks and brownish-yellow cups. It was sketched and bottled, and both it and its parasites are tolerably perfect after the lapse of some months. Since then both a *calanus pellucidus* and a cypris have been found in the same condition and bottled.

Sapphirina bella. This beautiful copepod abounds in warm latitudes. Moreover, in May, in $35^{\circ} 26' S.$; $18^{\circ} 40' E.$; current, N. $78^{\circ} E.$ 2 miles; temperature of surface water, 63° , thus being on the western edge of the Agulhas Bank, I was led to tow the net by seeing brilliant blue sparks in the sea about 8h. a.m., which turned out to be sapphirinas of the brightest blue. Many specimens have been bottled, and some have retained their metallic lustre.

Cyclops (?). This formidable crustacean is frequently to be met with, for surely the third pair of foot-jaws must appear as very ogre's claws to whatever it feeds on. The thoracic feet are four in number, black and plumose like those of *pontella valida*. This has been sketched and many specimens bottled, which have retained both shape and colour. Some of the bodies were of a shining black, and the horns frequently tipped with black.

Family of the Cyprida.

I cannot attempt to describe the different genera to which these belong. They are found almost as commonly as the shells, and many have been bottled and preserved well. Some were very large and active, and looked full of orange-coloured granules. On one I could see through its shell that an alga (?) was growing on its body similar to that seen and sketched on an *euchaeta diadema*. It has been bottled.

Sub-Class of the Podopthalma.—Order of the Stomapoda.—Family of the Mysidea.

Siriella vitrea is very frequently found. It has been sketched and bottled, and is in a good state of preservation.

Leucifer aestra is found frequently in all warm latitudes. It has been sketched and bottled, and is in good preservation. One of the specimens has scarlet foot-jaws.

Family of the Thysanopoda.

(?). This stomapod, with its brilliant scarlet stars, is frequently to be met with in warm latitudes. The first time that we found it, in $24^{\circ} 36' S.$, the net was thrown over by my second-officer during the middle watch on account of the very phosphorescent state of the sea, but I have not remarked that any that we have caught had a particular power for emitting light. Sketched and bottled successfully.

Larval stomapod. Very active. Sketched and successfully bottled.— $31^{\circ} 2' N.$; $45^{\circ} 6' W.$; S. $14^{\circ} W.$ 2 miles; 73.3° . $11^{\circ} 51' S.$; $74^{\circ} 38' E.$; N. $47^{\circ} W.$ 14 miles; 81.2° . It has also been found in other warm latitudes.

Order of the Decapoda.—Sub-Order of the Macrura.

Larval macroura. Sketched.— $0^{\circ} 57' S.$; $82^{\circ} 50' E.$; 82° .

Again. Bottled.— $12^{\circ} 48' S.$; $74^{\circ} 30' E.$; N. $24^{\circ} W.$ 17 miles; 80.8° . This has emitted much yellow matter, but has preserved its shape.

Larval macroura. The legs were in such rapid motion that it was difficult to make them out distinctly. Sketched in $34^{\circ} 53' S.$; $22^{\circ} 38' E.$; S. $77^{\circ} W.$ 15 miles; 64° . Bottled in $26^{\circ} 48' S.$; $57^{\circ} 55' E.$; N. $85^{\circ} E.$ 29 miles; 77° .

Larval macroura. This was first found in about ten fathoms water— $16^{\circ} 18' N.$; $82^{\circ} 22' E.$; N. $15^{\circ} W.$ 14 miles; 75.5° ,—being on a part of the coast where the influence of the Bundamalunkah, Godavery, and other rivers shows itself in reducing the specific gravity to 1021.1, I was inclined to consider this as a "long shorer," but found it next in $6^{\circ} 22' N.$; $25^{\circ} 20' W.$; N. $44^{\circ} E.$ 111 miles in four days; 81.8° , where the specific gravity of the sea water was at its more general average of 1025.5. It has since been repeatedly met with at sea. Bottled and well preserved.

Podopthalmæ with branchial feet finished off like a camel's hair brush. Bottled.— $30^{\circ} 46' S.$; $37^{\circ} 11' E.$; 68° .

Again. Bottled.— $19^{\circ} 14' S.$; $4^{\circ} 32' W.$; N. $58^{\circ} E.$ 15 miles; 72° .

These, with several other individuals of the same class which have been bottled, have preserved well.

Sub-Order of the Brachyura.

Carcinus mœnas, zoea of. Bottled and well preserved.— $26^{\circ} 41' S.$; $52^{\circ} 17' E.$; N. $39^{\circ} E.$ 21 miles; 77° .

Carcinus mœnas, perhaps in a different stage. Two specimens are bottled, more delicate and transparent than the above, and differing in their tails, consisting of beautifully curved and toothed plates. They are well preserved.— $33^{\circ} 37' S.$; $28^{\circ} 44' E.$; S. $82^{\circ} W.$ $8\frac{1}{2}$ miles; 72.7° .

(*l*). Of the same class. Bottled.— $19^{\circ} 4' S.$; $4^{\circ} 32' W.$; N. $58^{\circ} E.$ 15 miles; 72° .

Sub-Class of the Edriopthalma.—Order of the Amphipoda.

Amphipoda. The only specimens of this amphipod that we have caught were on two successive days. Sketched.— $31^{\circ} 13' S.$; $13^{\circ} 18' E.$; N. $65^{\circ} W.$ 7 miles; 63.7° .

Amphipoda. This small crustacean was found by washing some sargassum, which it much resembled in colour. It clung to the side

of the bucket with great ease, running along almost as fast as it swam. I could not distinguish any eyes. Sketched.— 30° N.; 45° $13'$ W.; N. 78° W. 2 miles; 71.1° .

Again, amongst the sargassum. Bottled.— 29° $39'$ N.; 42° $14'$ W.; S. 18° W. 9 miles; 77.1° .

Amphipoda (?). This was found moving freely about in the hollow body of a salpa. Many salpæ were caught the same day, each inhabited by one or more of these crimson amphipods. One was sketched by my friend Mr. Wrench, of the 12th Lancers, who remarks on it—"It appeared to respire by a quick movement of the hind legs. There was a distinct circulation in the legs of a colourless fluid containing a few corpuscles, the fluid running up one side of the leg and down the other."— 32° $42'$ S.; 76° $19'$ E.; 62° .

Amphipods with compound eyes and remarkably long legs. Bottled and well preserved.— 8° $3'$ S.; 84° $57'$ E.; East 14 miles; 82° .

Amphipod with two immense claws. Bottled.— 12° $48'$ S.; 74° $30'$ E.; N. 24° W. 17 miles; 80.8° .

Edriopthalma. Bottled, but not in good preservation.— 30° $17'$ S.; 79° $53'$ E.; N. 55° W. 4 miles; 68° .

Family of the Gammarida.

Talitrus. This bright blue talitrus, spotted with dark blue stars, was found in a smooth sea. It differed in some respects from the talitrus engraved in Vogt's *Zoologische Briefe*; therefore those parts have been sketched.— 38° $10\frac{1}{2}'$ S.; 26° $34'$ W.; S. 63° W. 55 miles; 58° .

Some of these little creatures seem to carry their young in a pouch formed by two projections like saddle flaps which hang down each side and meet under the body. Once after bottling a specimen I saw several young ones in the same bottle which had not been previously noticed.

Gammaris. This displayed the usual ungraceful agility of the rest of its family, drawing up the tail feet to the head and using them, as Vogt expresses it, as a kind of leaping-pole. Sketched.— 0° $57'$ S.; 82° $49'$ E.; N. 30° E. 25 miles; 81° .

Gammaris. This is one of the most widely spread of all the crustaceæ,—heat and cold seem equally unable to affect its burly body, but they were particularly abundant during calm weather in April about 29° $30'$ S.; 45° $32'$ E.; 76.7° . One has been sketched and a great many different specimens have been bottled, which have almost all preserved well. Sometimes they are covered with black stars, sometimes they are rich blue, sometimes red. These colours fade, but the hood-shaped head of one like that of an ant-eater, the large claws of another, the side-shields of another, and other peculiarities remain perfect. The last that was bottled was a small one feeding on a medusa, much in the same way that a crab feeds itself. I watched them for sometime and bottled the eater and the eaten together.

Family of the Idotheida.

Idothea. Caught in "a gentle weather" in 31° 34' S.; 77° 24' E.; N. 44° E. 17 miles; 67°. Bottled. The shape is preserved, but the beautiful blue colour gone.

In conclusion it may be said that the few researches which the light winds have enabled us to make, (for it is only during them that the net can be towed,) have led to the deduction that different classes of these little creatures may probably have favourite spots in the great ocean.

We have noticed them with attached eggs throughout most months of the year, especially in the case of the *Euchæta diadema*, whose beautiful blue eggs soon attract the eye. A careful register of the latitude, longitude, and date when eggs are found, may be useful to the naturalist.

It will be interesting to learn if the streaks of hot and cold water so frequently met with by East Indiamen when running down their easting in about 40° South, are inhabited by different families. We have frequently noticed a difference in the surface temperature of the sea amounting to 13°, and sometimes even to 15°, in a few hours. Again during our last passage home from India, the following entries were made in the meteorological journal kept for the Board of Trade.

Day.	Hour.	Latitude.	Longitude.	Surface Temp.	Specific Gravity.	Current.
1859.		° /	° /	°		°
July 5	Noon.	6 17 S.	15 40 W.	78	1027·5	S. 25 W. 5 miles.
.. 6	..	4 11 S.	17 55 W.	77·3	1027·5	S. 56 W. 13 "
.. 7	..	1 47 S.	20 0 W.	74·7	1027·3	S. 84 W. 38½ "
.. "	8 p.m.	....	....	73·4		
.. 8	Noon.	0 36 N.	21 7 W.	73·9	1027·3	S. 69 W. 19 "
.. "	8 p.m.	....	....	76·1		
.. 9	Noon.	3 36 N.	22 40 W.	79·9	1026	N. 68 W. 54 "

The sudden change in the temperature of the sea which commenced on the 7th and lasted until the evening of the 8th, brought with it cool, damp, hazy weather, and the sea looked green, perhaps from seeing it through the haze. This cold water probably came up along the coast of Africa, and was diverted to the West; hence it most likely brought with it inhabitants peculiar to itself: but we were sailing too fast for towing the net. It made quite a pleasant change in the weather, and when it was over we did not require the thermometer to give us the unwelcome news that the temperature of the sea had changed from 73° to 80°. The journal goes on to say that during this cold fit the sea was confused as well as green.

In page 65 of the February number of this magazine it is mentioned that "salpæ abounded on the Agulhas Bank, but not on its edge;"

the probable cause was that the water on the bank is very cold, whilst the current running round it is warm.

The only unpleasant part of these researches has been the necessity to take life, for Wordsworth well teaches us,—

“ Never to blend our pleasure or our pride
With sorrow of the meanest thing that feels.”

On these grounds I have given the little captives liberty as soon as possible, except where specimens have been required, for they have no doubt a high enjoyment in their minute existence.

JAVA.—Some Particulars of Government—Notes on a Visit.

The Java officials are both European and native. The Europeans are the Governor-General and Council of four,—which latter are selected by the King of Holland from lists sent to him by the Governor-General, and it is the highest honour to which a Dutch civil servant can aspire. Then, in point of rank, follows the Resident, Assistant-Resident, Secretary, and Controller. The native officials are the Regent, Wedana, Jacksa, Mantries, and Village Chiefs.

The powers of the Resident are financial, administrative, and judicial. He has a general control over the entire Residency. By his own decision he can award punishment of twenty-five stripes with a bamboo, imprisonment for fifteen days, or three months labour on the roads and a fine of fifty guilders; but when presiding with native members at the Landraal he can award any punishment short of death or transportation for twenty years. He also receives reports from the Jacksa or Public Prosecutor daily, and passes sentence at once. He has frequently to visit some part of his Residency, that he may witness everything with his own eye and see that both European and native officials do their work, and that there is no oppression upon the people. He receives monthly returns from the native Chiefs of the number of families in each village, their names and condition, their sex, and whether adults or children; the quantity of land cultivated, under what crops, and their probable harvest yield. The natives are allowed by law to go free wherever they like by getting a pass from their native superior, but the head of the village from which they go and the one at which they arrive have to report to the Resident the time of their departure and arrival. In short, this officer is supposed to know everything that occurs in his Residency, and is not allowed to urge any excuse for the contrary. Salary 2,500 guilders per month.

The Assistant-Resident's duties are much the same as those of his superior. He administers in the outlying Regencies of the Residency the same as the Resident does in that under his peculiar charge. The

accurate knowledge which each Resident possesses may be illustrated by an anecdote told by Mr. Fraser, the British Consul:—While travelling, the horses ran over a child that was crossing the road in a place where no houses were seen. He took the child into his carriage, and gave it to the next Resident, requesting him to find out the parents. He immediately sent for the Register; and the Mantries, or Petty Chiefs, at once ascertained the names and numbers of the families near where the accident occurred, and whose children would be about the age of that in question. The Mantries examined the appearance of the child, and then galloped off to inquire amongst the families, as ordered by the Resident, and before the Consul continued his journey the child was restored to its mother. In some countries whole villages might be devastated before the officials could render assistance or know who were in them. The salary is 1,860 guilders per month. These are allowed Secretaries.

In each Residency there are a sufficient number of Controllers, according to the size of the district, which is divided into circuits of such an area as to admit of every Controller visiting every village and field of his circuit monthly, reporting the same to his Resident. This gives the natives constant opportunities of seeing their masters, and affords them opportunities of making any remonstrance, or application for relief. He is invested with large powers of conciliation and arbitration. He is President of the Taxation Committee, which estimates the paddee and sugar canes when ripe (something similar to our hop duties) both for the land tax and the proportion to the villages. He sees that proper instruments are used for cleaning, planting, reaping, &c. He ascertains the number of the coffee trees which are planted, per head of family, on the uncultivated land and hill sides, and sees they are properly attended to; besides examining monthly the books of all the native officials. His salary commences with 400 guilders a month, and rises to 500 when he is competent to perform his duties alone.

The Regent, as his name betokens, is the chief of the native officials. He receives from the Government a large salary, and has rank and right of precedence next to the Resident. He holds a native court with great pomp. He is never approached by any native, not even the members of his own family, except on their knees. His retinue is large; through whom he issues all orders to the Regency, has full control over all native chiefs and peasantry of the Regency, and is the *apparent* Lord and Ruler of the country. He is also the High Priest of his Regency, to whom therefore every native is spiritually as well as physically bound. The Regent is always taken from a member of some noble family who were Rulers of the particular district under the native Sovereign at the time of the Dutch conquest. The Preanger is the only district which by treaty belongs to the native Princes. No landed property is attached to this office, but with all the influence, pomp, and dignity of a native Prince, he is but the stipendiary of the Government, removable at their will.

His salary is 2,300 guilders a month. In the Preanger they get no salary, as the land belongs to them. There they are wealthy.

The Wedana is also a man of high family and a Government stipendiary. He carries on the police duties of a district, each Residency being divided into several (five or six), according to its size. He is assisted by the chief Mantries, and has a Clerk and one or two paid servants under him. He is held responsible for the immediate discovery and investigation of crime. His salary is good, being sufficiently large to maintain a number of followers and give occasional assistance to his subordinates.

The Mantries are salaried and unsalaried. The former preside over and manage portions of the Wedana's district; the latter are generally employed to carry messages, execute orders, and learn their duty: they are generally sons of the Regent or some Wedana. His remuneration is a small per centage on the Wedana's share of the produce of the district, and may be considered the first step in the line of Government employ. Therefore every young man of good family is desirous of the appointment. He is invested with a kriss, and given a Java pony to visit the district. The salaried Mantries are assisted by Village Chiefs, who are appointed by the Resident.

The Village Chief must himself be a villager and tilling his share of the village land, either in person or by his family. He is elected for one year. During that period he is a salaried Government servant, receiving eight per cent on the land tax paid by the village. The villagers are under his orders and employed by him either on the roads or cultivating the land. They have to give their one-seventh of gratuitous labour or one day's gratuitous supply of provisions for the Mantries, according to a roster kept by him. He is charged with the police duties and responsible for everything in his village, and all crimes are reported by him to the Mantrie. The management of the watch houses and men is under him. The watchmen are not paid, but every man takes his turn, which counts for his one-seventh of gratuitous labour furnished to Government. He is answerable for the land tax of his village, which is collected by him from the casual occupant of each field, according to the estimate made by the Taxation Committee, which is well known to all the villagers: this he is compelled to pay into the Resident's office four months after the harvest. Like all other officers, he has large conciliatory powers. All quarrels must first go to him and a council of village elders; but he has no power to punish or decide any question except by consent. If he fails to settle it amicably, it goes to the Wedana, and finally to the Landraal, which is a weekly meeting composed of the Resident or Assistant-Resident, the Regent, and three native Chiefs as members, where all questions are decided by a majority of voices.

The Jacksa is a species of Sub-Inspector of Police, who arranges and classifies offences for the information of the Wedana, to whose court he belongs.

The land, except the Preanger, is either in the hands of the Go-

vernment, or of some landlords who have purchased the soil subject to the taxation of one fourth per cent. on their rental. This gives them control over the entire property, and places all the tenants in the same position to them as they are in the unbought land to the Government; that is, they claim the one fifth of the entire produce of every field, and one seventh of male labour from the peasantry; for this they have no other obligation whatever; four fifths are their own, and six days out of the seven to themselves. The Government and landlords assist the peasantry in advances of money, and take their surplus produce at a fixed price. There are storehouses on the estates where the produce is bought and paid for at once, so that the peasantry have ready means of getting rid of their surplus coffee and rice without expence; and so careful are the Dutch to the wants and comforts of the people, that they have arranged that the carts which bring the produce from the interior to the seaboard shall take back half a load of salt and deposit it at their stores, so that the inhabitants throughout the country shall pay no more than those on the seashore for that useful article. This is a great boon and highly appreciated, as formerly it cost them nine guilders the picul, whereas it is now brought to their doors for two.

I have travelled much over the country, particularly through the extensive highly cultivated and wealthy estates of the Messrs. Motman, three brothers, whose property extends ninety miles, and has a population of 360,000 souls. I never saw such happy, cheerful, contented, thriving peasantry. One coffee-garden was fifteen miles long, which he expects this season will yield him a revenue of £25,000 sterling. There are eighty rivers besides canals and rivulets, so that every part of the estate has any amount of water; the paddee fields are consequently rich and beautifully terraced; the ten thousand rills that water them give a sound like a cataract. I never witnessed anything so lovely as this country. They have twenty-four water-mills at work, and are erecting a sugar factory, 400 feet by 200, to be worked by water, and lighted by gas, as a seam of coal has just been discovered on the estate. Several caves of the celebrated birds' nests, that find their way to the China markets, are also on the estate, yielding a rich return, selling at present at 4,000 guilders a picul (136 lbs.)

October 25th. My trip up the country commenced to-day with Mr. and Mrs. Fraser (Consul). We left their house in a comfortable English travelling carriage with four horses, reached Hadong Badah Hotel, Buitrnzorg, at 11h. a.m., on a short visit to some friends of the Fraser's, who are staying at this lovely spot for their health; then proceeded a few miles, and found awaiting our arrival under some fine trees by the road side, six beautiful horses, to carry us on to the rich rice estate, Dramaga, of Mr. Jacobus Motman, where we breakfasted; and at two p.m. he forwarded us to his brother, Mr. Frederick, at Togee. We nearly met with an accident at Loeriang Ferry. Mr. Frederick with Mrs. Fraser had preceded Fraser and myself in a light carriage, and were awaiting the raft to convey them across, when with our six horses we came thundering down the road. Their carriage was nearly run over; fortunately the driver was on the box, who

guided the horses out of the line, and our coachman very adroitly shot the carriage into the ditch, and brought the horses up against the bank just clear of the other, without upsetting us. The weather became stormy with heavy rain and thunder, in which we crossed over, the raft being formed of three large canoes lashed together, about six feet apart, covered with planks and a bamboo coating, which took carriage, horses and all safely over, there being a bamboo rope extending across the river, by which they haul over. Stopped at one of Mr. Frederick's numerous houses to refresh; arriving at Togue at half past five.

Mr. Frederick is the head of the family, and has a large establishment. Stables for 200 horses, gardens, grounds, and baths,—beautifully arranged. The respect paid to him, and indeed to all these gentlemen, is surprising: they are beloved by their numerous tenantry, with whom they have been brought up, and never having left the island, their influence is great.

Next morning found persons moving about at half past three. Looked out of my bed-room window into the hall and observed servants dressed and providing coffee. Being dark, I was certain that I had not overslept myself, so got up to learn the cause of this early meal, and was surprised to find that it was the usual hour of the proprietor's rising. After coffee he sits in the hall, enjoying his cigars, and listening to the grievances of the people, who, knowing his custom, if they have any request to make glide in to him at that hour, well knowing that overseers are not then up. By this secret method Mr. Motman knows all that goes on, so that oppression is speedily detected. At daylight he rides to some part of his property, and every fortnight sees all his people, as he makes a point of paying them himself, so as to be certain every man gets his wages without any speculation by middlemen or agents.

This morning, being accompanied by an engineer who had just arrived from Singapore, we rode to some coal formation, lately discovered about ten miles distant.

27th went to Bolang Hier, the house of one of his sons-in-law, who overlooks that portion of the property, containing a large sugar-mill, worked by water.—beautiful country,—scenery, park like. Selected a site for a house on a plateau between two hills, one filled with deer, and the other with tigers.

28.—Mr. Fraser left us early to convey Mrs. Fraser home, much to our regret, the lady being a lively agreeable person, and enjoyed the travelling. Mr. Frederick and myself proceeded to Mangoeng, the residence of Mr. Peter Van Motman, situated at the foot of the Sulack range of mountains, where a busy river is running fast. The banks are clothed with verdure, and for about 3,000 feet up the mountains are seen rich coffee gardens. From the drawing-room windows I was much amused at witnessing the country nymphs laving their delicate bodies in the river immediately beneath us, without any offence to the most modest eye. Dressed in a sarong, which falls from the breast to the knees, they walk in, and either slip it off over their heads as they

immerse themselves, keeping it dry, or, which is usually the case, or wear it as a bathing garment, leaving a dry one on the bank, which they slip over their heads dropping the wet one, so that they are never uncovered, or appear to think they excite any observation,—such is Eastern custom. Mr. Peter had provided, a native feast for my amusement,—a species of harvest home after the coffee picking. A large shed was temporarily erected, capable of containing two or three hundred,—the entrance having a most tasteful and elegant gateway, formed completely of bamboo. In the shed were dancers, jugglers, diviners, cooks, and music. I walked through it and was much pleased with the order that appeared in the arrangements, and in the happiness of young and old. The chiefs of the estate were first entertained at a separate board, and suitably waited upon, after which the heads of slaughtered oxen, dressed in crimson cloth, placed in a canopy of the same material, and borne on men's shoulders, were carried in procession round the establishment, with music, singing, and gesticulations, and then the feast in general commenced. A band of fifteen, all using the native instruments, (called gamboline,) was stationed in a house resembling those built for pigeons, (but expressly erected for the purpose in all the estates of the wealthy proprietors,) was going from five a.m. to eleven p.m., with but two hours' intermission, from one to three p.m., at which time all Java (except the merchants) retires to sleep.

In the evening we were entertained with the Gadabus or knife cutters, who performed many feats, which, if real, ought to kill every one of them. The natives are much excited by them, and all passed off extremely well.

The island of Onrust is about seven miles from Batavia, with a floating dock lying off it. Onrust has a small naval yard with hospital and barracks for crews of ships besides domiciles for the workmen,—and being of coral formation was incapable of admitting the excavations necessary for a dock. The attempt was once made, but a depth of six feet was scarcely reached before the workmen were inundated with salt water.

THE SURVEY OF BANKA STRAIT. *By Mr. J. Stanton, Commanding H.M.S. Saracen.*

In our last number we gave Mr. Stanton's directions for navigating the strait of Banka, apprising our readers who might use them that they would find much alluded to there that is not to be found in the chart now used by navigators,—and which we hope will soon be superceded by that of Mr. Stanton. While we are waiting the appearance

of this, we have the gratification of recording the following interchange of friendly sentiments between him and Captain Keuchenius, employed by the Netherland Government on a similar duty to that of Mr. Stanton. The contributions of Captain Keuchenius to the navigator's resources in the Eastern Seas, are very well known and appreciated by those who have frequented the coasts of Java. To ourselves they have been long known; and while it is highly satisfactory for the sake of national courtesy to see two scientific officers appreciating each other's valuable labours, each forwarding the views of the other, we are quite confident that the authorities at Batavia only require to see the importance of marking the new channel by laying the proposed buoys, to carry it at once into effect.

H.B.M.S.V. Saracen, Mintoh, 10th August, 1859.

Sir,—The nature of my instructions directing me to co-operate with the Dutch naval officers engaged in promoting hydrographical knowledge in these seas,—I beg to acquaint you that my recent survey of the southern part of the straits of Banka, showing the existence of a new channel eastward of Lucipara, is at your service, as also directions for navigating the same; if you think proper to copy them for the information of the government of H.N. Majesty.

I should have wished myself to have furnished you with copies; but having only a short time at my disposal and much to do, I am unable to carry out my wishes.

Permit me at the same time to thank you for your repeated offers of assistance, and desire to forward the service on which this vessel is engaged, viz., the common interests of our respective nations.

I have, &c.,

WM. STANTON, *Master and Commander.*

Captain J. Keuchenius, R.N., H.M.N.S. Padang.

On board Schooner Brig Padang,

At Mintoh, 10th August, 1859.

Sir,—The kind proposition you made me in your letter of this date, which I will accept with the most grateful thanks, makes it both a duty and a pleasure to insist once more that where I can assist you in anything officially or privately, I hope you will dispose of me and the means at my command.

I can give you but thanks; yet I hope others will give you the recompense you merit by the great work you have done, by which all nations whose ships come into these seas will profit.

I have, &c.,

A. KEUCHENIUS,

Commander H.N.M.S. Padang.

Wm. Stanton, Esq.,

Master Commanding H.M.S.V. Saracen.

*H.B.M.S.V. Saracen,
Mintok, 15th August, 1859.*

Sir,—To accompany the chart I have sent some sailing directions, with a few general remarks on the strait of Banka.

From the short time I have been in the straits the latter is rather brief, but they will serve to augment the general knowledge, and I should feel obliged if your greater experience here should suggest any alterations or additional remarks.

The sailing directions for the new channel will be sufficient for ships to avail themselves of it, and the letter A marked on the chart shows which in my opinion are fit places for buoys, should it be decided to place them; but with ordinary precaution and attention to the above directions, the channel will be quite navigable without them.

The scale of the chart is 0.9533 of one inch to the nautical mile of 6,080 feet, (English,) and I make, by astronomical and other observations, Tobo Ali Fort to bear from Kalian Point (S. 54° 29' E.) true distance 96.73 nautical miles.

In accordance with your request on my first interview with you off Nangka to be informed of the nature of my instructions with reference to the survey of these straits, I take this opportunity of expressing in writing what I then told you, as I had previously done to the principal authorities at Mintok, and also in my communication with Lieut. Vos, on the 31st of January last, before leaving Singapore.

My orders from the Hydrographer to the British Admiralty were to find out and examine any part of Banka Straits which had not been recently surveyed; to associate my efforts with those of the Dutch officers employed on a like service, and also to impart any new information I may obtain for the common benefit of all nations.

Hearing at Singapore that Lieut. Vos had just completed a survey of these straits, and seeing a new chart of 1858, I wrote to Captain Washington, F.R.S., &c., the Hydrographer, to inform him of it, and subsequently received orders to proceed to another destination; but finding from Lieut. Vos's answer to my letter that no recent survey had been made, and that he intended to confine his work to the vicinity of Mintok, I decided, as I had nearly completed the survey of a new channel, to continue my work and await further instructions.

I purpose leaving this place in a few days to make a complete examination of the soundings, to enable vessels to approach the mud bank between Fourth and Second Points, and will probably obtain some more soundings on the approaches towards Dapur Island, returning to Mintok about the middle of October, when I shall have the pleasure of again giving you any further hydrographical information I may obtain.

Trusting, Sir, that the efforts of our respective nations (with the large field open to both) may be long directed to improving the hydrographical knowledge of the Eastern Seas.

I have, &c.,

WM. STANTON, *Master and Commander.*

Captain J. Keuchenius, H.N.M.S. Padang.

Batavia, 22nd September, 1859.

Sir,—The Commander of the schooner brig *Padang* has sent me the chart of the interesting surveys of Banka Channel and the finding of a new passage to the eastward of Lucipara Island, with the remarks which you so kindly gave him for the purpose of employing it to improve the Indian charts.

I give you my thanks for the kind offer, and it will be very useful when we make the new chart of Banka Strait.

I have the honour to give you the assurance on the part of the Dutch Navy, that it will always be an agreeable duty to assist the British Navy on all occasions with hydrographical surveys.

*The Rear-Admiral Commanding H.N.M.
Navy in the East Indies and Inspector
of Marines.*

William Stanton, Esquire.

Master and Commander H.B.M.S.V. Saracen.

*On board H.M. Surveying V. Pylades,
Mintok Roads, 28th October, 1859.*

Sir,—I have the honour to inform you that on my return trip to Java with H.N.M. schooner brig *Padang*, I have worked up through the new passage recently surveyed by you between Lucipara and Banka. I was obliged, on account of the tide being foul, to work up during the night, in which I succeeded in a very short time. In the daytime as many soundings and bearings as possible were taken, and it gives me great pleasure to inform you that the correctness of your survey leaves nothing wanting to insure safe navigation.

Only the Mamelon Hummock, when under the Banka shore, is not visible because of the adjoining trees. Further out from the shore, when this hummock becomes visible, two small hills are seen South of the Parmassang Mountains, and might give rise to mistakes. On account of this, I have made the proposition to place a wooden or stone mark on the Mamelon.

The merchant ship *Seeploey*, drawing 20 feet, has also worked up through this passage, and the captain assures me, as his conviction, that this meritorious survey is of the utmost importance for navigation, and leaves in correctness nothing to wish for.

The proposition made to place four buoys in this passage, is now in consideration at Batavia.

*The Lieutenant at Sea, First Class,
Commanding H.N.M.S.V. Pylades.*

J. KEUOHENIUS.

William Stanton, Esq.,

Master and Commander H.B.M.S.V. Saracen.

METHOD OF DEDUCING TIME FROM THE SUN'S ALTITUDE.

Scarborough, January 14th, 1860.

Sir,—In order to avoid the polar distance, the arc above 90° not being marked in the tables, and also to get rid of so many different denominations of logarithms, which young navigators may occasionally commit mistakes in applying, I have devised the following method of deducing time from the sun's altitude at sea.

Latitude and declination of *contrary* names. Example:—

	☉'s true alt.	16° 33'	
	Increased by	90	
	<hr/>		
	☉'s Nadir distance	106 33	
	☉'s dec. S.	10 13	sec. 0·006941
	Lat. N.	37 32	sec. 0·100727
	<hr/>		
		164 18	
	<hr/>		
	Half sum	77 9	cosin. 9·347184
	Nadir dist. half sum	29 24	cosin. 9·940125
	<hr/>		
☉ H. Ang. or App. Time	3h. 59m. 5s.	= sin. sq. 9·394927	

When latitude and declination are of *same* name; take differences between each of them and the half sum, and proceed as above. Example:—

	☉'s true alt.	29° 24'	
		90	
	<hr/>		
	☉'s Nad. dist.	119 24	
	☉'s dec. N.	16 8	sec. 0·017449
	Lat. N.	36 54	sec. 0·097081
	<hr/>		
		172 26	
	<hr/>		
	Half sum	86 13	
	<hr/>		
	1st remainder	70 5	cosin. 9·532312
	2nd remainder	49 19	cosin. 9·814166
	<hr/>		
☉ H. Ang. or App. Time	4h. 20m. 11s.	= sin. sq. 9·461008	

Hoping you will be kind enough to insert this method in the *Nautical*,

I remain, &c.,

EDW. H. HEBDEN, Jun.

To the Editor of the *Nautical Magazine*.

LUNAR EQUINOCTIALS.

Sir,—In your number for January last, to which I would respectfully refer your readers, I was kindly permitted to use the following paragraphs.

“I have noticed during the past years (and reference to other years confirms my suspicions) that the moon never crosses the earth’s equator without there being a simultaneous disturbance of the barometer or thermometer, or both.

“The most remarkable circumstance, next to that of high winds prevailing at the times of the moon’s equinox, is that of the occurrence of most violent winds, which are apparently due to the moon’s influence, happening *about two days after* the moon’s equinox.”

I further requested general and special attention to the barometer on or about the 12th and 27th of January instant.

Preferring a consideration of facts to speculative arguments, I will accordingly notice what has actually occurred since my last was put into your hands on the 19th of December: reminding your readers that I only offer remarks upon observations taken by myself at one place, viz., Sheerness.

Reference to a diary of the weather and to a projected diagram of the barometer for December last, will show that for a period of about eight days previous to the 29th of December, the weather had been nearly one continued calm, interrupted only by a very moderate breeze on Monday 26th, (which, by the bye, I believe to have been a hurricane somewhere,) and a light pleasant breeze on the 28th; but it is at least remarkable as in connexion with the above abstracts, that on the 29th, 30th, and 31st of December, the wind, which blew merely a smart gale at Sheerness, was so excessively violent in some parts of England, that in Wiltshire, at Calne for instance, it is supposed such a destructive storm had never previously visited that locality (see *Liverpool Mercury*, 7th of January). Now the gale was at its height on the 30th,—the very day on which the moon crossed the equator.

Again, I noticed that for about eight days previous to the moon’s equinox at midnight of the 12th of January, calms and uninterrupted light winds prevailed from the westward; but it would seem that no sooner did the moon approach the equator than the characteristic disturbance of the barometer occurred, although, from some cause as yet unknown, it was smaller in amount than on most occasions; but it was attended with a sudden sharp frost and distinct change of wind from S.W. to N.N.E.; the wind again on the 14th resuming its southerly quarter. But that which so distinctly bears upon my assertion as quoted above, is the further remarkable circumstance that shortly after the moon’s equinox on the 12th, the barometer began to descend (and thus constituting a “change” to which I have referred) until midnight of the 14th, (that is to say, about two days after the equinox,) when the wind at 0h. 15m. a.m. of the 15th suddenly rose

and rapidly increased to so strong a breeze that during the 15th the foul weather flag was hoisted at the steam guard ship in the Mersey.

The moon next crossed on the 27th of January, when again the calm weather of the previous three or four days was interrupted early in the morning of the 27th by a change of wind from southerly to N.b.E., and the wind rose at Sheerness only to a fresh breeze, while the barometer curve on my diagram indicated a terrible gale not far distant,—nor was this incorrect, for the dreadful N.N.E. gale on the North coast of England at this period was wrecking above seventy ships, and depriving of life some twenty-five of our fellow men: the weather next day resuming its previous calm, and in further accordance with my previously quoted assertions, the thermometer fell very considerably.

The next crossing happened on the 9th of February instant. The wind had been for a few days before this stormy from the westward. On the 8th it blew fresh from W.N.W.; but early in the morning of the 9th, (the day of the lunar equinox,) the wind suddenly shifted to the N.N.E., snow and hail fell before sunrise, and a very sharp frost set in. Two days afterwards the wind (for a few hours only, as if it were from some interruption) returned to the South.

As sufficient has been said to illustrate my meaning as to Lunar Equinoctial Gales, it may be convenient to your readers if for their ready comparison I recapitulate, taking the last nine periods of the moon's crossing the equator.

1859, October 23rd.—Change from fair weather to sleet and snow.

The Royal Charter Gale set in two days afterwards.

November 5th.—Very heavy gales, lightning, &c.,—remarkable rise of barometer commenced two days afterwards, amounting in forty-eight hours to 1·18 inch.

November 19th.—Change to easterly, very cold: decided barometrical disturbance.

December 3rd.—Very great disturbance with barometer. Change of wind from N.N.E. to S.S.W. with very heavy gale two days afterwards.

December 16th.—Change of wind from N.N.W. to S.S.E.; very sharp frost. Only slight (but marked) disturbance in barometer.

December 30th.—Terrific gales in different parts of the country (e. g. at Calne, &c.)

1860, January 12th.—Change of wind to N.N.E., returning next day to south-westerly as before. Very strong wind two days after the equinox.

January 27th.—Dreadful gale on the North coast, and change of wind from South to N.b.E. and N.N.E.

February 9th.—Strong gale and sudden shift of wind from W.N.W. to N.N.E., with marked barometric disturbances two days afterwards.

I may venture therefore to mention as characteristics of the periods referred to,—high winds,—shifts of wind generally with colder wea-

ther,—disturbances two days after the equinox. &c.,—and as I could go through a list of fifty such consecutive crossings and see the same result, I trust I have not without some justification presumed to combat opinions held by those whom the civilized world revere, and to whom I would respectfully commend the subject.

If the moon influence our weather when crossing the earth's equator, we might likewise expect to find some corresponding disturbance, in a greater or less degree, when she is on what I may call by analogy the "stital colures:" such is absolutely the case.

It must not be supposed that I would expect changes of a like nature to occur either at the same moment at different places, or that such changes should at the same place be always similar in character. It would be unfair in considering this important subject to reject in our investigations the efficacy of local influences, such for example as the neighbourhood of high land,—whether the place of observation be on the North or South side of high hills, especially when proximate to large bodies of water, &c.; but I beg to submit that the facts to which I have referred are within the power of the multitude to corroborate or refute.

If the circumstances to which I refer can be explained as unconnected with lunar influences, I shall not on conviction feel at all ashamed to confess in your pages my misconception. They are at least extraordinary coincidences.

I am, &c.,

S. M. SAXBY, R.N.

To the Editor of the Nautical Magazine.

NAVIGATION OF THE PACIFIC OCEAN.

(Continued from page 92).

Route from Sydney to India by Pitt Passage.—The best route for India or China from Sydney, when either of those by Bass Strait or Torres Strait are not adopted, appears to be to pass to the East of New Guinea, taking Pitt Passage for running through the Java Sea from East to West, or leaving it by Ombay Strait. In which latter case, on leaving the Java Sea the course would be South of the Sunda Islands. This route, as well as that to the North, should, however, only be taken from March to September,—that is when the S.E. monsoon prevails South of the equator.

In leaving Sydney the course would be to the northward of East as far as the meridian of 160° E.; then North, keeping near this meridian, and passing East of Howe and Middleton Islands, Wreck Reef, and Cato Bank. Captain Bristow, however, considers it preferable from Sydney to keep along the coast as far as Sandy Cape, and to pass West of these reefs.

New Caledonia should then be left to the East, the dangers of these latitudes being provided against, and the course should be shaped for Cape St. George, the South point of New Ireland. In making for the St. George Channel and Pitt Passage always keep at a moderate distance from the coast of New Guinea, guarding against the easterly currents and light N.W. winds which are sometimes found to drift vessels seaward. From March to September a ship having reached the meridian of 134° , should keep near the coast of New Guinea when approaching Pitt Passage with the S.E. monsoon. Instead of taking St. George Channel, enter that between New Brittany and Cape King William, passing East or West of Rook Island; from thence steer so as to pass between Lottie and Long Islands, or round the latter to the West, according to circumstances. Then keep along the coast of New Guinea, passing North of the islands off it, from Astrolabe Gulf to Dumont d'Urville Island, and follow the coast as far as the point of that name. From thence steer so as to pass North of the Traitor, Mysory, and Providence Islands. Then keep the coast of New Guinea in sight as far as Cape Mamori, and, continuing along it to the Cape of Good Hope, make for Pitt Passage by Dampier Strait. This route of the *Astrolabe* is shorter and more direct than that by St. George Channel, and is less dangerous.

Pitt Passage being gained by Dampier Strait, or by that which may be most convenient, the directions already given in the Indian Ocean may be adopted for proceeding to China, passing East of the Philippines.

When the N.W. monsoon prevails South of the equator a ship from Sydney to India should not, as in the foregoing route, proceed by the coast of New Guinea. In November, December, and January it is better to keep as far as the parallel of 5° N., near which N.E. winds will then be found. At this season pass South of Mindanao by Basseean Strait, cross the Sooloo Sea, and then enter the China Sea by Balabac Strait, rounding the northern part of Banguay and Balamangan Islands. From there, crossing the China Sea, make for Malacca Strait. This route is, without doubt, the best for India in the N.E. monsoon from the East coast of Australia or Tasmania.

Eastern Routes to China from East Coast of Australia.—A vessel from the East coast of Australia bound to China or India, during the prevalence of the N.W. monsoon South of the line (from September to March), and not desiring to take the southern route, strong winds will have to be encountered in taking the eastern route, that is to say a more easterly route than the last mentioned.

In this case two routes are generally taken, one passing West of New Caledonia, the New Hebrides, the Islands of Santa Cruz, and East of the Solomon Islands; the other is East of New Caledonia, the New Hebrides, and Santa Cruz Islands. These two routes are nearly the same as that already mentioned as the Great Eastern Route from the Cape of Good Hope to China.

In taking the first of these routes, a ship from Sydney should steer E.N.E., in order to profit by the regular breezes that prevail at sea,

and having reached the meridian of 160° E., should pass East of Howe and Middleton Islands in running to the northward, as S.W. winds are often met near New Caledonia; but care should be taken not to approach it too close. After passing East of New Caledonia, steer North, keeping on the meridian of 164° . for the channel between the Santa Cruz Islands and the Solomon Archipelago.

Having passed this archipelago (if in the first months of the monsoon) a course may be shaped for China. Crossing the Caroline Archipelago, steering North, and having cleared them, run for the Isle of Guam, where one of the channels between the Marian Islands may be taken. Then steer for Formosa Strait, and then run between the Bashee Islands.

In case of not reaching the Solomon Islands till after January, when the N.E. monsoon begins to fail in the China Sea, a route between Guap and Goulon Islands, or between the latter and the Pelew Islands, may be taken. From thence steer so as to round the N.E. point of Lucon, and then take the most convenient channel for Formosa Strait and China.

Second Eastern Route.—The second eastern route from Sydney for China is longer than the foregoing, but has fewer dangers, besides the advantage of more regular winds than those West of New Caledonia and the New Hebrides; for when passing to windward of all these islands a ship would have to guard against the westerly current found in crossing the S.E. Trade.

From Sydney make for a sight of Norfolk Island or pass a little East of it. Then make for Isle Mathew (the volcano), which will be seen seven or eight leagues; then pass East of New Caledonia, the New Hebrides, and the islands near them; leave the Feejee Islands to the eastward, taking the course most convenient for the New Hebrides, and keeping the meridians of 171° or 172° E. If Erronan Island, the easternmost, cannot be weathered, take the channel between it and Tanna; then run North as far as the parallel of 13° S. If the New Hebrides are not sighted either Tikopia Island or that of Fataka must be. Then continue North, so as to cross the equator between 160° and 168° E. As the Western current is generally strong, a ship should try to reach the Carolines by keeping on the meridian of 163° E., and having crossed the equator in 160° or 162° E. a ship should determine to cross this archipelago between 156° and 155° E. When leaving the Carolines pass South of the Mariannes or through one of the channels formed by these islands; from whence make for Formosa Strait and the China Sea.

In the above routes, if delay on the passage prevents arriving in the China Sea till after the N.E. monsoon is over, in such case when North of the equator change the latter part of the route by passing South of Mindanao for Basseelan Strait, then cross the Philippines, taking Panaou or Surigao Strait, or that of San Bernardino. The first is North of Mindanao, the second North of Samar. By the first the Sooloo or Mindoro Sea is taken; by the second the China Sea is taken North of Mindoro. The route South of the latter island may

also be taken for Mindoro Strait, but from the Pacific the route for the China Sea by the San Bernardino Strait is generally preferred to that of Surigao.

We have here treated generally on the navigation of the Pacific Ocean and that of its western borders. We may now refer to the navigation of the eastern coasts of this extensive ocean, but first to the subject of passing from the Atlantic into it round Cape Horn.

Doubling Cape Horn from the Atlantic.—Seamen who have doubled Cape Horn have given different directions on some points of the subject, but those will be adopted here which appear to be the most trustworthy. But before pointing out the proper routes it may be right to say a word or two on the most favourable season for entering the Pacific from the Eastward.

Captain J. Weddel grounds his opinion on the experience of five years in navigating these parts, and considers the months of March and April as the worst for doubling Cape Horn. He says the difficulties of doubling this cape may be greatly diminished by choosing the proper season for it, and loss of time may be avoided as well as injury to the ship.

In the beginning of November northerly winds set in and continue till the middle of February, when they are succeeded by those from S.W. During these months the westerly wind is not of long duration, and then the passage is easily made. From the 20th of February, or thereabouts, to the middle of May the winds generally vary between S.W. and N.W., and are very strong. During this time, therefore, a badly-found ship and one that is not tight should not attempt the passage. But from the middle of May to the end of June the prevailing winds are easterly, with fine weather; and these six weeks offer a good opportunity for doubling the cape, even in sight of the island of Diego Ramirez. Then in July, August, September, and October the prevailing winds vary from S.W. to N.W., and August and September are especially stormy months.

These remarks appear conclusive as to the best time for doubling Cape Horn.

As to the route to be adopted when from the eastward, continues Capt. Weddle, this greatly depends on the time of being off the cape, and on the strength of the westerly winds which prevail in these latitudes. I prefer, under all circumstances, to pass West of the Falkland Islands. In the summer the strait of Lemaire may be taken, as it shortens the passage by fifty or sixty miles; and this may be done without danger provided we have daylight for clearing it, admitting that at the southern end we meet with southerly winds.

Cape Horn is about thirty-one leagues from Cape Good Success, with Barnevelt Island between them. If desirous of anchoring near Cape Horn the route S.b.W. $\frac{1}{4}$ W. (compass) during the night will take a ship clear of the N.W. current which sometimes sets among the islands at the entrance of Nassau Strait. If not intending to anchor, the most advantageous route after leaving the strait of Lemaire would

be to make to the southward, passing South of the cape and Diego Ramirez at a distance of several miles.

In the summer, when working westward in the vicinity of the cape, towards evening take care to be near the coast of Terra del Fuego, because during the night northerly winds often come off the land and veer West in the morning. This, however, depends in a great measure on the seasons mentioned for passing Cape Horn. In fact, during those months when the wind is most violent, as in March, August, and September, the seaman should follow the directions given by Anson and King, who recommend standing to the South as far as 60° , where a smoother sea and more moderate and steadier winds will be found. Nevertheless, when a ship is obliged to make her passage along the coast, the places where she may anchor with safety are Wigwam Bay, Port Maxwell, Indian Cove, New Year Sound, and Clear Bottom Bay.

Such are generally the remarks of Captain Weddel. We will now see what others say on doubling the cape.

As we have already observed, Captain King recommends a ship from the Atlantic intending to double Cape Horn to run down the coast of Patagonia at a hundred miles distance. Captain Fitz-Roy does not agree in this opinion. I do not think, he says, that it would be important for a large well built vessel to keep near the East coast of Patagonia. The sea, it is true, is smoother there, but the current near the coast sets northward with more strength than out at sea. But, when in sight of the coast, no ice is met, while further East it is found even North of the parallel of 40° S. Instead of going to the South as far as the parallel of 60° S., as Captain King says, I prefer to work to the westward near Terra del Fuego, towards Nassau Bay. In Orange Bay a ship may await a favourable moment to make a long board to the West. If disappointed of this, she may return to her anchorage under Black Island in Euston Bay, or elsewhere, and await a more favourable time. To make Westing is the principal object to be kept in view till we reach the meridian of 82° West. We do not find ice near Terra del Fuego, but frequently meet with it seaward from this island. In the route here pointed out near Cape Horn and the land many dangers and injuries to the vessel will be avoided by remaining quietly at anchor during the bad weather and profiting by any change of weather or wind to make westing. It appears from this that Fitz-Roy prefers in all cases the route nearest the land. Weddel's opinion differs from his, for he advises this route during summer, and the sea route down to the parallel of 60° or thereabouts during winter.

Fitz-Roy's opinion is here supported by that of Cook, La Perouse, and Krusenstern, as well as Capt. Beechey. I do not see, says this officer, the necessity for going far South to double Cape Horn. One thing I only recommend, namely, to adopt that tack on which most westing is made without thinking of latitude further than to pass twenty leagues South of this cape. With N.W. winds I should run S.W., and with

S.W. winds N.W., and in case neither board is favourable, I would stand to the southward, unless I was in too high a latitude. The strongest winds are not found near the coast, as is supposed; quite the contrary: and at thirty miles from it, the sea breaks from the inequality of the bottom. There is, however, one serious objection to approaching the coast East of Cape Horn, and that is, the rapidity with which the current sets across Lemaire Strait, particularly with southerly winds. This is not the case West of Diego Ramirez, and I do not see any objection in this part to approach the coast to about forty or sixty miles. Near Diego Ramirez I found little or no current.

When doubling Cape Horn from the eastward, we should pass inside or West of the Falkland Islands, and pass East of Staten Island, but as near as possible to it, because S.W. winds are often met with as soon as the Pacific Ocean is open. N.W. winds off the Falklands generally become West or S.W. as Staten Island is approached, and with the wind from West off this island we have only to run South. However, this course need not be taken unless we can make westing. Even if we gain little or nothing on the other tack, we should keep near the shore, for there is no advantage in making southing if it is not to avoid losing in the westing. We should not, however, take much liberty with the coast while East of Cape Horn. Such are the most general rules for doubling this cape.

As to passing through Lemaire Strait, or outside Staten Island, opinions differ. The prudent course is to adopt the latter, although the passage through the straits gains to windward and shortens the route. But with a southerly wind it should never be taken, for with the tide running against the wind, the sea in the strait becomes boisterous. With a calm it would still be wrong to adopt it, unless the West coast of the strait (for anchorage) cannot be reached, on account of the tide setting towards Staten Island. Everywhere else the anchorage is in deep water and close to the shore. However, with northerly winds, this route appears to be very advantageous. Such is King's opinion, and Captain Fitz-Roy's also, whose opinion is unquestioned, and who considers that there is no difficulty in taking Lemaire Strait. The only danger to be apprehended is calm. Vessels from the southward are not very liable to this danger, in S.W. winds at least; and in this case they would probably find N.W. winds in the northern part of the strait. The bay of Good Success is, however, admirably situated for affording shelter should wind or tide fail.

In passing Staten Island from the southward, the tide rips, extending some distance off the N.E. part of the island, should be avoided; but there are no dangers near the island. The foregoing is sufficient to convey an idea as to how to double Cape Horn from the eastward.

Most seamen who have frequented these latitudes (as King, Basil Hall, Beechey, La Perouse, &c.) agree that the barometer does not give any certain indications near Cape Horn, and that it can only be depended on in middle latitudes. That although the mercury often rises or falls before a change in the weather, the rising or falling more

often follows the change. The mean height of the barometer is 29·5 inches. With N.W. winds the mercury is low; if it falls to 29·0 or 28·8 inches, expect S.W. winds, which only commence when the mercury ceases to fall. But again, a fall in the mercury often occurs without being followed by any change in the weather.

Magellan Strait.—In reference to the straits of Magellan, King's directions for the Patagonian coast must be followed by vessels from the Atlantic to the Pacific. For steamers, especially if small, this passage will be advantageous; but with a sailing vessel it is both tedious and dangerous.

For a small vessel coming from the Pacific to the Atlantic, the passage of Magellan Strait is very advantageous. It is always safe, very nearly as quick, and not so dangerous as the route by Cape Horn. Thus: Entering by the gulf of Trinidad, she would take Conception Strait, Sacramento or St. Esteban, then Smyth Channel, and the strait at Cape Tamar. In these channels northerly winds prevail, and anchorages are at hand to pass the night in.

The winter months are undoubtedly the best for the straits of Magellan when going West. When coming from West the summer months are preferable; the nights being short and westerly winds prevailing.

Doubling Cape Horn from West.—Passing from the Pacific into the Atlantic Ocean by Cape Horn, the principal objections are: dark cloudy weather, a heavy sea, and floating ice. For a large ship the passage is easy enough, and the summer months (January and February) are considered as the most favourable for it. A small vessel having doubled the cape, would do better, and find a smoother sea, by passing inside the Falkland Islands from Lemaire Strait. For a large vessel Beechey considers it preferable to pass East of the Falkland Islands, especially in the winter, because the wind has then a hankering for the eastward, and thus, when past the islands, she would be in a good position for reaching the River Plata.

One of the most formidable dangers of doubling Cape Horn is that of smashing a low iceberg at night, when it is blowing fresh and a heavy sea running. According to all seamen it appears that in the winter and spring months (July, August, and September) they are most commonly met with. Sometimes these floating masses are only a few yards above the water, and therefore very difficult to discover in the night. In the dark nights of winter these dangers therefore are to be provided against by the best look out that can be kept: for they are mostly met in fresh winds and a heavy sea. And, as Captain Basil Hall advises, it will be best at night under such circumstances to lie off the cape. With fine weather and a quiet night small sail may be carried, but the look out should be doubled, the greatest possible precautions adopted, the sails being set so as not to prevent the watch from seeing all round. The following precaution is recommended by him. Having reefed the topsails and courses, the yards should be braced nearly sharp up, bowlines hauled, and everything ready for going about in the night, however the wind might come. Then, when an

iceberg is seen near ahead it may be avoided by putting the helm up or down. In all cases the yards braced in renders either plan easy of execution.

The foregoing are the best instructions seamen can have for doubling Cape Horn under all circumstances; and we will now consider the navigation of the western coast of America.

Navigation of the West Coast of America.—The navigation of the western coast of America presents no difficulties, care being taken, if going North, to keep in Humboldts Current, and in running along the North coast during summer advantage should be taken of the Mexican Current. Thus the passage may be easily made from the straits of Magellan to Acapulco, by taking care to profit by the monsoons of the Chili coast; and the passage will be shorter or longer according as the monsoon is favourable or not.

A ship bound to Acapulco, or the coast of Mexico, in the winter, when the current is running S.E., and the monsoon blowing N.W., should get away from it as soon as she has crossed the equator, and navigate so as to pass East of Clipperton Island, in order to keep out of their influence. She should then get to the northward of the parallel of Acapulco, and take care to make the land well North of it.

From Cape Horn to Mexico.—A ship from Cape Horn to any Mexican port, should profit by southerly winds, so as to cross the equator in about 100° W. long. picking up the N.E. Trade winds on a meridian 6° or 7° East of the port to which she is going, as San Blas or Mazatlan, and avoid the westerly currents and variable winds met with near the Galapagos. From these islands to Cape San Lucas, says Commander James Wood, it must be observed that the Trade winds do not blow with so much force and regularity East of a line from this cape to the Galapagos. Among these islands S.E. winds are prevalent during nine or ten months of the year. In January and February and sometimes in March, they are interrupted by long calms or northerly winds, which are never strong. North of these islands the eastern limit of the Trade appears to depend on the time of year. In the beginning of April, between the parallels of 8° and 13° North, this limit is 900 or 1,000 miles further East than in the month of June; and in the other months it is more or less East as the season is more or less advanced. In no case is the Trade found to be so fresh and regular as it is West of the line abovementioned. It is the prevalence of westerly winds, calms, and contrary currents in the space comprised between the coast and this line, which renders it so difficult for a ship to make westing from Panama. It has taken sometimes forty days to get from Panama as far as 112° W., the western limit of the Trade winds, a distance of about 2,000 miles. A ship having once got the Trade, can run West, South, or northward; but it must not be forgotten that the eastern limit of the Trade greatly depends on the season. Thus in June or July we find fresh breezes from N.N.W. and even sometimes from N.W. as far as the meridian of 127° West, while in March and April we meet with light winds from N.N.E. varying to East and E.S.E. on the meridian of 100° West.

These winds have then gradually reach the meridian of 112° , (that of Cape San Lucas,) West of which the breeze is fresh from N.N.E.

As a general rule, it is found that in proportion to the distance off shore, and without any consideration of latitude, the wind draws easterly.

Navigation of the Chili Coast.—There are two modes of navigating the coast of Chili. In going North, the course is steered direct for the port of destination as the prevailing wind permits. In coming South, we do the same if we can: if not, we lay the ship's head as near it as we can, taking care when braced up the sails are clean full, for the principal thing is to cross as soon as possible the zone of contrary winds and gain a latitude where the ship can make a direct course. It is always best in making a passage to keep clean full.

(To be concluded in our next.)

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

By this time the Japanese Commissioners will be on their way to be lionized at Washington, and treated to the business of Congress.

Yes, observed Rodmond, and from their first emancipation from the land of their birth; America may then boast of having been the first territory to receive them.

Deserves it too, continued Albert. Wasn't Jonathan the first to say they had been shut up long enough from the world and to break through their exclusiveness? What we might have done long ago if we had chosen. When should we have gone there if he hadn't set us the example?

The fact is, replied Rodmond, we have been all along with the old world and Jonathan with the new. Besides they are all but next door neighbours, and with us they are on the other side of the world.

The embassy is to consist of two high-rank Commissioners and a suite of above seventy officials, added Rodmond. They leave Japan on the 22nd of February, and cross the isthmus of Panama, doing the sea voyage on both sides in American men-of-war.

Glad of it, said Albert; suppose we shall have them next.

Quite true though, said Rodmond, as you observe regarding Japanese emancipation; but they have yet to stand the rub of intercourse with the world. There will be many a rude shock for them to undergo before things get into a smooth train—

And of which, returned Albert, depend the Japanese will be ready to give and take their share. They neither want courage nor enterprise, and only require fair play and no favour.

Here comes that boy of ours, and along with the Secretary, too,—all smiles. Something in the wind, depend on it. Well, Purser, what has the boy got now?—Come, Arion, out with it.

Desipere in loco, Captain, is no bad motto. Time and place, and

everything in both; would that every one was punctual in the observation. The Purser and I have agreed that Brother Jonathan is as wide-awake as ever,—always something new, although on the brink of a volcano from North to South. By the bye, why doesn't the North buy off the slaves of the South, as we did the property of our planters? 'Twould be only some few more millions.

Come, Master Slyboots, no more politics with serious looks, but give us the benefit of those winks between you and the Purser!

Well, to be serious no more then, said Arion. What do you think of the Yankee whalers in the Pacific having found out a harpoon by which the whale kills himself,—the more he pulls the line, the deeper goes the harpoon.

Ingenious enough, said Albert, no doubt. Accounts for the whalers being less in the Pacific,—falling off, they say.

And another, added Arion, is an electrical apparatus by which the whale is "shocked to death!" How shocking! But as for electric matters, there's no end of the application of this;—there is an electric clock, for instance, that will wake you up, tell you the hour, and light a lamp for you just whenever you please.

Capital, said Albert, and a gun that loads itself,—a fishing line that adjusts its own bait,—and a rat-trap which throws away the rat, then baits itself and stands in the corner for another!

Clever trap that; do for the elections, too!

Aye, that will do, said Rodmond. I thought, Arion, there was something in the bright looks you had. Boys will be --

Men, I suppose, some day or other.

Boys, said Rodmond with some emphasis: being interrupted.

No doubt old *boy*, added Arion, and when you are gone you shall have a better epitaph than that cove had somewhere in *Sussex*

What was that, Arion?

Oh, short and sweet, said Arion, but to the purpose.—Did you never read it? You'll not forget it when you do. It was this,—
"Erected to the memory of Peter Pepper, accidentally shot as a mark of affection by his brother." Poor Peter!

Aye, and poor brother, too. There, there, said Rodmond, as Albert joined them, I can't keep this boy from his old ways. By the bye, those Japanese you were speaking of are a remarkable people, said Rodmond. They have many religions, but no government religion. In this respect the government is very liberal, and some thirty different sects exist, each having its own peculiar form of worship. One sect I have remarked had many characteristics of the Christian's belief and of Bible teachings. They are called *Sinchoos* (worshippers), and, while believing in a Triune God, have many superstitions. They believe in transmigration,—that all existence commences in inanimate matter, rising into conscious, intellectual, and spiritual existence towards death; and their creed altogether embraces a sort of Universalism, by which every one will finally reach heaven; but the wicked have to pass through many transmigrations before they are fitted for the blessed abode, and before they can reach supreme happi-

ness. They have also a means of salvation by self-sacrifices,—by impaling themselves in atonement for their sins. I have seen part of this ceremony, when some twenty Japanese, dressed in white and uttering their penitence, proceeded to the top of a mountain and cast themselves headlong over a precipice, up the face of which they had climbed by means of iron pins fastened to the solid rock in such manner as to enable them to make the ascent. There is also another mode by which, in their belief, they will attain eternal life, and that is by assembling on board a junk, and after getting out to sea, while engaged in their devotions, the vessel is scuttled, and they go down uttering cries of joy. These sacrifices are regarded as necessary to relieve both the victims and their friends from the disgrace attached to whatever crimes the penitents were guilty of, or for which they may have been condemned by the laws, and are always immediately preceded by bathing in the sea. They have a superstition, too, that a demon dwells in the storm-cloud, and upon the approach of a storm they go out with arms and make every hostile demonstration possible in order to drive it away. Their supposed victories over this storm-fiend are commemorated by paintings of the monster, filled with arrows and darts, fleeing before the hostile array. Yet another of their beliefs is that they are descendants of God; that at one time they inhabited the sun, and by reason of this consider themselves superior to the human race, being themselves gods.

By the time Rodmond had concluded his remarks on the Japanese they had reached the Club and found the Chairman, who then commenced his address.

The Chairman had much pleasure in seeing his friends of the Club on this, the fourth, occasion of their meeting, for as events thickened fast about them both at home and abroad, it was satisfactory to have a receptacle in their papers to which those concerning themselves might be consigned, along with their true character,

“Stripped of their colouring, and from garnish free.”

Events, indeed, both at home and abroad that were of high importance at the present crisis had taken place, and while he was addressing them some would perhaps date their birth, and guide the course of public as well as private conduct in a manner which would materially influence the world about them. It was truly said the whole world is always in motion,—there is no such thing as rest,—change, constant, unceasing change is the principle of life, and whether we looked to the works of the Creator or to those of man, onward to the ultimate goal of eternity was the order illustrated in all around us.

However, he would turn to those that belonged to them, and classing them as Home and Foreign, would now take up the former. It would ill-become him not to say that the great political measure now hanging over them was perhaps the first which claimed their attention, not from that character of it which was repudiated by their rules, but from certain measures connected with shipping that it involved. They were aware that in this proposed measure a reciprocity was looked for

from certain foreign powers of advantages which we allowed to their shipping on our coasts that ours did not enjoy on theirs,—that there were certain evils that operated most unfavourably on ours, also of our own producing: he might allude to them separately, but the task would become tedious. Some were of minor, but again others of very considerable importance. Among the former, he looked upon light dues as of really minor importance; but among the latter was reciprocity and the great grievance of wreck, bringing with it a train of causes that it was almost a disgrace to a civilized country should be allowed to exist. Look at wrecks by collision, they were generally speaking disgraceful. Some among them might be the fault of but one party, mostly, he feared, it was of both. Again, see the wrecks by foundering from sheer unseaworthiness. Again, from bad navigation, as illustrated by the *Indian*, a vessel to which he had recently alluded, and to which he might also add the case of the ship *Sir Henry Pottinger*.

In respect of collisions, he had received an opinion from a person some time in command, and for whom he had much respect. It was this, he says:—

This is a subject of such vital importance that I should have abstained from offering a opinion did I not consider myself competent to do so. I do not expect to be singular in my remarks, and shall be happy if I tend in the least to remove the evil.

Before attempting to show the causes, I may here state that collisions seldom take place where competent pilots are in charge or amongst the coasting trade of this country, excepting under extraordinary circumstances; and I question whether any of the thousands of able men brought under this category could pass an examination at the Local Marine Board.

Reverse the question and the result would be dreadful to contemplate. Yet this state of things is being brought about by the facilities given to officers, who, provided they can pass a satisfactory *theoretical* examination, are considered competent to command; and this remark is applicable also to junior officers, to whom, if they are young and anxious for promotion, or aided by interest, a reduced pay is immaterial, and practical experience (which should command) is compelled to succumb. From this system a great laxity of discipline naturally arises, which is one cause of the evil.

The principal cause I attribute solely to a want of general supervision of all sea-going vessels; for, under the existing depressed state of British shipping, some owners resort to almost any expedient to get their ships to sea, and reduce the expenditure to an extent affecting their safety.*

It is not my province to condemn the course of examination pur-

* In support of this assertion I will quote a case that came under my particular notice, viz.,—A vessel sailed from England to Australia, thence to Calcutta, during all which time only one compass was on board; and, remarking on the absurdity and danger of such niggardliness, I was informed the owners would not allow another!

sued at the existing Local Marine Boards, although I maintain no amount of theory will make a thoroughly practical commander. With this fact before us why should not some stringent rules be laid down for the due observance and guidance of all on board.* Men of experience will never object to what they know are facts such as will tend to teach the theoretical an art which, under present circumstances, is acquired at the risk of a fearful sacrifice of life and property.

As he said he quite agreed with the author of that opinion. But why should collisions take place at sea. That opinion applied to pilot water, but wide as the ocean is there is not even there room enough for all. To these he considered that a bad look out or no look out at all, was the real, perhaps the only cause. Her Majesty's ships, he was happy to say, were free from this disgraceful charge, although even for them it was difficult at times in the "Narrow Seas" to avoid a sleepy headed blundering merchant ship. And why, simply because her Majesty's officers had their eyes open. It might be that on occasions the crews of merchant ships were too few, too weak after heavy work to keep a constant look out. Whichever way it might be the evil was a serious one,—it was one of those with bad navigation that was gaining a bad name for British ships, and would assist in turning passengers of our own countrymen into foreign ships,—and who could wonder at it. It was an evil which called for redress.

There were other matters, continued the Chairman, which he might consider hereditary evils in our ships. Evils which he feared, like those constitutional diseases of the human system that science could not reach, and which he feared no legislation or superintendence would ever prevent. These were indeed to be deplored. These were they which accounted for the sudden disappearance of a ship with every one on board,—which accounted for a ship breaking up as soon as she touched the ground,—and although it might be all very well for certain interested persons to say that ships were not made for beating on rocks, yet he believed that if merchant ships which could not be kept off the rocks would but hold together for a reasonable time when they do get on them, there would not be so many lives lost as there usually are on such occasions. There were constitutional evils in the construction of ships, as there were diseases inherited in the human system, to which the old adage, he was sorry to say, must be applied,—

“What can't be cured must be endured.”

And they would ever stigmatize the British merchant ship as a being of uncertain existence every day of her life, and for the safety of which the insurance office is looked to in too many cases instead of the “precaution,” which very properly belongs to the ships of the State.

Again, it was a remarkable fact, continued the Chairman, that although the lives of her Majesty's subjects depend on the ground tackle of merchant ships, still there is no law to oblige their owners to fit

* The rules should be imperative to a degree, and any deviation or relaxation should be visited with the severest punishment, even to a cashier as regards the master and mates, and imprisonment or loss of pay by the seaman.

them with anchors and cables in proportion to their size,—there was a rule adopted by Lloyd's, but how limited was the number which that affected, perhaps not a third part of our mercantile marine. But this subject, in consequence of the loss of the *Royal Charter* on Anglesea lately, had just been taken up, and a committee was now looking into it from which some good result might follow. Some one, in reference to the application of mechanical powers adopted in merchant ships, to make up for the paucity of manual strength, and without which they could do nothing, complained of such things not being used in the ships of the State, by which their crews might be reduced. This worthy gentleman, whose head was no doubt full of tacks and sheets and haulyards, patent windlasses, &c., seemed to forget there were such things as guns to man, on which the safety of the State after all had mainly to depend. That gentleman, he thought, had better keep to his merchant ships, for he evidently was adrift in a ship of war.

Arion here observed, that he had read certain accounts, setting forth in glowing terms the launches of several merchant ships,—he would instance a screw steamer of 900 tons, at Hull, named the *Hope* by Miss Josephine Thorney:—at Sunderland, a splendid barque, classed thirteen years A1 at Lloyd's, named by Miss Austin the *Madelin*, of 245 tons, as she "majestically glided into her native element," fitted with Cunningham's self-reefing topsails, and every modern improvement;—and again, a handsome barque named the *Heron*, classed A1 for eight years. He would like to know whether the difference in length of time for which these vessels were classed A1, depended on the number of "Devil's bolts" in them, very well known in merchants' yards, or the probable length of time each vessel was likely to hold together whenever she got on shore; or whether all the modern improvements for which they were to be remarkable would save them from annihilation by collision, for which British merchant shipping had lately acquired a notoriety that was in no way creditable to them. He would like to know whether among the improvements their builders had given them, it was intended to retain the three Ls.

Albert interposed. He did not think Devil's bolts fair subjects for discussion. Owners knew but little of their ships unless they were builders,—and even then how entirely they were in the hands of their workmen.

Yes, added Rodmond, and do you suppose they care?

Well, replied Arion, we must believe so,—or who would deal with them.

Then after all, added Rodmond, there is something in the question of Arion as to the length of time of classing a ship A1 off the stocks.

Some kind of freemasonry, replied Albert, best known at Lloyd's. Things must not be looked too close into in shipbuilding more than in any other trade.

Nay, said the Chairman, I cannot agree to that doctrine while so much life is at stake by good faith and honest work being preserved in the art. It is too notorious that certain merchant ships are built for the market,—they are built for the mere purpose of making a certain

amount of interest for money which they cost, and giving the builder all credit for honesty of design, it is still notorious that his work in certain cases is faulty. Now, I think where dishonest work implicates the safety of human life, it merits exposure.

With respect to the announcements of launches, however, there was a term employed which he deprecated the use of much, being sadly out of place. For instance, in the launch of gunboats at Liverpool, it was stated:—Yesterday (Wednesday) two fine gunboats, the *Pelican* and *Steady*, were launched from the building yard of Mr. W. Miller, of Liverpool. Each of these vessels is 145 feet long, extreme breadth 25 feet 4 inches; depth of hold 13 feet; and tonnage 425. Draft of water when fully equipped, 9 feet 3 inches forward and 11 feet 6 inches aft. They will be fitted with engines of 80-horse power by Napier, and carry one 95 cwt. pivot gun, and four 24lb. carronades. They were “christened” by Mrs. Miller and Mrs. Preston. Mr. Miller is now building two more gunboats, *Heron* and *Dottrell*, of 267 tons, which will be more heavily armed than those abovementioned. Now all these particulars were very well in their way,—but why should the writer deliberately use the term “christened,”—it was out of place and totally, indeed grossly, inapplicable. Why should not the term “named” be used and far more appropriately.

In reference to docks, he was glad to see that noble place, Falmouth, looking up as it should, for he had seen it stated that Lord Falmonth, with Mr. Baring and Mr. Gurney, the borough members, would lay the foundation stone of the breakwater for the docks at Falmouth, on Tuesday the 28th of February. The works, considering the state of the weather, are in rapid progress; there at present about one hundred hands employed, which number will shortly be augmented.

This was as it should be, and it was also stated that some means would shortly be provided by which the construction of harbours on our coast would be much facilitated. This, too, was as it should be—for say what we may, *harbours are wanted*.

Then as to harbours, he had met with a statement concerning floating harbours in connection with coast defences. A plan by Capt. Adderley Sleigh had for its object to form floating breakwaters at a very slight cost, which would afford complete protection to vessels anchoring behind them, and which could be placed in any depth of water, and in any position where protection is needed, either on a large or small scale. Admiral Sir Henry Leeke, K.C.B., said it was one of the most valuable and important projects that had ever come under his notice. It was stated that several places on the coast were in communication with Captain Adderley Sleigh on the subject, and an influential requisition from the corporation and magistrates of Hastings for its adoption had been made.

Now, although he had no opinion of floating harbours, there were names in connection with this which entitled it to consideration; but he could honestly say that he anticipated more of disappointment than anything else from a *floating harbour*.

The cases of wreck during the month of January, according to the

Shipping Gazette, amounted to 214, and he would preserve these instances, which were not of that number, to show how British merchant ships were lost. He should like to know whether these vessels were really seaworthy when they went to sea.

“News has just arrived by telegram that the screw steamer *Scamander*, Captain Jenkins, 666 tons burden, from Liverpool to Alexandria, foundered in the bay of Biscay on Tuesday the 31st of January. The crew, thirty-eight in number, and the three passengers, Mr. J. Colton, wine broker, and Mr. and Mrs. Hogg, of Liverpool, were all saved and brought to Plymouth on Thursday by the Dutch steamer *Cornelia*. The *Scamander* left Liverpool on the 27th of January, so that she had only been four days out. The cause of the misfortune is not stated.”

“The *Japanese*, which reached Liverpool on the 6th of February from Calcutta, had on board the Captain and crew of the brig *Asia*, which went down off the Western Islands. One man was drowned. The captain of the *Japanese* reports having met with fearful weather outside. On the 30th of January the ship encountered a tremendous gale, which disturbed the cargo, and sent the vessel over on her broadside. The waves, which ran very high, often swept the deck, and the foreyard arm was frequently dragged through the water.”

“For several weeks great anxiety has been manifested relative to the fate of the *Cleveland*, iron screw steamer, chartered in the early part of last December for the conveyance of coal for the Spanish Government, and left Cardiff for Cadiz on the 20th of that month, since which time nothing whatever has been heard of her, and no doubt is said to be now entertained at Lloyd’s but that she must have foundered, with all hands, in one of the fearful gales that burst forth a few days after her departure from port. The *Cleveland* belonged to the Stockton and Middlesborough Steam Navigation Company. She was built in 1857, and registered 650 tons. She was fitted with four bulkhead watertight compartments, with engines of 240-horse power. Both ship and cargo were insured at Lloyd’s.”

“The loss of the *Dinapore*, belonging to Mr. W. S. Lindsey, M.P., on the coast of France, has created a painful interest. The *Dinapore* had been long employed in the East India trade, but on her last voyage she was chartered to take a cargo of steam coal from Cardiff to Aden for the P. and O. Company. Captain Lillwall, the commander, was accompanied by his wife, who, it is stated, being near her confinement, had a surgeon and female servant (nurse) on board. Shortly after leaving Cardiff the ship encountered a succession of fearful gales with heavy seas. She laboured severely, and at length sprung a leak. The tempestuous weather continued, and the pumps having become choked with coal dust, there was not much chance of reducing the water she kept making. In this state of things, and the vessel being off the coast of France, near Ushant, Captain Lillwall attempted, it is

supposed, to run for Brest. In doing so, unfortunately, the night being dark and stormy, the ship went on one of the sunken reefs which are to be found about that part of the coast, and speedily began to break up. Captain Lilwall, his wife, servant, surgeon, and eighteen of the crew, took to the longboat, (the lifeboat having been previously washed away,) and the chief officer, Mr. Thompson, and nine seamen, took to the dingy, which was at the stern of the ship. The latter was picked up by a French pilot lugger and landed at Conquet, but of the longboat not the slightest tidings had been heard up to Saturday evening, and the belief is that its crew must have perished. The ship was insured."

This was the way in which certain British merchant ships were disposed of.

Then collisions again were too numerous for him to do more than merely advert to them. But he would preserve these two cases as specimens to add to the foregoing.

"Dover.—This morning as the barque *Elizabeth Dawson*, 333 tons, was sailing down Channel with a cargo of coals from Sunderland to Alexandria, and when about three miles off the South Foreland, she was run into by another barque right amidships, and sunk immediately in deep water. Being cut below water mark, the crew had great difficulty in coming by the boat and saving themselves. A very remarkable circumstance attended this catastrophe. One of the men sunk in the vessel to the bottom of the sea. In his struggles he came in contact with a piece of wood, about four feet long, which lifted him to the surface. With much exertion on the part of the crew, he was picked up and saved. They all landed at Dover, and met with a most kind reception at the Sailors' Home, where they soon found the comfort of such a refuge after many hours' exposure in a bitter cold N.E. wind. It is not known by the crew what vessel it was that ran them down."

"This morning, (19th February,) about three o'clock, as the steamer *Ondine*, Captain James Hunt, from Dublin to London, was abreast of Beechey Head, she came in collision with the schooner *Heroine*, of Bideford. She was struck just abaft the beam, and immediately began to sink. So great was the injury, that in less than twenty minutes no traces of her were visible. A portion of the passengers and crew, twenty-one in number, were saved in the jolly boat, and landed at Dover, where the Sailors' Home was at once opened for their reception, and every possible comfort afforded that their distressed circumstances required. They were landed perfectly destitute. About fifty of the passengers and crew are missing. Some of them, including the captain, took to the starboard lifeboat, but it almost amounts to a certainty that they were swamped, as they could not reach the *Heroine*. In the darkness of the night one fearful shriek was heard, and no more was seen or known of them. The *Ondine* was a very unfortunate vessel. She is the same steamer that a few months ago ran

down, near the South Foreland, the *Robert Garden*, a Dover collier, whereby the pilot and several of the crew were drowned."

Now that we are alluding to the strait of Dover, continued the Chairman, you will no doubt recall to mind the sad loss of the *Blervie Castle*, and my remarks in reference to her and a proposed lightvessel for the Ridge Shoal. I have now the pleasure of stating that the Trinity Board has decided on placing the proposed lightvessel to warn ships of the proximity of that dangerous shoal the Ridge. The vessel is in course of preparation, and a very few weeks will see her at her station, when I trust that although such collisions as those just related may still occur, no vessel will hereafter leave her bones on that shoal.

There is a subject, continued the Chairman, which, affecting as it does, the maritime interests of our country, has special claims to our attention, and that is, the Mercantile Marine Association at Liverpool. Of recent origin, (perhaps a year or two,) it was highly gratifying to see that from a very slender beginning it has gradually strengthened itself by its judicious and excellent arrangements, and supported as its first efforts were by men of influence, merchants and shipowners of that neighbourhood, it has collected within its walls those for whom it was specially intended, and cannot fail to benefit the important class of our countrymen who belonged to the mercantile marine. Not only were the advantages of a reading-room, library, and such matters provided by it, where officers of this service might meet and hold friendly conference with each other, or profit by instruction from lectures on professional subjects, but the institution did more than this, it provided an establishment for an excellent education for the sons of its members and others on board a frigate provided by the Government at the place. It is truly said of the school frigate *Conway* at Liverpool,—This ship is a decided success. At the close of the last half year the boys numbered 49; but at the opening of the school after the Christmas holidays, there were 102. Mr. M. B. Pizey has been appointed second master, and when ordained he will officiate as the regular chaplain. Mr. Tucker, who has been nine years on board one of her Majesty's ships, has been appointed chief officer. An additional assistant-master will also be appointed shortly. Six new guns, intended for the "ship gun drill," are expected shortly; and the vessel herself has been thoroughly refitted and painted.

Liverpool might well boast of this institution, and the *Conway* had already established herself in the estimation of every one; and not only had her range of tutor's appointments been abundantly sought after, but her complement of pupils been nearly filled up within a short time. In the words of a recent report, he might say there were 107 boys on board the *Conway*, 15 or 16 more ready to embark, the number for which she was intended being only 128; but it was expected that this number would become 328 when they could get a larger ship for them, and to Liverpool would at all events belong the

honour of setting an example which must be followed by all other ports of the kingdom, that of having established nautical schools. Such institutions are specially adapted to the youth of this country, who in their hearts love salt water. The advantages of the *Conway* were already appreciated, for they gave the sons of their members a sound nautical education for £25 a year, and those of officers who were not members the same for £35. It was intended to connect with the institution the advantages of a mission to seamen in the Mersey, and he looked forward to the noble example of this Mercantile Marine Institution being followed generally on our coasts.

Next in importance to the subject of officering and manning our ships is that of providing them, for we all know that ships are more easily found than seamen. The Institution of Naval Architects, to which he alluded, at length established in this country, appeared likely to give a fresh impetus to our maritime enterprise by the improvements which it was likely to extend to our mercantile marine. Indeed, from the assemblage of influential names combined for its support, including those of our first shipowners, as well as ex-official and those now in high government positions, without regard to political party, augured well for the noble science of naval architecture at length being the care of a national institution. It has been truly said of it that "the best ship-builders of the country have heretofore been content to work singly and silently; now they have combined and will speedily make themselves heard;"—to which we may add, since they are now supported by highly influential men without regard to political party.

He would now turn his attention to matters abroad, where he rejoiced to see his countrymen in their true colours, for he must be allowed to place among their annals an American opinion of their conduct in reference to the boundary-line and the questioned territory of San Juan Island. That blot in old treaties, which promised to become a festering sore, full of disaster, had, by the magnanimous conduct (and he used the expression purposely), of our admiral, been happily avoided. Here is the opinion of a Californian paper on the conduct of our countrymen in that business.

I have said that the British are entitled to credit for forbearance, and they are, indeed; for they could have landed an overwhelming force on the island, and not only annihilated the small command, but blockaded, if not devastated, the whole Pacific coast, before the actual state of affairs could have reached the Cabinets of both Governments or means for our protection could be devised and obtained. It is owing to them that serious difficulties did not immediately ensue, for, reverse the case, would our Yankee blood and spirit have quietly awaited the issue of counsel had the disputed territory been fortified, armed, and controlled by an English force? No, emphatically No! Blood would have flowed irrespective of person or place, and the clarion of war would have awakened the whole civilized world to arms. During the progress of the negotiations the tone of the Eng-

lish authorities was highly conciliatory, whilst their course and intentions were frankly, fairly, yet courteously, made known.

The mission of Lieut-Gen. Scott was brought to a final and successful issue on the 8th of November, and all the evils of General Harney's inconsiderate assumption of power, it is to be hoped, rectified. "The pen" has proved itself "mightier than the sword;" diplomacy and counsel better than the force of arms. In the adjustment of the imbroglio, moderation and courtesy have prevailed, and honour stands proudly by the American Eagle. Conciliation and frankness combined have removed the cause and the fears of a rupture, and an American force is to remain in the disputed territory for the protection of American interests; but the occupancy is divested of all menacing appearances by the reduction of the numerical strength of the force and the removal of the "brazen-throated dogs of war" which sat so frowningly on the heights of Bellevue.

He was quite sure that every one would rejoice in this termination of an unfortunate state of things in old treaties that ought never to have existed, but that termination would be mainly due to Rear-Admiral R. L. Baynes, C.B., who thus gave good proof of his fitness for his command.

The Chairman continued, in reference to American matters he had received an important document concerning steam navigation that would be found interesting and useful for Pacific travellers, who, there was reason to believe, would be increasing for some time. We know, he added, that the Pacific Steam Company of Liverpool have had the period of their charter extended for twenty-one years. Their fleet in the Pacific consists at present of nine steamers, and three more are being built to go out. The annual steaming distance of the company along the coasts of New Granada, Ecuador, Peru, Bolivia, and Chili, now amounts to about 170,000 miles, to be immediately extended to more than 300,000.

The following was the paper to which he had alluded:—

The Steam Marine connected with the Isthmus of Panama.

Very few persons have any idea of the extent of the steam marine connected with the Isthmus of Panama, both on the Atlantic and Pacific Ocean. To enable our readers to form some conception of this important trade, a friend has carefully compiled for us the following lists, which no doubt will be perused with considerable interest both by our local and foreign readers.

It would be wrong to suppose that these enterprises are due to the opening of a railroad across the isthmus, for many of them were established prior to the existence of the enterprise; but it must be admitted that a great impetus has been given to their business and a large addition made to their trade since the facilities afforded by the completion of the railroad have rendered the transit from ocean to ocean so speedy, secure, and easy; and ere long we may expect to see not only British lines of steamers from Panama to Vancouver and

Australia, but also a line of French vessels from Bordeaux or Havre to Aspinwall.

Nothing can more strongly point out the importance of the Isthmus of Panama as a transit route than the following figures:—

Various Lines of Steamers Running in Connection with Panama Railroad.

North Atlantic Steamship Company, Running between New York and Aspinwall.

<i>Adriatic</i>	4,144 tons.	<i>Baltic</i>	2,733 tons.
<i>Atlantic</i>	2,849 "		
		Total ..	9,726 "

Pacific Mail Steamship Company, Running between Panama and California, Oregon and Washington Territory.

<i>Golden Age</i>	2,280 tons.	<i>California</i>	1,085 tons.
<i>Golden Gate</i> ...	2,067 "	<i>Oregon</i>	1,099 "
<i>John L. Stephens</i>	2,189 "	<i>Columbia</i>	777 "
<i>Sonora</i>	1,616 "	<i>Republic</i>	850 "
<i>St. Louis</i>	1,621 "	<i>Northerner</i>	1,010 "
<i>Panama</i>	1,087 "	<i>Taboga</i> (tug) ...	189 "
		Total ..	15 870

Vanderbilt's New York and New Orleans Mail Line to California.

<i>North Star</i>	1,867 tons.	<i>Sierra Nevada</i> ..	1,247 tons.
<i>Northern Light</i> .	1,747 "	<i>Cortes</i>	1,117 "
<i>Uncle Sam</i>	1,433 "	<i>Daniel Webster</i> .	1,035 "
<i>Orizaba</i>	1,450 "	<i>Philadelphia</i> ...	1,238 "
		Total ..	11,134 "

Panama Railroad Company's Central American and Panama Line.

<i>Guatemala</i>	1,021 tons.	<i>Flamenco</i> (tug) .	63 tons.
<i>Columbus</i>	460 "		
		Total ..	1,544

Royal Mail Steam Packet Company, Running between England, West Indies, Aspinwall, and East Coast South America.

<i>Shannon</i>	3,472 tons.	<i>Conway</i>	895 tons.
<i>Atrato</i>	3,467 "	<i>Wye</i>	752 "
<i>Parana</i>	3,070 "	<i>Derwent</i>	794 "
<i>Paramatta</i>	3,439 "	<i>Eagle</i>	630 "
<i>Magdalena</i>	2,943 "	<i>Prince</i>	398 "
<i>La Plata</i>	2,404 "	<i>Tasmanian</i>	2,253 "
<i>Tamar</i>	1,963 "	<i>Tyne</i>	2,184 "
<i>Medway</i>	1,897 "	<i>Avon</i>	2,069 "
<i>Thames</i>	1,889 "	<i>Mersey</i>	1,001 "
<i>Trent</i>	1,856 "	<i>Dee</i>	1,699 "
<i>Solent</i>	1,804 "	<i>Oneida</i>	2,284 "
<i>Teviot</i>	1,744 "	<i>Seine</i>	3,092 "
<i>Clyde</i>	1,371 "		
			49,368 "

Pacific Steam Navigation Company, Carrying English Mails between Panama and all Ports on West Coast South America. First Line of Steamers Established on the Pacific.

<i>Lima</i>	661 tons.	<i>Callao</i>	841 tons.
<i>Valparaiso</i>	839 "	<i>Bogota</i>	661 "
<i>New Granada</i>	429 "	<i>Bolivia</i>	839 "
<i>Inca</i>	229 "	<i>Anne</i>	475 "
<i>Cloda</i>	475 "		
		Total ..	5,449 "

Some of the above steamers have been sent to England and had new engines put in and their deck room enlarged.

Liverpool and Aspinwall Line of Freight Propellers.

<i>Plantagenet</i> ...	500 tons.	New steamer bldg.	500 tons.
<i>Saladin</i>	350 "		
		Total ..	1,350 "

Besides the above, Vanderbilt has one steamer on the way round Cape Horn, and some think he will send the *Vanderbilt* and *Ocean Queen*, their tonnage being as follows, viz. :—

<i>Ocean Queen</i> ...	2,801 tons.	<i>Champion</i>	1,563 tons.
<i>Vanderbilt</i>	3,360 "		
		Total ..	7,724 "

Cost of Pacific Mail Company's Steamers.

<i>California</i>	171,241 doll.	<i>Republic</i>	180,471 doll.
<i>Columbia</i>	135,000 "	<i>J. L. Stephens</i> .	305,754 "
<i>Golden Gate</i> ..	415,858 "	<i>Golden Age</i> ..	400,000 "
<i>Northerner</i> ...	170,000 "	<i>St. Louis</i>	265,639 "
<i>Oregon</i>	171,241 "	<i>Sonora</i>	291,864 "
<i>Panama</i>	183,982 "	<i>Taboga</i>	39,966 "
		Total Cost ..	2,781,016 "

Recapitulation.

<i>Name of Line.</i>	<i>No. of Steamers.</i>	<i>Tonnage.</i>
North Atlantic Steamship Company	3	9,726
Pacific Mail Steamship Company	12	15,870
Vanderbilt Mail Line	8	11,134
P. R. R. Company Central American	3	1,544
Royal Mail Steam Packet Company	25	49,368
Pacific Steam Navigation Company	9	5,449
Liverpool and Aspinwall	3	1,350
Champion (Vanderbilt)	1	1,563
Total	64	96,004

There are, in addition to the foregoing, the following lines of sailing vessels running in connection with the Panama Railway, viz. :—One line from New York to Aspinwall; one from Liverpool to Aspinwall; one from London to Aspinwall; two from Bordeaux to Aspinwall; and one from Bremen to Aspinwall.

The Boston Ice Company send about five ships a year with ice and Yankee notions to Aspinwall.

On the Pacific side there are quite a number of sailing vessels, bringing into Panama the products of South and Central America for transportation over the isthmus.

The accommodations for watering ships are very complete, there being two aqueducts at Taboga Island, each furnishing an abundant supply of pure water for the shipping.

At Taboga the Pacific Steam Navigation Company have a "grid-iron," sufficient to take out any steamer or man-of-war in the Pacific; they have also near the gridiron a large foundry and machine-shop, with every convenience for repairing steamers and for cleaning or coppering their bottoms. The tide rises and falls twenty-one feet at their works.

At Aspinwall the Panama Railroad Company have a large foundry, where they are prepared to do any repairing on machinery.

The store-houses and works of the Pacific Mail Steamship Company are on Flamenco, Islanao Culebra, and Perico Islands, a small group nearer the anchorage.

The prices of ship stores in Panama average much lower than in any other Pacific ports. There is no duty on any article imported into either Aspinwall or Panama, so that all European goods can be sold "the duty cheaper" here than in the United States, the transportation being the same.

Table of Distances.

Southampton to Aspinwall, via St. Thomas	4,720 miles.
New York to Aspinwall	1,989 "
New Orleans to Aspinwall	1,533 "
Panama to Valparaiso	2,718 "
Panama to Australia	7,953 "
Panama to Tahiti	3,421 "
Tahiti to Sydney	4,532 "
New York to Sydney, via Panama	9,989 "
England to Australia, via Panama	12,690 "
England to Australia, via Suez	14,490 "
Panama to Honolulu	3,660 "

Fastest Running Time of Steamers between various Ports and the Isthmus of Panama.

New York to Aspinwall	6 days 23½ hours.
San Francisco to Panama	10 " 22½ "
Valparaiso to Panama	9 " 11 "
Australia to Panama	32 " 0 "
Liverpool to Panama	16 " 7 "

On the Pacific coast of Central and South America there are 10,744,341 inhabitants, chiefly dependent on this route for their European mails, and also for the exports and imports of their country, viz. :—

New Granada....	2,546,029	Costa Rica	125,000
Ecuador	854,000	Nicaragua	324,000
Peru	2,418,000	Honduras	350,000
Bolivia	1,628,000	San Salvador	394,000
Chili	1,133,862	Guatemala	971,450

Say Total .. 10,744,341

Should Australia be added to the above list, by a mail route being opened between Panama and there. As anticipated, this will add a country fast filling up by immigration, and whose superficies approximate to 2,690,810 square miles. The exports of gold from Australia to England for the first eight months in 1859 amount to 1,484,750 ounces, or 61 tons 17 cwt. 1 qr. 4 lbs. 2 oz. Shipping inward, 553 vessels, of 153,002 tons, having over 7,955 men on board; and the shipping outward 563 vessels, of 139,020 tons, having 7,988 men. During the year 1855 over 55,000 immigrants arrived at the port of Sydney alone.

The West coast of Mexico, California, Oregon, Washington Territory, and the British Possessions on the Pacific receive their European mails and export all their specie via Panama.

The home value on most of the products of this country has advanced very much since the completion of a railroad over the isthmus of Panama. Large quantities of Peru bark, balsam, cochineal, cocoa, coffee, hides, indiarubber, indigo, logwood, oil (whale and cocoanut), sarsaparilla, varnilla, gold, silver, and hundreds of other commodities of the Pacific, seek a market via this great central route of the globe.

The Panama Railroad Company have so frequently published statements of their affairs that we feel it would be a repetition of what our readers have already seen to publish anything further. The rapid increase of business over this road is without precedent, and still the business is as yet in its infancy. The road was only completed in January, 1855, since which time the company has been constantly making improvements, until it is now one of the best appointed railroads for the transportation of light and heavy freight, as well as passengers, extant.

The cost of coals, laid down in Panama, via Cape Horn and via the railroad, is as follows, viz. :—

Via Railroad.

Cost in United States per ton of 2,240lbs.	4d. 25c.
Freight to Aspinwall	4 80
Primage	0 24
Loading cars in Aspinwall	0 60
Freight over railroad	5 0
Total cost per ton in Panama	14 80

Via Cape Horn.

Cost in United States	4d.	25c.
Freight and primage to Panama	11	50
	<hr/>	
Total	15	75

The cost of lighterage, and the waste and breakage is greater via railroad than by sea.

With the foregoing facts before our readers they will be enabled to judge of the importance of "this narrow neck of land." Every day the transit business is increasing, and in a short time it will doubtless engross the greater portion of the trade that now finds its way round Cape Horn.

And now, observed the Chairman, turning our attention to Japan, that most interesting land, yet nearly as full of volcanoes as its shores abound with rocks, unhappily the course of events has not run smoothly there. Accounts recently received relate a state of affairs which requires all the energy and determination of the authorities to suppress. He hoped that our Consul would be supported with the same good judgment and consideration as had been exercised in the Pacific. The account he had seen stated that trade had been suspended by the native authorities, but with the approval of the British Consul-General, on account of the improper conduct of some of the British residents there, and because of outrages committed on Japanese by drunken sailors. "Mr. Alcock, our Consul-General," says the *Hong-Kong Journal*, "is distinguished by great caution and by even a timid regard for the good opinion of the local communities in which he has been placed, so that it is extremely improbable that his lengthy and severe circular has not been more than warranted by the circumstances of the case. In it he asserts that inquiry into murders committed lately on foreigners in Japan 'marked by circumstances of great atrocity and vindictiveness,' and into alleged insults committed by Japanese officials, 'has only tended to prove how much *foreigners, in a marked degree, have themselves to blame for so deplorable a state of affairs.*' Sailors from ships of all nations have been allowed to go about on shore intoxicated, offering violence and insults to respectable Japanese; and Mr. Alcock even asserts that the permanent foreign residents have given just cause for complaint by violent or indecorous conduct to native officials, as well as to others. The Consul-General says that British merchants at Yokohama have made 'insane demands' on the Japanese authorities, 'often with menace and violence,' while there has been procrastination and want of system on the part of the Japanese. In the desire to purchase gold coins, on which there is a profit of nearly 100 per cent., demands have been made on the Japanese treasury in violation of the treaty regulations, under fictitious, often indecent, names, and for fabulous sums which no language can express. In addition to all this there appears to have been smuggling

going on. It is not possible that the interests of legitimate trade in Japan (which can only be slowly developed) and the honour of England in the East, should be suffered to be perilled by such proceedings as these."

This is but a bad beginning of our intercourse with Japan, but let us hope that the firm measures spoken of as adopted by our Consul will be supported by our naval commander, on whom all must now depend. But the very character of the British merchant has been degraded by certain profligate parties in their inordinate thirst for gold, and it will be but a duty that British merchants owe to themselves, as well as a respect for the credit of their character abroad, if such proceedings are publicly denounced by those who glory in the honour and respectability of the name.

In reference to China and the large expedition which was known to be preparing to vindicate the late disastrous affair at the Peiho River, report states that the Emperor of China was quite ready to concede all we required. Such a termination of affairs would indeed be desirable.

The business of the Club was about to conclude, when Albert, addressing the Chairman, said, I am anxious, in reference to a remark which I recently made on the Suez Canal scheme of M. Lesseps, to state that a pamphlet has just appeared from the hands of this gentleman relative to it, with the object of removing erroneous impressions about possession of territory, fortification, and the withdrawal of the territory from the power of the Sultan. He contends that this is an unfounded assertion, and all other motives besides those of fairly establishing his canal to be entirely chimerical.

That word chimerical is happily introduced, observed Rodmond.

Yes, added the Chairman, and a scheme which in the opinion of savans who really understand the subject is impossible from physical causes, may be fairly considered chimerical in the opinions of those men who lead the world in such matters; and worldly wisdom, which is no bad commodity after all, looks for a real motive under the surface, and pounces upon a political one for that possession which has been boasted. He believed, however, that there really were not only no more grounds for disquiet or mistrust in this respect than there were for anticipating that the canal would ever become a *fait accompli*. In conclusion, he would add that the Board of Directors lately met, at which several foreign Directors attended. The present situation of the undertaking was pointed out by the President, M. Ferdinand de Lesseps, and it was decided that a general meeting of the shareholders should be convoked for May 15th.

One more word, continued the Chairman, and that, too, on a very important subject; but this letter has just been placed in my hands, and it is so full of plain honest truth in contrasting the comforts of a ship of war with the miseries of a merchant ship, that I am sure the Club will be glad to place it among its papers. Every word of it is true, and it is high time that the prejudices of seamen against the navy should be rooted out by truth. Here and there some obstruc-

tions are found, but good conduct is certain of good treatment and encouragement, and it is only the badly disposed who naturally dislike to submit to be checked in their bad behaviour.

7, *Chambers Square, Upper East Smithfield, London.*

Sir,—In a man-of-war, in the first place, at sea, you are sure of your watch and watch, and in harbour it must be very urgent circumstances that the commanding officer will turn the hands up.

In a merchant ship the watch is turned out at seven bells to get their breakfast, ready to go to work at eight o'clock, and after the four o'clock watch is relieved they have an hour at the pumps, or perhaps more if required; then you go to your breakfast and no beef in the kid, and your coffee no good; you will then go to the mate and complain about it; he will tell you that you have got your allowance and you will get no more, and order you *forward*, and when you come on deck at twelve o'clock he has a nice job for you—if it is any thing of a dirty day—to scrape the royal mast, the royal studding-sail booms, or grease both, or tar a main royal or top-gallant stay. Dare you then refuse, you will get a good pounding and your wages stopped. When your allowance is weighed out it is taken out of the cask full of pickles and full of salt; it is hung on the stillards before a drop of pickles or a grain of salt leaves it, and when it is cooked there is not one third of the weight. You must not say a word about it, or you will get nasty jobs for so doing.

But in a man-of-war, if you think you have not got your allowance, take it to the officer of the watch, and he will see that you get satisfaction. He will make the parties bring their weights and scales up, and have it weighed before himself, and if it is not the weight the whole will be made up to you; and if you cannot eat the whole of your allowance you can leave what quantity you like behind and be paid for it.

But in a merchant ship, if your bread is that bad you cannot eat it, you will buy bread out of the bum-boat at your own expense and get nothing for it, and you must eat the bad bread after all.

In a man-of-war there is no calling you out of your name. If you ask an officer any question, he will give you a civil answer; and if it is anything of any consequence, he will give you his advice to the best of his opinion, and put you in the right way to go about it. There is no knocking you down with a handspike, and kicking you when you are down. You need never be afraid of being washed out of your bunk. They do not roast anybody, but try to preserve the health of their crews in every shape and form that they can think of.

But in a merchant ship, the harder it rains and blows the more work you have got to do. I have been in a ship bound to Calcutta, where I have been holy-stoning decks and it raining as if heaven and earth were coming together, and a gale of wind, when the sea came clean over the rail and washed us, stones, sand, and paint-rubbers, clean to leeward, and they went overboard; but that did not stop us.

We were ordered to get more stones and sand, and go on with our

work, and never had a dry stitch to put on for ten weeks; and if a man wants any clothes or a pair of shoes, he must go to the captain, and he will send a tailor or shoemaker on board to you, and you must take the things at his price, or else go without them, instead of the captain giving the money to the man in his own hand and let him go where he likes to purchase his own things. No; the captain wants the discount for it. When he pays all the bills that are contracted by the crew it will amount to a few pounds, and the captain puts this discount in his pocket.

Sailors, do not be foolish, take my advice, and look out for yourselves in time. Look at the advantages there is in the navy to what there is in a merchant ship.

In the navy your wages are always going on. You are not in danger of being roasted alive, nor being shot by your officers. The captain of the *Blanchmore*, of Liverpool, shot one of his men dead, and fired at another one; but as luck would have it he had a bottle in his hand close to his breast, which turned the ball off. There is no such thing as that in a man-of-war. When some of these masters of merchant ships get you into a foreign port, the wages there may not be as much as you have got; then they will keep you at work both late and early in the heat of the sun, working aloft and in the hold, doing everything they can to kick up a row with you, so that they can put you in gaol; and when you come out they will tell you you can go where you like. The last ship I was in the mate was detected in putting the clock back for fear the men should see that he was working them over their time. There is nothing of that sort goes on in a man-of-war. I had occasion to go to the visiting doctor one morning with a large boil on my shoulder; he ordered me to put a bread poultice on it. I went to the steward for a little bread, and the chief mate said that I ought to find it myself.

In a man-of-war there is an experienced doctor to attend you in any illness that may come on you. He will not let you go to work until you are well.

In a merchant ship the mate, second mate, and perhaps the captain bullying you, calling you everything that they can lay their tongues to. They say, throw your gangways open and give your men more liberty; but I say, let a merchant ship throw her gangways open and give her men more liberty and better food. As for liberty, I have had more liberty in a man-of-war than ever I had in a merchant ship. If a man wants comfort on board of a ship, a man-of-war is the place to get it.

In different merchant ships that I have been in, I have heard men running a man-of-war down. I said nothing at the time. Before the voyage was up, I found out that they were fellows that was turned out of the Service with disgrace for robbing their shipmates, or for worse crimes. These are the fellows that give the Navy of our country a bad name; but, young men, try it for a while—one commission will not kill you. You can join one ship, and when she is paid off you are clear again; but I will be bound to say you will

never leave them when you find out the usage, and privilege, and the good abilities of naval officers, until your time is up.

I have served her Majesty the whole of her reign up to 1856—that is, about seventeen years and a half; and if the country wanted me, I would willingly jump at the chance; but the Service does not want me. I was invalided, and got my pension. Their lordships gave me the full scale for the time I served, and I am quite satisfied with it; had I been able to serve longer I would have got more, and when they have got employment for me they will give it me.

So now, young sailors throughout, take the advice of an old sailor that has experienced both Services; make no delay, the sooner you join the sooner you will get a good pension. Mind and do not let any of those fellows that have been turned out of the Service stop you. When any of you hear a man run a man-of-war down, ask him if ever he was in one? and if he says he was, ask him to let you see his discharge. You will find he will not let you see it; he is ashamed to show it, for it has the corner cut off.

I will now conclude with a hearty good wish to the Navy, its commanders, and to all that join it.

I remain &c.,

WILLIAM WILSON,

Late Boatswain's Mate H.M.S. Algiers.

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Admiralty, February 18th, 1860.

The length to which our Nautical Club proceedings have run has precluded the possibility of giving more usual matter, which is reserved for our next.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle

APRIL, 1860.

OUTER ROUTE FROM SYDNEY TO TORRES STRAIT.—*Proceedings of H.M.S. Herald, Captain H. M. Denham, R.N.—Extract of a Letter to Captain Washington, R.N., Hydrographer to the Admiralty.*

Leaving Port Jackson on the evening of the 11th April, 1859, on a N.E.b.N. course, it was found that the floating light dipped at 10½ miles, the eye being 22 feet high; the Inner South-head light at 14½ miles; and the South-head light at 24 miles; that the edge of the 100 fathoms bank of soundings lay 23 miles, due East from Broken Bay. No current was experienced with the W.N.W. wind, in pursuing this track to the offing; nor did we get into the prevailing southerly current until crossing the parallel of 31° S. in long. 154° E.; but a weatherly set of half a knot was found in 28° 33' S., 154° 28' E.

From the Bellona Group we gained the western horn of the Booby Reef, awash (at half tide), and determined its position to be 20° 57' S., 158° 31.8' E. The black coral blocks are always 4 to 6 feet above water on the southern edge of this reef, which at all times presents a crescent of breakers. The variation was found to be 9° 19' E.; high water, full and change, at 8h. 15m.; range of tide 5½ feet.

The next detached reef which we traced on this eastern limit of Torres Strait was the N.W. Bellona, awash. Like Booby Reef, no soundings are found along its south-western side. It is awash at half tide, presents some conspicuous blocks of dark coral, and its N.W. extreme is in 20° 47.6' S., 158° 28' E.

The position of the principal wooded island (44 feet high) of the

eight low islets of the Chesterfield Group, forming the southern extreme of the Bampton Reefs, was next determined in $19^{\circ} 52' 22''$ S., $158^{\circ} 19' 16''$ E. Variation $9^{\circ} 19'$ E.; high water, full and change, at 8h., rise and fall 5 feet.

The southern of the two wooded islets (elevated 17 feet) called the Avon Isles, marking the middle of a trend of dangers reaching 58 miles North and South, is in $19^{\circ} 32' 5''$ S., $158^{\circ} 15' 20''$ E. Var. $9^{\circ} 2'$ E.; H.W., F. & C., at 8h. 24m., and the range of tide 5 feet.

From the Avon Isles we traced the Bampton Reef (awash) for 31 miles N. $\frac{3}{4}$ E. to its abrupt northern extreme, in $19^{\circ} 1' 19''$ S., $158^{\circ} 26' 56''$ E.

The Kenn Reef was found to comprise a chain of three detached reefs of 16 miles extent, trending N.N.W. $\frac{1}{2}$ W. and W.S.W. from the south-eastern elbow, indicated by a white low sand cay, and situated in $21^{\circ} 15' 24''$ S., $155^{\circ} 50' 28''$ E. Var. 9° E.; high water, full and change, at 8h.; rise $5\frac{1}{2}$ feet. We found a rude pile, constructed with the débris of wrecks, on one of the sand cays at $1\frac{3}{4}$ mile to the westward of the S.E. projection of this reef, the cays of which are scarcely 6 feet above high water level, but so protected from the ocean surge by the outer edge of the reef as to shelter vegetation.

This reef is divided into three distinct parts, the south-western of which (a small circular reef of half a mile diameter, with a sand cay on it) is separated, on the eastern side, from the main reef by a 4 fathom opening 2 miles wide, the eastern side of which is studded with detached rocks. The northern part of the main reef is divided by a boat passage; its southern part has three sand cays; and it is separated on the northern side from the north-western low reef by a clear channel of 33 fathoms $2\frac{1}{2}$ miles wide. Off the N.W. extreme of the north-western reef there are several detached dangers.

When crossing here from the Bampton Reefs we did not experience any current. No soundings were found on the eastern side of Kenn Reef, but there is a bank, affording excellent anchorage in South-easters, on its lee side.

When about 17 miles North of the next reef on this western side of the route, viz., Frederick Reef, no soundings were to be had with 2,750 fathoms. Notwithstanding it was steep-to, we found anchorage in its curve, and determined its southern elbow to be in $21^{\circ} 1' 46''$ S., $154^{\circ} 24' 20''$ E. Var. $8^{\circ} 44'$ E.; H.W., F. & C., 8h.; rise and fall 6 feet. We built a temporary cairn with wrecked timber on its central low sand cay.

After searching for Carns Mid-day Reef, said to be in $21^{\circ} 58'$ S., $154^{\circ} 20'$ E., and then for Welsh Reef in $21^{\circ} 15'$ S., $153^{\circ} 56'$ E., our track warranted their being struck out of the charts.

We next determined the extent and position of the Saumarez Reef; which we found to extend 20 miles in a N.E. and S.W. direction, its extremes shown by sand cays, between which, on its western side, a ship may anchor anywhere. The north-easternmost of these cays is in $21^{\circ} 38' 11''$ S., $153^{\circ} 46' 34''$ E., var. $8^{\circ} 38'$ E.; and the south-

westernmost is in $21^{\circ} 50' 48''$ S., $153^{\circ} 30' 19''$ E.; while its convex side has a dangerous elbow in $21^{\circ} 55' 50''$ S., $153^{\circ} 35' 50''$ E. Like all these reefs, the weather side offers no soundings whatever.

Being anxious to replenish water we anchored at the southernmost horn of the Great Barrier Reef, which is in $22^{\circ} 23' 12''$ S., $152^{\circ} 38' 49''$ E.; var. $8^{\circ} 41'$; H.W., F. & C., 8h. 48m.; rise 7 feet. Soundings of 190 to 76 fathoms, white coarse grit, were found in the 60 mile run between the Saumarez Reef and the above position. It was ascertained when at anchor 21 miles East of the above horn of the Barrier that the flood tide set West half a knot an hour, and the ebb E.b.S. three-quarters of a knot; the stream of flood ceasing one hour before high-water at the Barrier Reef, and the ebb stream continuing one hour after low-water on the reef. But when anchored 80 miles off, in 220 fathoms (pale ooze), in $22^{\circ} 31' 13''$ S., $154^{\circ} 0' 13''$ E., we found a steady S.W. current of half a knot.

On arriving at the Percy Group, we found (July) all the water courses dry except at the western bay on the northern side of No. 1 island, where we discovered a small but constant rill. The opportunity was taken to make a plan of the anchorages at this group, and we found Beale Creek of No. 1 island to be in $21^{\circ} 44' 56''$ S., $150^{\circ} 20' 56''$ E. Var. $8^{\circ} 9'$ E.; H.W., F. & C., 10h. 30m.; rise $14\frac{1}{2}$ feet at springs, and 11 at neaps, with a range of 8 feet. The island attains an altitude of 625 feet.

The creek of the Lagoon at the West bay of No. 2 island, the summit of which is 816 feet high, is situated in $21^{\circ} 39' 46''$ S., $150^{\circ} 17' 10''$ E.; var. $8^{\circ} 42'$ E.; H.W., F. & C., 10h. 30m.; rise 16 feet, neap range 10 feet. The peak of the northern or No. 3 island of this group is in $21^{\circ} 31' 19''$ S., $150^{\circ} 18' 34''$ E. Nos. 1 and 2 of these islands afford plenty of wood and some seine fishing, but nothing else, while their rocky surfaces give no hopes of vegetation: perhaps a few seeds left there may afford some fruit and vegetables to the voyager of the Inner Route. We did not see a native.

On Cato Island we planted a collection of fir trees which we had brought from the Percy Islands. My impression is that it is the proper position for a lighthouse in preference to Kenn Reef, although a more salient danger; and having again satisfied myself of the non-existence of the Australia Rock, we proceeded to the western extreme of Wreck Reef; the eastern extreme with its Bird Islet having been found last season in $22^{\circ} 10' 30''$ S., $155^{\circ} 28' 34''$ E. Its western extreme (marked by a low bare sand cay) is in $22^{\circ} 12' 4''$ S., $155^{\circ} 11' 4''$ E.; var. $9^{\circ} 49'$ E.; H.W., F. & C., 7h. 56m., rise 6 feet; and it thus appears found that this Wreck Reef Chain spreads East and West for $18\frac{1}{2}$ miles, presenting a formidable danger to leeward for vessels taking the Outer Route.

We next visited the reef which had recently proved fatal to the imperial French steamer *Duroc*,* 6 miles in extent N.N.W. and S.S.E. and presenting a flat grassy cay, of 7 feet elevation, in $17^{\circ} 24' 39''$

* See account of her loss in vol. for 1857, p. 263.

S., $155^{\circ} 52' 38''$ E.; var. $8^{\circ} 30'$ E.; H.W., F. & C., 7h. 55m.; rise $5\frac{1}{2}$ feet. Upon the Mellish Cay we placed a conical beacon 32 feet high, with the remains of the unfortunate *Duroc*, which vessel had been evidently lured on to the southern part of this reef while reasonably assuming she was steering 17 miles southward of its then assigned position. At this cay, as well as at all others we had visited, a tablet of its relative position, with the nearest points of succour, was placed, and a great variety of fruit and vegetable seeds were disposed of.

The Farquhar and Lihou Reefs were next visited, and found to trend N.E. and S.W. over a space of 45 miles, the north-eastern projection being in $17^{\circ} 20' 45''$ S., $152^{\circ} 5' 33''$ E., and its south-western extreme in $17^{\circ} 39' 13''$ S., $151^{\circ} 22' 44''$ E.; var. $7^{\circ} 57'$ E.

In stretching towards the Barrier Reef, we experienced no current for the first 140 miles; but on advancing, we became sensible of a half-knot set to the S.E. We could see nothing of David Reef or Vine's Horse-shoe Reef as we passed over their assigned positions; and we advanced 40 miles within the assumed boundary of the Barrier Reef, a fact which our subsequent traverse to H.M.S. *Fly's* farthest perfectly established, so that it proves that the outer margin of the Barrier Reef recedes (northward of *Fly's* farthest) 35 and 40 miles within its outline on the chart. I was enabled to fix it in $20^{\circ} 5' 5''$ S., $150^{\circ} 55' 13''$ E.; $20^{\circ} 50'$ S., $152^{\circ} 1' 13''$ E.; $21^{\circ} 0'$ S., $152^{\circ} 19' 13''$ E.

Broken water having been reported from time to time off Breaksea Spit, indicating a danger in the coasting track between Port Jackson and Port Curtis, we made direct for it, and found a formidable coral reef a mile long North and South, one-third of a mile broad, with as little as *nine feet* on its middle part, a knoll from which the remarkable sand-slip of Sandy Cape bears S.W.b.S. (S. $41^{\circ} 3'$ W. true), distant $11\frac{1}{2}$ miles, and the nearest (eastern) elbow of Breaksea Spit W.b.S. $\frac{1}{2}$ S. (S. $81^{\circ} 24'$ W. true), $3\frac{1}{2}$ miles. A bank of soundings (13 fathoms) surrounds it at half a mile off, with 19 between it and the reef, deepening to 32 fathoms at a mile range outside. The distance of the mainland admitting of no clearing marks, ships must borrow towards the breakers of Breaksea Spit to 8 or 10 fathoms if intending to pass *inside* this shoal, or, by night, must keep in 35 fathoms to ensure being *outside* of it. This was named Sandy Cape Shoal. The current over it set steadily S.S.E. at $1\frac{1}{2}$ knot for nearly two days that we were anchored on it.

Touching at Cape Moreton, a 9 fathom sounding, amidst some 20 fathoms, was examined, and a rocky shoal of 22 feet discovered N.E. of Moreton Bay. It is about two cables across, steep to, in 14 and 19 fathoms, with a constant stream of $1\frac{1}{2}$ knot setting E.S.E. the whole day we were anchored on it. It was named the Hutchison Shoal after Lieutenant Hutchison of this ship, whose lead struck the shoalest part, and it bears N. $\frac{3}{4}$ W. 2 miles from Flinders Reef, and N. $\frac{1}{4}$ E. $5\frac{1}{2}$ miles from Cape Moreton lighthouse. A ship will be *outside* of it while the lighthouse does not bear southward of S. $\frac{3}{4}$ W., on which bearing the lighthouse is seen over the body of breakers on

Flinders Reef. Vessels passing *inside* of it should not bring the lighthouse southward of S.b.E. To pass between it and Flinders Reef, borrow on the reef, bringing the Glasshouse Craigs W. $\frac{1}{2}$ S.; or, passing northward of it, the craigs should not be brought westward of W.S.W.

(The bearings are magnetic, except where marked as true.)

Geographical Positions determined by H.M.S. Herald, during her Cruise in 1859.*

Place.	Spot of Observation.	Latitude, South.	Longitude, East.	Vari- ation, East.	Tides.		Height above High Water Level.
					H.W. F. & C.	Rise	
		° ' "	° ' "	° '	h. m.	ft.	ft.
<i>Coral Sea.</i>							
N.W. Bellona Reef	Booby Reef, North-western horn	20 57 0	158 31 46	9 19	8 15	5 $\frac{1}{2}$	Awash.
"	North horn of North western reef	20 47 36	158 28 1	.....	.....	...	"
Chesterfield Group	North-west point of Long Island	19 52 22	158 19 16	9 19	8 0	5	44
"	Loop Islet	19 56 30	158 29 53	.....	.....	...	12
"	North-west point of reef	19 37 23	158 13 13	.....	.....	...	Awash.
Avon Isles	South-western islet	19 32 5	158 15 20	9 2	8 30	5	17
Bampton Reef	North point	19 1 19	158 25 56	.....	.....	...	Awash.
Kenn Reef	Observatory, Sand Cay	21 15 44	155 48 38	9 0	8 0	5 $\frac{1}{2}$	6
"	South-eastern point of reef	21 15 24	155 50 28	.....	.....	...	Awash.
"	North point of reef	21 6 8	155 46 13	.....	.....	...	"
Frederick Reef	South Sand Islet ..	21 1 46	154 24 20	8 44	8 0	6	5
"	North Sand Islet ..	20 56 48	154 25 36	.....	.....	...	4
Saamarez Reef	North-eastern Sand Cay	21 38 11	153 46 24	.....	.....	...	8
"	South-western Sand Cay	21 50 48	153 30 13	8 36	8 0	6	8
"	South-eastern elbow of reef	21 55 0	153 35 50	.....	.....	...	Awash.
Barrier Reef ..	H.M.S. <i>Herald's</i> South extreme	23 23 12 $\frac{1}{2}$	152 36 49	8 41	8 48	7	"
Wreck Reef ..	West Cay	23 12 4	155 11 4	9 49	.....	...	6
Mellish Reef ..	Sand Cay	17 24 39	155 52 38	8 30	7 55	5 $\frac{1}{2}$	(Cay 7 Beacon 30)
Libou Reef ..	North-east point ..	17 20 45	152 5 33	7 57	.....	...	Awash.
"	South-west point ..	17 39 13	151 22 44	.....	.....	...	"
<i>Australia.</i>							
Percy Group ..	Middle island West bay	21 39 46	150 17 10	8 42	10 30	16	Peak 816
"	North-west bay, South Islet	21 44 56	150 20 56	8 9	10 30	14	Peak 625
"	Pine Peak	21 31 19	150 18 34	.....	.....	...	"
Sandy Cpe. Shl.	Nine-foot rock	24 35 48	153 21 34	9 46	.....	...	"
<i>Barrier Reef</i>							
Barrier Reef ..	Inside, No. 1 prong	22 9 0	152 12 13	.....	.....	...	Awash.
"	" No. 2 "	21 42 0	151 41 13	.....	.....	...	"
"	" No. 3 "	21 37 0	151 23 13	.....	.....	...	"
"	" No. 4 "	21 29 0	151 10 13	.....	.....	...	"
"	Outside, No. 1 prong	20 5 0	150 55 13	.....	.....	...	"
"	" No. 2 "	20 50 0	152 1 13	.....	.....	...	"
"	" No. 3 "	21 0 0	152 19 13	.....	.....	...	"

* The longitudes of these positions have been adapted to the meridian of Port Macquarie, Sydney, assumed in 154° 14' East of Greenwich. See *Australia Directory*, vol. 2, page 361.

PILGRIMAGE TO MECCA IN 1859.

The pilgrimage to Mecca of 1859 is gone by to history. The Feast of Sacrifices, celebrated in the valley of Araf, some distance from the sacred city, by a huge concourse of the faithful, has concluded the last act in the solemnization of this religious rite.

Before referring to statistics collected as to the number of the pilgrims of 1859, we may notice, in a few words, the origin of the sacred pilgrimage to Mecca just performed with as much fervent piety as in the beginning of Islamism. Although a mere summary, the historical outline will convey an idea of the force of those religious convictions which every pilgrim acquires in his own country, imbued as they are with the fervour of the purest fanaticism.

The pilgrimage to Mecca dates back to a period far anterior to Mahomet. Before him, and indeed from time immemorial, the heathen population of the Arabian peninsula went in crowds devoutly to visit the holy temple of Kava. Vain were the attempts of the prophet and legislator to suppress the observance of a custom which had begun in the earliest ages by a people whom he desired should recognize his law, and he therefore desisted, preferring the religious character of these traditional customs to seeing his extensive designs frustrated, and contented himself with diverting this duty of the Arabs to their idols towards the worship of the true God.

The Mussulman tradition traces back the foundation of the first temple of Kaba to Adam himself, who, they suppose, received permission for it from the Deity. After the death of Adam they say that his son Seth built a similar temple "of stone and lime," which was destroyed at the time of the deluge, and rebuilt by Abraham and Ishmael some time afterwards by God's command (Koran, chap. ii., verses 119 and 121). It was at this time that the famous black stone which, according to their tradition, fell from the sky with Adam, (this stone is nothing but a large aerolite,) was brought to Abraham by the angel Gabriel, who fixed it in one of the corners of the holy temple. According to the historian Aboul-Fida, this temple, which was often repaired, was entirely rebuilt a few years before the birth of Mahomet by the Khoraischites, an Arab tribe to which the prophet's family belonged. A little later, Abdallah Sbeu Zobeir, Calif of Mecca, made considerable repairs in it, and in the year of the Hegira 74, it was again newly built by El Hadjadi Sbeu Youssef, Abd el Malek's lieutenant, who seizing on Mecca, gave the edifice the form which it has nearly preserved to the present time. Since then the temple has received other repairs, especially at several recaptures, and particularly in 1621 and 1631.

Mahomet, in the Koran, has made the pilgrimage to Mecca one of the four cardinal points in the practice of his religion. They constitute indeed so many absolute obligations for the true believer; 1st, prayer; 2nd, charity; 3rd, fasting, and 4th, the pilgrimage to Mecca. The faithful must accomplish the pilgrimage at least once in the course

of life, and no illness, want of means, or any suffering, can exonerate them from this duty. Women even are not excepted.

There is another pilgrimage that the Mussulman has to make after that to Mecca. He must also go to Medina, to visit the prophet's tomb: the only difference in the two is, that the pilgrimage to Mecca is a divine obligation, while that to Medina has only a canonical obligation. The latter is formally prescribed in the sacred book the Koran, so that if a pilgrim after having observed all the religious ceremonies at Mecca, is unable to go to Medina to pray at the tomb of the prophet, his pilgrimage will be considered no less regularly accomplished, and therefore as having acquitted himself of the imperious duty ordained by his religion.

The pilgrimage to Mecca is obligatory on the true believer, for the prophet says, according to the learned doctor the Scheikh El Ghazale, "They die Jews or Christians who have knowingly and through negligence not fulfilled this religious duty once in their lives."

The pilgrimage must be performed in the beginning of the last month of the Mussulman year, the month of Zou' Hedjan, which is consecrated to this solemnity, as its name shows. On the tenth of this month the religious ceremonies are completed by the celebration of the feast of sacrifices, called by the Arabs Aid El Corban or Aid El Dhohia, and by the Turks Corban Beyram.

The territory of Mecca is bounded by the shores of the Red Sea, the town of Rabok on the north-west, and by that of Leit on the south-west. A line from the latter place passing North across the mountainous chains of Djebel and Korah, then north-east on reaching the village of El Maghazel, and then East for Rabok, will give a triangular figure, which nearly comprises the sacred territory, called by the Arabs Beledou Hadoul El Haram.

As soon as a Mussulman on the pilgrimage to Mecca crosses its boundary, he is obliged to disrobe and assume the pilgrim's costume, which, Ihram says, consists of two pieces of white cloth, one of which encircles the loins and falls midway down the leg, and the other is thrown over the shoulder, leaving the right arm free. The head must be bare, and the feet simply protected by sandals; but many pilgrims wear no covering on their feet. While thus apparelled, hunting is forbidden, and this prohibition is so strict, that they are not even to kill an insect or any vermin on their bodies. While the pilgrimage lasts, their language must be reserved, they must carefully avoid quarrelling or fighting and all female intercourse.

On arriving at Mecca the pilgrim, assisted by a guide, commences a series of ceremonies, which are briefly these:—

1st.—To proceed to the temple and pass seven times round it, walking and running, beginning at the south-eastern corner, where the black stone is fixed, laying his hand each time on this stone or kissing it.

2nd.—To drink water from the wells of Zem Zem. According to the Mussulman tradition, when Agar wandered with her son Ishmael into the desert, the spring of water which supplies this well came miraculously under their feet.

3rd.—To stop and pray at Abraham's place: this is marked by a stone, on which, according to their tradition, Abraham stood when he built the temple. They still pretend to see the mark left by the patriarch's feet.

4th.—To stop and pray at the place called El Madjen, where, by the same tradition, Abraham and Ishmael made the mortar which was used in constructing the temple.

5th.—To run seven times between Mounts Safa and Merwa in the same town. This ceremony is performed in commemoration of Agar's sorrowful search for water to quench her son Ishmael's thirst.

6th.—After morning prayer (on the ninth day of the month) to go to Mount Arafat, (also called Djebel El Rahma, the Mount of Mercy,) nearly twelve miles from Mecca. The tradition says that Adam and Eve, when driven out of Paradise, came forth on the earth, Adam on the island of Ceylon, and Eve on Mount Arafat, and that Adam, seeking for her everywhere, found her at the foot of this mountain, where, by order of the angel Gabriel, he built a temple. It was to Mount Arafat that Mahomet retired always to pray and preach. At the time of the pilgrimage, the khatib (preacher) standing on the left of the site of Adam's temple, and a little in advance of the place where the prophet used to kneel, delivers a long discourse, and the immense crowd of pilgrims encamped in the valley or on the sides of the mountain, listen first attentively, addressing fervent prayers to the Most High; but towards the end of it, nothing is heard but cries and lamentations from the crowd, to express their contrition for past sins, and to claim pardon.

7th.—On the next day, having passed the night in prayer in the oratory of Mozdalifa, at a little distance from Arafat, the pilgrims at evening resort for the second time to the valley of Mouna, about half a mile long. The pilgrims advance in a close mass, over a long road, which crosses the valley, and against each of the pillars, which are placed there at certain distances, called the Devil's Pillars, they throw three small stones, which they take care to provide themselves with from the ground surrounding the temple of Mozdalifa. The object of this ceremony is to commemorate the patriarch Abraham, when he was about to sacrifice his son, by God's command, meeting Satan, and driving him away with stones. Immediately afterwards the pilgrims sacrifice their propitiatory victims in the valley, and as soon as these sacrifices are concluded, they proceed to shave their heads and cut their nails, and religiously bury the produce of the operation. This is the last ceremony required of them, but the pilgrims remain two days more at Mouna, then returning to Mecca they again visit the temple, and soon after prepare for their departure.

Those of the faithful who previously to arriving at Mecca have made the pilgrimage to Medina, generally embark at Djeddah, either for Egypt, the Persian Gulf, or India. Those who have not yet made this religious visit to this second holy town, go there from Mecca after completing the ceremonies of the Hadj. The devotional proceedings which they must go through at Medina, consist in reciting prayers in

the mosque of the prophet Mesdjid el Nabi:—1st, at the place called El Rawdza or the garden; the prophet has said, "Between my tomb and my temple is a garden of the gardens of paradise:" 2nd, at the temple of the prophet: 3rd, at the place called El Hudjirah or the chamber; that is, the chamber occupied by Aischa, the woman whom the prophet loved, and where he was interred. Besides his tomb, there are also those of the Califs Abou Bekr and Omar: 4th, at the place called Mahbat Gabriel, where the angel Gabriel descended from Heaven and appeared to Mahomet: 5th, at the tomb of Fatima, the prophet's daughter and wife of Ali.

It is known that the prophet would work with his own hands in the construction of the mosque at Medina. The house which he inhabited adjoined the sanctuary. He died there on Monday the 12th rabiul aoul, in the 11th year of the hegira (6th of June, 632).

Besides the places abovementioned at the prophet's mosque, the pilgrim should visit,—1st, the Kouba Mosque, the foundations of the dome of which were laid by Mahomet, at the time of his flight from Mecca to Medina: 2nd, Mount O hod, celebrated for the cavern in which the prophet hid himself at the time of his flight, also celebrated for a miraculous spring, which quenched his thirst, and for a memorable battle, when he was delivered from his enemies, and as also for Aaron's tomb, which tradition places here: 3rd, the cemetery El Bakia, where the Ottoman califs, the prophet's nurse, his son Ibrahim, and many of his wives are buried.

It is usual for each Sultan on his accession to the throne to send as a present to the temple at Mecca a rich suit of hangings, manufactured at Constantinople, called kissona, to ornament the inner walls of the temple. This religious offering is sometimes repeated after a certain lapse of time in the same reign. Thus, at his accession the Sultan Mahmoud sent his religious tribute, and a few months before his death he ordered a new kissona to be richly embroidered and sent as a present to the holy temple; but death having overtaken him before his intentions could be fulfilled, it was the present Sultan, his son, who, in the second year of his reign, sent his father's gift. Consequently, the Sultan Abd ul Medjid has not, up to the present time, conformed with this ancient custom, which dates back to the times of the first califs. According to another solemn custom, quite as ancient, the Viceroy of Egypt sends every year a rich carpet of Egyptian manufacture for covering externally the sanctuary of the temple.

We have obtained from a source entitled to entire confidence the following statement of the number of individuals who made the pilgrimage to Mecca in 1859 from the different countries where the religion of the prophet has its devotees.

Pilgrims arrived at Jeddah, by Sea.

Turks, Arabs, Circassians, Moroccans, Algerines, Tunisians, &c., from Suez	52,000
From Souakin and Massurah	567
From Yemen	840
From India, Java, Sumatra	6,200
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From Persian Gulf	850
From different places in the Red Sea	1,000

By Land to Jeddah.

Caravan from Damascus and Syria	2,000
„ Egypt	3,000
„ Scheek (Oman country) and near the Persian Gulf	1,500
„ Bagdad and Persia	4,000
„ Medina	1,500
„ Assye country	1,000
„ Nedjed country	1,000
„ Sana country	1,000
„ Jebel Chammo	1,000
Divers caravans from the interior of Arabia, inhabitants of Mecca and from the adjacent towns	16,150

Total of the pilgrims 93,600

The foregoing numbers will be considered an approximation to the real number entitled to credit; and as far as regards the arrivals of the pilgrims at Jeddah, they may be received as correct, as they appear in the register kept at the port.

The expences of the journey by sea for pilgrims to Jeddah, necessarily vary according to the distance of the places of departure and the kind of vessels in which these pilgrimages are made. The following is a table of the rates of fare.

From Suez to Jeddah by country vessel, passage of fifteen or eighteen days, each person	60
From Suez by steamer from Medjidee, passage four or five days:	
First class (cabin)	225
Second class (on deck)	75
From Suez by large sailing vessels, passage seven or eight days. These vessels are from the Indian Ocean, and after having discharged a cargo of coal at Suez, embark pilgrims for Jeddah before leaving them there on their return down to the straits:	
Kosseir, by Arab vessels	120
Souakin, by Arab vessels	50
Massurah, by Arab vessels	15
Yemen coast	30
From India, Java, &c., by large vessels	450
From the Persian Gulf, by Arab vessels	200
„ by boats	120

Every pilgrim must be provided at his departure with his own provisions necessary for the voyage, as he is only entitled to water.

A considerable number of the pilgrims make the voyage to Mecca not only as a religious duty, but also one by which they benefit themselves much in the way of business, by disposing of the merchandise which they bring with them at Hadjaz, or taking other articles with them on returning home.

The pilgrim seldom or never travels alone. He joins his countrymen or any of his tribe, who, thus united, form distinct parties, travelling with all their goods, tents, utensils, and bales of merchandise,

sometimes amounting to something very considerable and cumbersome. Many of the lower classes who are very poor manage to make the pilgrimage by begging the expences of the journey as well as their subsistence, not only in the country through which they are travelling, but from their fellow travellers.

On their arrival at Jeddah the pilgrims lodge in caravanseries, called Okela. It is not uncommon to see then ten or fifteen people even, with all their goods crowded together into rooms not larger than twenty-five feet square. The Arab pilgrims, properly so called, Morocans, Algerines, and Tunisians, prefer living in their tents, which they bring with them, and pitch them accordingly in public places.

The pilgrim does not stay longer in general than two days at Jeddah, and his first care on his arrival is to collect his means for the journey to Mecca by camel. The cost of a camel journey from Jeddah to Mecca varies from fifty to sixty piasters (eight to ten shillings). The average weight of the load he can carry is about three quintals. One camel is generally sufficient to carry the baggage of two pilgrims, and those who are prevented by old age, infirmity, or inability from fatigue from walking, are carried in large wicker baskets, slung across the camel, and covered with mats, called chekelef, in which they spread carpets, &c., and repose with their goods, in which manner women generally travel. In this case the price of a camel journey is higher, and costs some trifle more.

The journey from Jeddah to Mecca by caravan is made in twenty-eight hours, and generally by night, in order to avoid the great heat. The pilgrims leave Jeddah at four o'clock in the evening and arrive at Hadda the next morning at six o'clock; they remain there until the evening, and at four o'clock set out again, to reach Mecca at daybreak. Hadda is two thirds of the journey from Jeddah; but those pilgrims who travel alone make this journey quickly, doing it in eighteen hours, and stop but three hours at Hadda.

The arrival of pilgrims at Jeddah has caused the following movement of the navigation.

The following is a statement of the number of vessels that come to Jeddah from India under different flags.

English	21
Ottoman.....	3

From Singapore, Java, and Sumatra. •

English	11
Ottoman.....	5
Dutch.....	3

From Suez.

Ottoman	2
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Steamers from Suez.

Ottoman	8
French	1

Steamers from Aden.

Ottoman.....	2
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MARITIME PORTS:—The term includes those on every part of the coast and its rivers frequented by shipping. The statistics of 1839 mention as many as 400, 86 of which are in the Channel, 231 on the shores of the Atlantic, and 83 in the Mediterranean; and redividing them topographically, 145 are on the shores of France, 79 on those of the islands, and 176 within rivers.

It may be easily supposed that a tolerable number of these do not partake of a commercial character. More than half are little more than fishing ports. But the nautical importance of different ports depends on the amount of tonnage entering and departing, and this is found to be increasing annually. In 1850 the entire tonnage both of coasting and sea-going vessels, amounted to 10,000,000: in 1858, the last year of which returns are printed, it had increased to 15,000,000; and this is divided very unequally in different parts of the empire. Thus Marseilles has 3,100,000; Havre, 2,100,000; Bordeaux, 1,150,000: other ports in the order of their importance are Nantes, Rouen, Dunkerque, Cette, Calais, Dieppe, Boulogne, Toulon, Caen, Honfleur, Arles, Brest, which ports vary from 700,000 to 200,000 tons of shipping.

Twelve ports have from 200,000 to 100,000 tons, as Cherbourg, La Rochelle, St. Malo, Rochefort, Tournay Charente, Blaye, St. Nazaire, Granville, Lorient, Bastia, Bom, and Bayonne; and twelve more register from 100,000 to 50,000 tons; the remainder falling under the latter register. But it must be admitted that these lesser ports, although unimportant commercially, are often useful as harbours of refuge, and in every case they support a large population of hardy fishermen, who are well used to the sea, and who form the principal source of the supply of seamen for the fleet.

Considerable sums of money have for the last twenty-five years been applied for the improvement of the maritime ports, not only mercantile but also fishing ports. Some of these works are not yet completed, and will require 10,000,000 francs. At Bastia there is yet to be constructed, with the concurrence of the town authorities, a new port in the bay of St. Nicholas,—also to finish the new basin (wet dock) at Rochelle, to complete the improvements at Dieppe, at Treport, at St. Valery-en-Caux, at Honfleur, at Port-en-Bessein, at St. Vaast, at Lorient, at Redon, at Sables d'Olonne, at Tournay-Charente, at Point de la Grave, at Bandol, and to finish the ship canal communicating between the port of Boue and the lake of Berre.

Several new works also, besides these, have been authorised by imperial decree in the course of the last three years; of these, Port Napoleon at Marseilles stands first, a work which will add to this great maritime establishment an extent of water surface equal to that which it already devotes to commerce.

At Havre, between the advanced port and the basin of Eure, the great dock for ocean vessels is in course of construction, besides une forme de redout sufficient to receive the largest sized ships.

The port of Boulogne will be gifted with a wet dock, which will give new vigour to its maritime commerce,

At Brest, near the entrance of the naval port, the new port of Napoleon is in course of construction in the roads; this communicating with the Brittany Railway will enable Brest to be raised to the rank of our first commercial cities.

The commerce of Cette, always on the increase, has rendered a new canal necessary to communicate direct between the docks and the southern and Mediterranean lines of rail.

A wet dock in direct communication with the Orleans Railway, is in course of construction at Rochefort, the town contributing to the expence of this useful work.

At Bayonne the bar of the Adour has often been an insurmountable as well as a dangerous obstacle to its navigation,—and to the present time has defied the efforts of engineers. A last resource has been determined on. A system of jetties of loose stones is in course of construction at the mouth of this river, and the effect of these operations will very soon show itself.

The military canal of Caen to the sea is now open, but some works remain to be completed to ensure its proper supply of water.

At St. Malo an important modification has become necessary in the works going forward. Spacious jetties obtained from the wet dock already of larger dimensions than necessary, will allow of an extension of the town, which the former condition would not have done. The plan modified according to these views is under the consideration of the authorities.

At Fecamp a new entrance is in course of construction to facilitate access to the wet dock at Carenton; at Noirmoutiers, the channel is being improved, and at Portvendres the repairing of the mole is going forward, which has been partly destroyed by the sea.

The whole expence of these works amounts to about fifty millions of francs; but in this respect no restraint is placed on those operations which tend to improve our commercial ports.

The construction of the Napoleon basin at Marseilles should assuredly be followed up very shortly by a considerable increase. At Havre the urgent necessity of enlarging the channel is evident, as well as of enlarging the outer harbour, which, in its present condition, is almost inaccessible to oversea ships, and the subject is under grave consideration. At Bordeaux a plan for the construction of new quays is under consideration. The wet docks at Dunkerque and St. Nazaire are nearly finished; but these works are already found insufficient for the demands of commerce, and therefore works for further improvement are under consideration.

It is not necessary to specify here the works which will be successively followed up for the improvement of secondary ports. But the important operations for the formation of harbours of refuge may be mentioned that are going forward on the dangerous coast of the bay of Biscay. They include three places,—the Bassin d'Arcachon, Cape Breton, and the bay of St. Jean de Luz.

The harbour of Cape Breton, in a nautical point of view, is unexceptional. It is the natural formation near the coast of a submarine

valley, known by the name of the Fosse of Cape Breton, where the sea, even in the heaviest storms, is comparatively calm. This circumstance has long suggested the idea of forming there a harbour of refuge for ships,—and a plan was completed in 1858, the utility of which secured its immediate approval. The work will tend to fix the mouth of the channel, where the waters spread as they issue from the lakes of the coast. This first operation in rendering the action of the current stronger and more direct, will deepen the channel sufficiently to admit coasting vessels to shelter. Afterwards, should this succeed as it is expected it will, operations will be undertaken to render this a veritable harbour of refuge.

In respect of the improvement of the entrance of the Bassin d'Archachon and the defence of the roads of St. Jean de Luz, these projects, which involve the solution of the most difficult nautical problem, have formed the special study of our engineers, whose experiments have been successful,—these will soon be completed, and the commencement of the works will soon have to be determined on.

If to these great undertakings be added the improvement of the harbours of the second class, either in an extended or immediate future to the sums already assigned for them, that of eighty millions of francs more must be added as necessary for completing our maritime commercial harbours.—*Moniteur de la Flotte.*

SHIPS AND SHIP-BUILDING.

The late Mr. A. F. B. Creuze, principal shipwright surveyor to Lloyd's, says, in his *Naval Architecture*,—"The introduction of the system of solid bottoms would be an incalculable advantage; not to the merchant and shipowner, for the system of insurance is their refuge, but to a class of men of equal value to England with either merchant or shipowner—seamen, whose lives are often most cruelly sacrificed to the present immunity from pecuniary loss which marine insurance guarantees to their employers." (Mr. Creuze here refers to a report of a committee of the House of Commons.) And Mr. James Peake, the inventor of the safety boats, says,—“It is truly an uphill game to make the grasp-all people wise and humane against what they consider their interests; and ill-constructed ships, overloaded ditto, rotten ditto, and ditto lost for the insurance, are all the same to the shipowner, if he can only class her at Lloyd's; and the human lives that are yearly swallowed up by such cupidity are thought no more of, or even less, than a like number of bales of cotton. When will the law prevent this wholesale destruction? Laws have been enacted, nay, are now in force, by which both coach and railway are governed in the numbers to be carried by them,—and why this? For the safety of the public. But what takes place on the sea,—that highway of the world,—that

means of uniting the human species in one common bond? Why this, that the avaricious man may load his vessel to the sinking state for his profit, insure her for the chance of loss, and then send her forth to meet the pitiless storm, to weather which she is about as well able as a floating stage."

In an age like the present, when everything affecting, however trivially, the public interests is canvassed with an ardour and urged with a zeal unexampled in former times, it is matter of astonishment that the condition of our mercantile navy has hitherto attracted so little attention. The public mind is so irreversibly fixed on the onward march of political improvement, that amid the struggle of opposing interests the real sources of our national prosperity are apt to be overlooked; and accordingly the mercantile navy, the very pith and sinews of our exalted power as a nation, is a subject with which extremely few are acquainted. Every day brings us tidings of disastrous losses at sea, involving the destruction of much life and property. It is blindly ascribed to an act of the Almighty, when it is merely the result of a natural cause producing a natural effect. Vessels are built to be lost, and lost they accordingly are. This may appear paradoxical, but is not the less true. It proceeds from the unjust system of classifying mercantile shipping at Lloyd's. The body of underwriters (including merchants and shipowners), from their extensive influence, have been enabled since 1798 to possess themselves of an extent of control over mercantile matters to which no other property in the empire is subject, and this vast influence is exercised without the slightest responsibility.

The books at Lloyd's form some records of the national shipping; but unfortunately the plan adopted by this corporation for the management of shipping is directly opposed to its efficiency. According to the present plan, age is the standard by which it is regulated; and the effect of this is when a ship has outlived her first character (generally nine years) the owner is compelled to sell her immediately, from the impossibility in a large portion of our carrying trade of employing any vessel to whose name the talismanic charm of A 1 is not appended; for no matter what the merits or real efficiency of a ship may be, so long as age is held to be the criterion, the merchants will continue to be governed in their shipments by the practice at Lloyd's, of looking to the age and not to the intrinsic excellence of the ship. The consequence of this is to encourage the building of inferior vessels. Many ships are built so hastily, are composed of such inferior or insufficient materials, and are altogether so fragily constructed, that from the hour they are launched they are so unfit for the conveyance of dry cargoes that it is infamous to imperil human life in them. But the builders of such vessels have felt that for eight or ten years they are quite secure of the first character at Lloyd's, and consequently can, at the inferior prices at which they are enabled to sell them, always find purchasers.

During the year 1833 (being a very stormy year) upwards of 800 British merchant ships were lost or shipwrecked, and between 2,000 and 3,000 valuable lives were imperilled, and more than £1,000,000

of property destroyed. During that period not one vessel of the Royal Navy suffered, because the ban of sea insurance extended not to it. "The best and most substantial materials are used, and the most correct and scientific principles of naval architecture are applied to its construction. Is it not truly dreadful to reflect on the condition of our mercantile navy, thrown prostrate under a system which, while it annually consigns to destruction an incalculable amount of capital, deprives the nation of the services of hundreds of valuable seamen, and their families of their dependence for support, thereby spreading dismay, want, and misery into the abodes of a class of men whose value can scarcely be overrated, and whose widows and orphans might have continued in the enjoyment of comfort and happiness had the efficiency of the vessels in which these gallant men perilled their lives been made a paramount object of national concern? But this gratuitous devastation of life and property is doubly deplorable from the community deriving no advantage whatever from the sacrifice, inasmuch as the vessels which are sunk occasion a diminution of supply of the merchandise which they carried, which increases the price of the remainder, and thus the public, as usual, are compelled to pay for the loss. It is thus that the sea insurers subsist, vampire like, on the blood and property of the community, and render it a matter of loud and imperative necessity that the public mind should awake to this all important subject."

This view of the mercantile navy appeared in 1834, and was so convincing and irrefutable that the different associations of underwriters, afraid that government would take the classification of merchant shipping away from them altogether, and take it into their own hands, as they were repeatedly urged to do, made a nominal reform in that year (that is they gave credit to the different sea-ports for building better vessels, which was not the case before up to that date), but which is as far from a real reform as its predecessor was: seeing it sprang from the same party, any efficient reform was not to be hoped for. Let us see what M'Culloch says to it, a disinterested evidence which no person will deny:—

"The plan of 1834, which the committee has proposed, seems very judicious, and it would, were it carried into effect, certainly be productive of the greatest advantage. But we are thoroughly satisfied, as well from the nature of the thing as from the statements of some of the most intelligent shipowners, that it is not possible to form in the first instance or to maintain a correct system for the classification of ships without the sanction and co-operation of the legislature and of government. It would be worse than useless to take up the reader's time by entering into any lengthened arguments to establish the right and duty of the government to interfere in a case of this sort. Government should not interfere in matters of this sort unless their interference be calculated to obviate some considerable evil or to accomplish some considerable good which cannot otherwise be obviated or accomplished. Now the case in question is clearly of this description.

The evil to be avoided is of the most flagrant description; it is the annual loss of hundreds of ships, of thousands of lives, and of a vast amount of property; and the good to be effected consists not merely in the obviating of this enormous evil, but embraces the improvement of our mercantile marine and the advancement of the interests of the public as well as those of the shipowners. It is, in fact, altogether nugatory to imagine that the crying evils of the present system can be eradicated or even materially mitigated without the interference of the legislature. Unless, therefore, the government and the legislature lay it down that the preservation of the lives of seamen and the prevention of shipwreck are objects beneath their attention, they are bound to interfere and to adopt and enforce such regulations as may insure an accurate classification of ships."

Six or seven witnesses appeared before the committee on shipwrecks of 1836 to recommend the system of solid bottoms to ships; amongst whom was Mr. Oliver Lang, a master-builder at Woolwich dockyard, an evidence whose knowledge on the subject no person will dispute. On his being asked question—"3,397. You think the increased safety would warrant the increased expense?—Yes, most certainly I do. 3,398. Can you assign any reason why shipbuilders do not adopt that plan if the increased safety would warrant the expense?—I cannot form any idea of the cause. 3,399. If you were a shipowner you would be disposed to adopt that plan?—I would. 3,400. If you were insuring a vessel as an underwriter you would probably take a decreased premium?—Yes." Now this was the very identical answer which the sea insurers did not want him to give.

In 1831 I made models of safe merchant ships, and, having submitted them to Sir Robert Seppings, Surveyor of the Royal Navy, by order of the Lords of the Admiralty, I endeavoured to get them approved of by the authorities of merchant shipping, and was driven about in London from Dan to Beersheba, all parties being unwilling even to look at them, much less to certify to their efficiency, it being quite against their interest that safe ships should be introduced.

Being at that time impressed that safe ships would benefit shipowners, I applied to Mr. Alderman Pirie, in whose employ I had sailed a ship, and was astounded (though not much given to astonishment) by the following fact:—He asked me if I did not see that by endeavouring to introduce safe ships, I would set all the shipowners foul of me: to which I replied that I did not, but that I considered I would set all the ship-builders foul of me. His remark was, that I would see, thereby implying that shipowners quite concurred in their ships being made unsafe. The desire to be possessed of vessels that will, when they are exposed to danger, readily go to pieces, and enable the owners to call upon the underwriters to pay for them, remains unaltered to this day. The following is a contrast of the building of a man-of-war and a merchantman. The hulls of merchantmen are built in three separate parts, but not all the parts closely fitted together. The outer part, which is less in thickness than one-fourth of

the whole, is the solitary portion where care is bestowed to keep out water. Compare the difference of the build of the man-of-war and that of the merchantman.

The skeleton of the merchantman may be seen in any ship-yard, with the timbers of the vessel standing at certain distances apart, generally about two inches. In the skeleton of the man-of-war, on the contrary, these timbers are placed in close contact in the bottom and sides, affording thereby additional security against violence of any kind. Then comes the planking outside, which binds all together with a degree of strength calculated almost to bid defiance to tempests. Granted that the vessel is not proof against rocks and shoals, yet even here she will live while weaker vessels would be riven to atoms. The ceiling which is used in merchant ships being useless, might be dispensed with altogether, which would always bring the inside of the timbers to view, and the wood which is used in it made of a different form and shape, and made to fill up the interstices between the timbers, and, along with the safety-keel, made to resist the admission of water from the keelson to the covering-board. I have been told that I might as well try to throw the earth out of its orbit as to introduce this method of building safe instead of unsafe ships. I do not hear much of the collision of men-of-war, although there are plenty of collisions of merchantmen. In the committee of 1836, the model of the *Pique*, frigate, which had been ashore on the rocks at Labrador for eleven hours, and came home with all her crew in safety, was exhibited before it. I am also keeping iron ships in view.

In the *Quarterly Review* appear the following remarks:—"The first steps towards a remedy of this state of things is to inquire into the causes of shipwreck. There can be little hesitation in naming marine insurance as the chief destroyer. Unseaworthiness and overloading of vessels, their being ill-found in anchors, cables, sails, and rigging, defective compasses, want of good charts, incompetency of masters, may all be attributed to this source. If the shipowners were not guaranteed from loss they would take care that their vessels were seaworthy, commanded by qualified persons, and furnished with every necessary store. The terms of the insurance, moreover, offer a direct premium to create, in cases of casualty, a total loss. For instance, a ship strikes the ground and becomes damaged, but, under able management, might be got off and repaired. In this case, however, the assured has to bear one-third part of the loss; whereas, if the loss is total he gets the whole of his insurance. Under these circumstances, even when there is no deliberate desire to perpetrate wrong, the captain will leave the ship to her fate, instead of using his energies to preserve her, to the detriment of his employer. It is the opinion of many that if the insurers were to agree to pay the whole insurance, whether the damaged vessel were got off or not, that we should see a marked diminution in the list of total losses at sea, for the natural inclination of the captain to save his ship would then no longer be counteracted by his desire to save the pocket of the owner."

Does any person ever read or hear tell of a man-of-war springing a

leak or putting into port leaky? No. What is the reason? Their solid bottoms and sides prevent the admission of water. This does not prevent their being lost on rocks, as is presumed to be the case with the *Sappho*. I have a letter under the hands of the master of the *Schomberg*, in which he says that she held together for two days and three nights, and thereby gave an opportunity to all the emigrants to leave her safely. Had she been an ordinary built vessel she would have gone to pieces in four hours, when probably half the emigrants would have been drowned.

We pray to be delivered from plague, pestilence, and famine; from battle, murder, and sudden death. Now, I know of no instance of death more sudden than that of a ship going down in the open sea, with five, ten, twenty, fifty, one hundred, or upwards, of persons on board her. Of this we have lately had abundance of instances,—the *Madagascar*, *Dalhousie*, *Guiding Star*, *Ultonia*, and others. We are told that the prayers of the righteous availeth much, and I can see no reason why we should not take our prayers to our pulpits. I do not mean that we should take chisels and mallets, caulking irons and caulking mallets, into our hands, but that we should pray to the Almighty to direct us to make ships strong and safe, and after the method that our men-of-war are built. If this should ever come into operation, depend upon it we shall not have one wreck for ten which we now have. In the Royal Navy we have not had the wreck of one line-of-battle ship in twenty-nine years, nor of twenty-nine vessels in twenty-nine years.

NAVIGATION OF THE PACIFIC OCEAN.

(Continued from page 148).

Navigation of the Peru Coast.—On the coast of Peru it is easy to run North.

Route from Valparaiso to Callao.—Thus, in going from Valparaiso to Callao, says Captain Basil Hall, we nearly always have the wind from the same point, S.S.E.; it sometimes varies a point or two easterly, and the passage is always safe and easy. The only precaution necessary is to keep off the shore in steering N.W., so as to be 150 miles from it, and then to run direct for San Lorenzo, a high island and easily recognized, forming the eastern entrance of Callao Bay. We generally make the land of the Morro Solar, which is nearly ten miles South of Callao, and then run through the Boqueron Passage, or else round the northern end of San Lorenzo for the bay. In the Boqueron Passage the lead should be kept going, and an anchor ready to let go. The passage from Valparaiso to Callao is about nine days.

In making to the southward along the coast of Peru, much practice

and skill are required, and seamen differ in opinion as to whether the passage should be in shore along the coast or out at sea. Captain Basil Hall says on this subject:—

Route from Guayaquil or Payta to Callao.—In leaving Guayaquil or Payta for Callao, we should keep near the coast until as far as Lobos Islands, and always endeavour to be near the coast a little after sunset, as this is generally the time when the land breeze commences. Although it is light, it enables a vessel to get on during the night along the coast, and she will be in a good position in the morning for the commencement of the sea breeze. After rounding Lobos Islands, work along their meridian as far as the latitude of Callao, then stand in shore, and if that tack does not fetch the port, another board or two must be made. This passage with a fast vessel is generally made in twenty and often in eighteen days. We have attempted to make this passage by keeping out at sea for several days, in the hope of reaching the port on the other tack; but very little is thus gained, on account of the northerly current found on approaching the equator.

From Callao to Valparaiso.—From Callao to Valparaiso is a much longer passage than from Valparaiso to Callao, from having to cross the S.E. Trade, to the southward of which are the westerly winds. But for the intermediate ports, except Coquimbo, as they are within the limits of the Trade, it is only with these winds that we can reach them. For any of these ports a vessel should make along the coast as above said as far as the Island of San Gallan, when the shore turns more easterly, allowing the ship to make a long leg and a short one, taking care always to keep the land in sight until she reaches Arica or any port between it and Pisco. On leaving Pisco the shore lies nearly North and South, and in going South it is not necessary to keep more than fifteen or twenty leagues at furthest from it, so as to be sure of having the sea breeze. A ship might keep on thus as far as the latitude of the port of destination. On no account should a vessel stand far out to sea, for in approaching the Trades the wind gradually becomes East, and it is often very difficult even to regain the port that we have left.

With a very bad sailing vessel it will be better to run free across the Trade winds to find the variables, and then run North along the coast, than to work unsuccessfully against them, since they only vary a few points.

The passage of a moderate sailing ship from Guayaquil to Callao is from fifteen to twenty days, and from Callao to Valparaiso about three weeks; but under peculiar circumstances, such as a northerly wind, this passage is made in much less time.

From Valparaiso to Conception.—The prevailing wind along this part of the Chilian coast being southerly, a ship from Valparaiso to Conception, in order to profit by any changes in it which will allow her to make southing, should keep along the coast, for it is seldom that it remains steady for twelve hours together. The passage from Valparaiso to Conception is generally made in ten days.

Navigation from the Southward to Panama.—A ship from

the southward for Panama may make her passage without any difficulty, according to Captain Wood, during the greatest part of the year; but in the fine season, when northerly winds prevail, she may adopt the following course. She should make short boards near the coast, where she will find a northerly current reaching a few miles off shore. When this current is interrupted, the tides are not so regular, while out at sea the current is constantly contrary. Between Point Chirambira and Cape Corrientes the coast is fringed with banks thrown out by the rivers; but southward of Cape Corrientes, except off Point Francisco Solano, where there are off lying rocks, the coast may be safely approached. Still, a vessel should not get into the calm occasioned by the high land, because it is very difficult to recover the breeze again, and there is always a heavy swell rolling towards the shore, and no anchorage on account of rocks.

A ship bound to Panama during the fine season should adopt the eastern passage between the coast and the Rey Islands, being free from danger with one exception. The water is smooth, and the tide being regular, she can get to the northward much better than in the middle or on the western side of the bay, where there is generally a current and much sea. During the rainy season the direct course up the bay is preferable to the passage between the islands, for the current then is influenced by wind.

From Panama South.—There is always difficulty in going southward or westward from Panama. To clear the bay to the southward mostly requires two days, and this is done either by working along shore against wind and current, or by standing far enough to sea and to the southward to reach our port on the starboard tack. Both of these methods are long and tedious, and it often takes twenty days to reach Guayaquil, while from thence to Panama it takes no more than a week.

From Panama Westward.—A vessel leaving Panama for the westward in the season of the northerly winds, should avoid being delayed by keeping in shore, and should profit by changes of these winds, which would carry her as far as the gulf of Nicoya. When she has passed the Morro Hermoso, she must be ready for Papagayos, heavy breezes, with which she may run through the gulf of Tehuantepec, and if she be bound to a port in the gulf or to Acapulco with these winds she may keep near the coast and close with the land by working. But if she is going West, she should keep out to sea.

The western route on leaving Panama in the rainy season is most tedious, on account of the calms, sudden squalls, and adverse currents, that one has to contend with. There is, moreover, a heavy swell, excessive heat, and abundance of rain. Vessels have not made twenty miles westing in a week, and this only by taking advantage of every favourable puff of wind.

The commanders of coasting vessels differ with regard to the proper route to take. Some say by working to the southward the district of bad weather may be avoided; others prefer working at a moderate distance from the coast, and this plan is most frequently adopted, be-

cause the squalls that are oftener encountered near the land, sometimes admit of standing to the N.W., whilst by keeping out at sea for finer weather this advantage is lost.

The Coast of California.—A vessel from the southward for California direct having run through the S.E. Trades would cross the equator near the meridian of 105° , and then run full and by through N.E. Trades to find the variables about 300 miles East of the Sandwich Islands. Having reached the variables she would make for her port, taking care to get in with the land well to the northward, for as she approaches the coast the wind gets northward and the southerly current runs very strong. Ships from Panama to the North by keeping in shore have required three months for this passage.

From Panama to San Francisco.—The following is a quicker route. On leaving Panama work between South and West while in the S.E. Trade, and if this is strong, go North of the Galapagos; but if weak and variable, pass South of these islands, and always in this first part of the route take care not to make northing until on the meridian of 108° or 110° West, with the view of keeping in the westerly current. Cross the zone of the variables as quickly as possible, for vessels have been carried to the East by the equatorial counter-current. Once having found the N.E. Trade, the southern limit of which is found between 2° and 8° N. lat. according to the time of year, haul the star-board tacks on board, and run full and by through it, and then gain the zone of westerly winds. The ship will then stand for the coast, it being observed that in the season of the N.W. winds (March to November) the current runs South near the land, and therefore it should be made well to the northward of San Francisco. At other times of the year with the wind from S.E. to S.W., the land may be made in the latitude of this port, and in all cases with these winds a vessel may get to the northward without difficulty, even making the land to the southward, for S.W. winds are then frequent. The passage here alluded to is made in thirty-seven to forty days.

From San Francisco to the Sandwich Islands.—A vessel bound to the Sandwich Islands from San Francisco, may generally make her passage direct. If she meets with westerly winds, she will make to the southward, and if they continue she will reach the N.E. Trade, with which she may run West to make the land at a convenient distance East of Hawaii. The S.E. winds sometimes found (principally in June) in the zone of the N.E. Trade, between the parallels of 25° N. and 22° N., are also crossed on the passage from San Francisco to the Sandwich Islands,—a passage which is generally made in sixteen to eighteen days.

From Payta or Guayaquil to San Francisco.—A vessel from Payta or Guayaquil for San Francisco, should stand to the westward, so as to pass South of the Galapagos, and would cross the line as soon as possible between 98° or 100° W., for as soon as she finds the N.E. Trade she should get North as fast as she can, crossing this Trade and reaching the variables in 29° or 30° North. She would then steer direct for San Francisco, making the land a little North of the

port. This passage from Payta to San Francisco was made in October by the *Sérieuse* in thirty-four days. Vancouver gives the following directions for ships near the Californian coast.

"The constant northerly winds which prevail near this coast render navigation difficult. A vessel going northward must keep away out to sea until she is well North of the port to which she is going, and then take care to make the land North of it. Still this mode of approaching does not appear to be necessary in December, when we were on the coast. From the bay of San Francisco, as far as Point Conception and even further North, land breezes will enable a vessel to make her passage easily by keeping near the coast. These winds generally come from East to S.E., and a ship can have no difficulty in getting southward with the sea breeze. In fact, during the twenty-four hours the land breeze lasts much longer than the sea breeze, and is often stronger. Besides, a good sailing vessel may still gain something during the day by having a smooth sea with the sea breeze, which although fresh is moderate.

A vessel proceeding from North to South along the West coast of America, will necessarily make her passage according to the place to which she is bound and the monsoon which prevails at different times on the coast.

From San Francisco to Valparaiso.—A ship from San Francisco to Valparaiso should keep to the southward along the coast with the view of gaining the zone of the N.E. Trades as soon as possible, but without passing much East of the meridian of Cape San Lucas, so as not to get out of the strength of the Trade. In this route she will be favoured by the southerly current of the Californian coast. She would cross the N.E. Trade, taking care not to be carried too far West by the equatorial current and equatorial calms by the time she gains the variables, and from these cross the equator as far East as she can (generally in 118° W. long.) Then crossing the S.E. Trade as soon as she has got into the variables South of the Trades, would run direct for Valparaiso. In this route she may possibly sight Easter Island.

From Acapulco to Panama and Guayaquil (Winter).—A vessel from Acapulco to Panama or Guayaquil during the winter should keep a moderate distance from the coast, so as to be in the Mexican current, and at the same time will have the N.W. monsoon in her favour.

Same Routes (Summer).—But, on the contrary, a ship from Acapulco in the summer should stand out to sea and avoid the Mexican current, as well as the S.E. monsoon, which prevails at that time.

From Acapulco to Valparaiso.—A vessel from Acapulco to Valparaiso should cross the equator in about 100° West, then get as far South as she can without being West of 105° , and so avoid the strength of the equatorial current. It often happens in this route that vessels pass in sight of Easter Island. When she has cleared the S.E. Trade, she would make for Valparaiso, taking care that her landfall is South of its parallel, so as to allow for the Humboldt current. The rest depends on the monsoon prevailing on the Mexican coast at the time of being there. The coast may be followed on leaving Acapulco,

and the line crossed on the meridian of 87° West, East of the Galapagos; from thence crossing the S.E. Trade, which should be left on the meridian of about 100° West, and make for Valparaiso with the variables.

From Guayaquil to Valparaiso.—In going from Guayaquil to Valparaiso a vessel should keep out at sea, so as to cross Humbolt current before passing the meridian of 92° West, then keep between this and about 102° West, to avoid the equatorial current: then cross the South tropic in 96° West, and make to the southward for the parallel of Valparaiso. Crossing this, steer for the South American coast, passing close to the northward of Masafuera and Juan Fernandez, making the land South of Valparaiso. This passage is generally made in thirty-seven days.

From Chili or Peru to Pitcairn.—In leaving the Chili or Peru coast for Pitcairn Island, a vessel should stand off the coast and get as soon as possible into the S.E. Trades on the parallel of Noukahiva, or the Sandwich Islands, 20° South, where there is generally a fresh breeze and fine weather. She would then steer West, keeping that parallel, and make Pitcairn Island to the S.W. Then run down to it, taking care not to pass it, and steering a point or two from the direct course, so as to allow for the westerly set of the equatorial current. It is only in the vicinity of this island, and principally in December and January, that N.W. winds are often found.

From Pitcairn Island a ship may steer for the Noukahiva Islands, shaping her course well East of them on account of the westerly current and drift of the Trade. On leaving this archipelago, cross the equator on the meridian of 143° West for the Hawaii Islands, at a distance of sixty miles East of them. Then in crossing the equator the N.E. Trade will be found in 5° or 6° North in winter and spring, or in 9° or 10° North in summer and autumn.

(To be concluded in our next.)

THE ST. LAWRENCE LONGITUDES.

In our January number we inserted an interesting paper by Lieut. Ashe, R.N., Astronomer of the Quebec Observatory, containing a series of observations for determining the longitudes of places visited by him, in connection with the observatory of Cambridge, U.S., by means of the electric wire. The closeness with which those observations were made was satisfactorily explained by Lieut. Ashe; and we may safely add that the errors of some of the places in longitude corrected by him are very important. In reference to those determinations, we have received the annexed letter from our esteemed friend and correspondent Admiral Bayfield, whose longitude of Quebec has fallen within the range of Lieut. Ashe's observations.

Now it is very well known to the nautical surveyor that the determination of the longitude of his primary meridian is the most difficult matter he has to deal with. It is, in fact, his first, his constant, and last consideration; and fortunate is he who has an established observatory within the limits of his ground, from which he can run short meridian distances with well rated chronometers for his longitudes, without having to trouble himself about that of his primary meridian. Such was not the case with Admiral Bayfield, whose hydrographic surveys extend from Newfoundland through the Gulf and River St. Lawrence to the remotest shores of Lake Superior, including all the Canadian Lakes; employing, indeed, a lifetime of constant active service under the government, and commenced many years ago, before the electric telegraph was thought of. Hence his primary meridian—that of Quebec—was determined by those independent means to which the hydrographic surveyor resorts, and the result will be seen in the following letter.

These remarks, however, arise from the satisfaction with which we perceive the closeness of accordance in his result with that obtained by Lieut. Ashe from an entirely different source. And when we consider the difficulties which Admiral Bayfield had to contend with in the various means employed by him, and the possible sources of error in Lieut. Ashe's results, arising from the determination of absolute time at each end of his wire, our admiration is excited by the result which Admiral Bayfield has obtained. We hope, indeed, to see a repetition of Lieut. Ashe's observations on some future occasion; for, although we have every confidence in his experience, it would be satisfactory to all parties (including even himself) to ascertain by a repeated confirmation of the result at which he has arrived, that it has not been affected by those errors, first in obtaining time and then in noting minute intervals of it, which do creep into all observations of this kind. We see the personal equation very properly corrected; but along with that indispensable correction we want to see a repetition of the same result from fresh determined absolute time at both ends of the wire; and until this confirmation is obtained we must consider the result to require it.—Ed.

Charlottetown, Prince Edward Island, 27th January, 1860.

Sir,—Your long and well proved friendship assures me that you will be interested in the reputation of your old friend, and I therefore send you my determination of the longitudes of my three principal stations, at Charlottetown, Halifax, and Quebec, in order that you may insert them (if you see no objection) in the *Nautical Magazine*. You will at once perceive their near agreement with the subsequent measurements by electric telegraph from Cambridge *new* Observatory, Massachusetts, to Halifax Dockyard Observatory, by Captain Shortland, R.N., and Professor Bond; and from Cambridge Observatory to Quebec by Lieutenant Ashe, R.N.

Not to extend this communication to an undue length, I shall confine myself to the results of lunar occultations, the best means at my dis-

posal, merely adding that the mean of 120 lunar distances and of 83 immersions and emersions of the first satellite of Jupiter, observed under the most favourable circumstances, gave for Quebec North Bastion between $71^{\circ} 13'$ and $71^{\circ} 14' W.$

The longitude of my house at Charlottetown, by lunar occultations observed under the most favourable circumstances, is as follows:—

Friday 8 V	18 46	immer.	Spica Virginis	gave	$63^{\circ} 8' 0'' W.$
" "	" "	emer.	" "	"	$63 7 9$ "
Thurs. 18 II	18 47	immer.	η Piscium	"	$63 7 2$ "
" "	" "	"	η Piscium	"	$63 7 55$ "
Tues. 20 IV	18 47	"	51 Geminor	"	$63 9 12$ "
Satur. 11 XI	18 48	"	α Tauri Aldebaran.	"	$63 9 3$ "
Tues. 30 I	18 49	"	65 Ceti	"	$63 6 54$ "
Mond. 30 IV	18 49	"	A or 31 Leonis	"	$63 7 23$ "
Wed. 2 V	18 49	"	B or 5 Virginis	"	$63 7 19$ "
Friday 25 V	18 49	"	5 Cancri	"	$63 6 51$ "
Mond. 21 V	18 50	"	m or 87 Ceti	"	$63 8 41$ "

Admiral Bayfield's house at Charlottetown by					
mean of eleven	.	.	.	.	$63 7 46$ "
Halifax, by chronometers	.	.	.	+	$0 27 24$ "

Halifax Dockyard Observatory . . . $63 35 10 W.$

Differing only $3''$ from Bond and Shortland's first measurement by the electric telegraph, as communicated to me in June, 1852.

Since the above results were obtained, the trigonometrical survey has been extended from Charlottetown to Halifax, and the chronometrical and other measurements between Charlottetown and Quebec have been all carefully revised.

The following are the results which I have adopted and forwarded to the Hydrographic Office:—

Halifax Dockyard Observatory, by Shortland					
and Bond with the electric telegraph	.	.	.	.	$63^{\circ} 35' 7'' W.$
Charlottetown, by trigonometrical survey	—				$0 27 31 E.$
Admiral Bayfield's house, Charlottetown	.	.	.	.	$63 7 36 W.$
Quebec, by chronometers and survey	+				$8 5 24 W.$
Quebec North Bastion . . . . .	.	.	.	.	$71 18 0 W.$
By survey	—				$0 0 16 E.$
Quebec Flagstaff, King's Bastion of the					
Citadel . . . . .	.	.	.	.	$71 12 44 W.$
Do. Do. Do. by Lieut.	.	.	.	.
Ashe with the electric telegraph	.	.	.	.	$71 12 15.5 W.$
Difference . . . . .	.	.	.	.	$0 0 23.5$ or $1.9s.$ of time.

From the above statement you will perceive that when comparing, in the *Nautical Magazine*, "the longitudes determined by Lieutenant Ashe with the value previously assigned to them," the longitudes de-

terminated by Admiral Bayfield ten years ago should have been excepted.

In conclusion it will be as well to add that the difference of longitude between Quebec and Montreal by our trigonometrical survey of the St. Lawrence, differs only 5", or 0.34s. of time, from Lieutenant Ash's measurement with the electric telegraph.

I remain, &c.,

HENRY W. BAYFIELD.

To the Editor of the Nautical Magazine.

P.S.—It is nearly twelve years since I reported to the late Hydrographer (that is, on the 25th April, 1848) the longitude of Halifax Tablet in Dockyard, 63° 35' 3" W. The Observatory is 11" more West, or in 63° 35' 14" W., agreeing within a second with Shortland's final determination by the electric telegraph, namely, 68° 35' 16" W.

LOCAL ATTRACTION,—*Derangement of Ships' Compasses, &c.*

It is much to be regretted that a subject involving so much of the comfort and safety of navigators, and especially of those sailing in steam ships and iron ships, should have received so little attention in this country from those who are far more competent to discuss it than I am.

It is a subject which has received much attention in England, and which has puzzled the wisest minds; it is a disease, if I may so call it, present in all vessels where there are large masses of hammered iron; it exists more in propellers than in paddle-wheel steamers, and is most prevalent in iron ships, as a matter of course. No *perfect* remedy has been found for it out of this country that I am aware of; although many devices have been tried, with greater or less success, none of them have been confidently adopted.

Barlow, Airy, Scoresby, Harris, Walker, Faraday, Gray, and others, have written much on magnetism, polar and local attraction, dip of the needle, &c., but they have all failed in providing a *sure remedy* for that species of error to which ships' compasses are liable by reason of local attraction. They have failed to make the compass give the true course in its proper position, the binnacle. They have devised certain expedients by which a ship may be guided with considerable safety, the most common and most reliable of which is to elevate the compass so far as to place it out of the way of the local attraction. This expedient renders the compass subject to variations and to accidents almost as inconvenient as a compass that has a variable error, such as the vibration of the machinery, and the difficulty sometimes of seeing the card. Indeed, the difficulties, especially in iron ships, are so great that no dependence can be placed on the course

steered, unless it be verified daily by azimuths, amplitudes, celestial observations, noting the bearing of the sun when on the meridian, &c., all of which means are subject to errors, and are not always attainable, by reason of thick weather and rough seas.

Airy condemns as dangerous the usual method of correcting the course steered by a compass in error from local attraction, namely, by a table of errors; and it must be obvious to every intelligent navigator that where a correction is to be applied, differing in amount for almost every point of the compass, serious errors will be likely to arise, endangering the ship in close navigation by night, when buoys, landmarks, &c., cannot be seen, and where the compass and the lead are the only guides. I quote Airy's remarks on this point:—

“On reviewing the results of the preceding examinations, I think I am justified in denouncing any system of navigating a ship by forming a table of compass deviation at the starting port, and using that table until means of correction can be obtained from observation, as dangerous, and I think it ought to be discontinued;” and again he says, “I apprehend that the necessity of using a table at all (that is, of steering by one nominal course when another course is intended) is, especially in difficult channels, a very serious evil, from which the method of steering by a corrected compass is entirely free.”

There are several persons in England who profess to have overcome the worst effects of local attraction in a high northern latitude, or near home; that is to say, they neutralize this disease by placing magnets and soft iron in the vicinity of the compass, so that it is nearly right on the cardinal points, and for the points where it is not right they make a table showing where it is out. These errors are very variable, and on going towards the equator are often found very large; and on getting into a high South latitude they are so great that the compass is entirely useless, unless corrected daily by celestial and other observations. It must be borne in mind that it does not follow because a compass is found to be correct, or nearly so, with the ship's head at any given point, that it will be so with her head some other way; nor does it follow that the compass being a point out to the left heading East, that it will be a point out to the left when she heads West; on the contrary, and as a general rule, the card will be drawn to the North in North latitude, and to the South in South latitude; but it does not follow that when the ship heads within a few points of the North or the South that the error will invariably be to the same extent or in the same direction. In amount the error is always variable, as the ship's head approaches towards the North or South, and not always regularly increasing or decreasing. I have endeavoured to show that in countries where the greatest experience and the greatest scientific knowledge have furnished opportunities for practical illustration of well known sciences, “no simple and sure method of making the compass tell the truth all over the world has been adopted.”

In Boston it is pretty generally known that a self-taught man, Captain Griffith Morris, after long study and practice as commander.

of an iron steamer, has discovered a method of making the compass of that vessel, and many others, quite correct of itself, without any table of errors. He professes to be able to do this in all vessels, whether of wood or of iron, and in all the latitudes usually navigated. I do not maintain for Captain Morris that he is so far infallible that he cannot make a mistake; but I do maintain that for all purposes of navigation in both hemispheres, wherever the test has been made, Morris has been correct in ships where great errors had existed before the corrections were applied. It is enough to say that he also uses magnets, but not soft iron, to effect his object, the mode of preparing and employing them being peculiar to himself, and resting exclusively in himself, so far as I know.

He has corrected three ships of the U.S.N., namely, the steam frigates *Merrimac* and *Minnesota*, and the steam sloop *Hartford*, all propellers.

Captain Pendergrast of the *Merrimac*, and his master, after a trial of about fifteen months between the latitudes of 50° and 10° North, gave their unqualified approval of Captain Morris's method.

Captain S. F. Dupont, after a cruise to China and back in the *Minnesota*, also gave an unqualified verdict in its favour.

Captain Lowndes, in the *Hartford*, has sailed for China, and only had an opportunity during a week's trial trip, of ascertaining that Morris was correct in 42° North.

The *Merrimac*, under a new commander and a new master, went to Rio Janeiro and round Cape Horn. A report from her officers, which I have seen, says that a slight error has been discovered in her compass; that is to say, if I have correctly read said report, the standard compass, corrected by Morris, has been found occasionally, not invariably, in error *two or three degrees* on some bearings or courses, and that these errors are found to exist by comparison with the admiralty or some other variation chart, and by azimuths or amplitudes. The standard of perfection is a chart made, perhaps, several years ago by men as fallible as Captain Morris.

To those accustomed to taking azimuths and to those who are familiar with the manufacture of compass cards, it will not be necessary to say that an apparent difference of one, two, or even three degrees between a standard compass and a number of azimuths, taken under acknowledged disadvantages (as in the case of the *Merrimac*) would by no means prove the standard compass to be in error.

In examining eight of the Admiralty compasses furnished for the *Merrimac* by the bureau at Washington, on the dock at Charleston Navy Yard, for the purpose of selecting a correct one, Captain Morris found a disagreement of from one to three degrees in these very compasses, they having been placed in a true line North and South, and sufficiently apart to prevent one from exercising any influence upon another.

Every practical navigator who has paid any attention to the subject knows that the best instruments, when placed in binnacles out of the line of the keel, generally differ more or less. I cannot, therefore,

but feel considerable doubt as to the correctness of the report that Morris's corrected compass in the *Merrimac* has been found subject to an error of any real importance as compared to the error which existed before the corrections were applied. It is very natural that a mechanical error in her compass should have been overlooked, and not altogether improbable that an error of a degree or two may have been made in the observations for azimuths. The weight of the evidence is altogether in favour of Captain Morris's method, so far as it has been tried in the U.S.N.

In the merchant service we have several marked instances of success where great errors existed. The iron steamer *Argentina*, the iron yacht *Edith*, the iron steamer *Sestos*, and the iron brig *Nankin*, were corrected in Boston and went into South latitudes,—three of them into La Plata and one to Calcutta. The wooden paddle-wheel steamer *Yangtzee* had her standard compass corrected in the forward wheel-house, within a few feet of the smoke-pipe, and was reported correct at the Cape, at Bombay, and in China. Captain Sampson of the *Sestos* writes from Calcutta that his compass was quite correct during the whole run by all the usual tests of azimuths, amplitudes, and bearing of the sun at noon.

In the iron brig *Nankin*, before sailing, there was a very large error, amounting to more than ten points on some headings. I made the passage in her to La Plata, and I watched the North Star carefully so long as it was visible, and failed to discover any appreciable error in her corrected compasses.* When an iron boat was taken from the davits and stowed within five feet or less of one of the corrected compasses it certainly affected it, just as running a gun by the compass of the *Merrimac* would naturally affect that. Capt. Morris does not undertake to make a compass correct under all the conditions of removing guns or other large masses of iron from their usual places when near to the binnacles. The report of the *Merrimac* says that Captain Morris has failed to "isolate" the compasses. If he could put them in the condition not to be affected by running guns fore and aft, near to them, nor by drilling a squad of marines directly under them, he would neutralize *polar* as well as *local* attraction; in short, the instrument would no longer be a compass with magnetic affinities to the poles.

Besides the iron steamers alluded to, Captain Morris has corrected the steamers *Joseph Witney*, *William Jenkins*, *Metropolis*, *Empire State*, *Bay State*, *Nantasket*, *Henry Morrison*, *Vanderbilt* Atlantic steamer, the iron propeller *Voyageur de la Mer*, and others whose names I do not know. Also, the iron schooner *Mahlon Betts*, which

* Since the publication of the above the brig *Nankin* has returned, and now lies in dock in London. The captain reports an error of more than a point in his corrected compass when heading eastward, and says that it is the same in both hemispheres; this, if true, would seem to me very curious and unaccountable. It is possible that an error existed when I made the passage to La Plata in her on our East course, as we never headed that way long enough to discover an error if one existed.—R. B. F.

vessel has been safely run (sometimes to the West Indies) for several years without error of her compasses.

The iron propeller *Contest*, bound to Calcutta, now lies waiting for Captain Morris, who is absent. She was built for the same parties who own the *Sestos*. They have detained the ship a fortnight for the purpose of having her compasses adjusted.

It is a great pity that Captain Morris's discovery or his adaptation of well known means should be practically lost to the world by reason of his unwillingness to place himself more prominently before it. By associating himself with some one eminently competent and willing to make the most of it at home and abroad, he would be doing a great service to the cause of humanity, and would entitle himself to the gratitude of thousands.

In closing this communication I would remark that it is a popular error to speak of "correcting the compass;" it is, in fact, the ship which is corrected,—that is to say, the local attraction in the ship is neutralized within a certain distance of the standard compass.

Yours truly,

R. B. FORBES.

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

When, some ten years or so gone by, the golden treasures of California would no longer be kept secret, and the real fact was left in broad daylight that golden fortunes were to be made there by digging, crowds of Americans rushed across the Darien Isthmus singing—

"Jump away Jonathan, jig along, Jemima,
California's made of gold, we'll get as rich as Lima;
Come, lads, leave your dads, to search for gold be brisk, oh,
Cut stick, right slick, and sail for San Francisco!"

and this was followed by the rather damping announcement that pistols and all revolvers were raised in price "cent per cent."

Then followed the rush to the Australian diggings, added Rodmond to the foregoing observations of Albert; then came the Frazer River gold fever, and now is the Cruces scramble on the River Chagres, the gold hunters being composed of the *elite* of the isthmus, with much the same accompaniments, by way of encouragement, as all the others had, as well as the implements of peace and war, order and confusion, progress and delay! The outcry on the isthmus is now, "Hurrah for Cruces!" all are off to the Chagres El Dorado, and the golden beaches of the river are thickly peopled with anxious gold-grubbers, wielding gyrating tin pans in earnest hope of auriferous results. Why, tin-washers are at a premium,—even rockers

are "riz." Cradles in demand, picks and shovels wanted. Dark hints are thrown out about constructing quartz-crushing machines,—companies about to be formed,—and Chagres looks forward once more to times such as those when the California rush took place, and rendered it famous for bad hotels, broken down mules, extortionate bongo owners, and bad whiskey. So says the Panama oracle, and more besides, on the pretensions of the said El Dorado.*

But leaving these gold hunters, rejoined Albert, it is said there are to be great doings on the St. Lawrence soon: at Montreal the railway bridge across the river there is to be opened in June by the Prince of Wales. In the Canadian Parliament at Quebec the following despatch, addressed by the Duke of Newcastle to the Governor-General, was read:—

Downing Street, January 30th.

Sir,—As the two houses of the Canadian Legislature will soon re-assemble for the despatch of business, it becomes my duty to inform you that the joint address to which they agreed at the close of their last session was fully presented to the Queen, and was most graciously received by her Majesty. In that address the Legislative Council and Commons of Canada earnestly pray the Queen to receive in person the tribute of their unwavering attachment to her rule, and to honour with her presence her subjects in British North America, upon the occasion of the opening of the great Victoria Bridge, accompanied by the Prince Consort, and such members of the royal family as it may please her Majesty to attend her on the occasion.

Her Majesty values deeply the attachment to her person and the loyalty to her crown, which have induced this address, and I am commanded to assure the legislature, through you, how lively an interest is felt by the Queen in the growing prosperity of Canada, in the welfare and contentment of her subjects in that important province of her empire, and in the completion of the gigantic work which is a fitting type of the successful industry of the people. It is, therefore, with sincere regret that her Majesty is compelled to decline compliance with this loyal invitation. Her Majesty feels that her duties at the seat of the empire prevent so long an absence, and at so great a distance as a visit to Canada would necessarily require. Impressed, however, with an earnest desire to testify to the utmost of her power her warm appreciation of the affectionate loyalty of her Canadian subjects, the Queen commands me to express her hope that when the time for the opening of the Victoria Bridge is fixed, it may be possible for his Royal Highness the Prince of Wales to attend the ceremony in her Majesty's name, and to witness those gratifying scenes in which the Queen is herself unable to participate. The Queen trusts that nothing may interfere with this arrangement, for it is her Majesty's sincere desire that the young prince, on whom the crown of this empire will devolve, may have the opportunity of visit-

* We are obliged to reserve this for another number.

ing that portion of her dominions from which that address has proceeded, and may become acquainted with a people in whose rapid progress towards greatness her Majesty, in common with her subjects in Great Britain, feels a lively and enduring sympathy.

I have, &c.,

NEWCASTLE.

To Governor Rt. Hon. Sir E. W. Head, Bart.

The sights of Canada are worth seeing, for our people there have got some of the Yankee go-ahead principle in them, and perhaps there is no part of the world where the march of progress has been so great as in Canada, and especially about the St. Lawrence and its navigation. The Prince, if he pleases, can go by rail from Quebec to Hamilton, at the furthest end of Lake Ontario, in twenty-six hours! Such are railway doings in Canada nowadays. It is also stated that the *Osborne* is to be ready by the end of April, and it seems not unlikely that she may become a tender to the *Euryalus*, so that Prince Alfred may get as far as Michigan in her if he likes; and the Prince of Wales will have the satisfaction of navigating the fresh water seas of Canada, and of even going to the great thriving city of Chicago in a pleasure yacht of his own.

A glorious summer cruise, continued Albert, and such a one as will kindle the affections of her Majesty's Canadian subjects into the warmest expressions of welcome to the royal visitors. They say the *Nile*, with Admiral Sir Alexander Milne's flag, will be out in time to accompany the royal visitors to Quebec, and something is said about the *Renown* forming one of the squadron, and the *Great Eastern* herself.

That Great Western Railway of Canada, observed Rodmond, is a splendid work, and will now be connected with the Grand Trunk Railway of America; but the Montreal Bridge—or, as it will become, the Victoria Bridge—is a work which for boldness of design and difficulty of execution is perhaps unequalled in the world,—this tubular bridge just completed across the St. Lawrence at Montreal, connecting it with Portland. It is thrown across a navigable river two miles in width, at a spot where its course is interrupted by rapids, and where it is exposed every year to immense masses of ice, which are dashed against it by the impetuosity of the current. When completed it will be one of the wonders of the world, and is another addition to the splendid conceptions of Robert Stephenson. The contract for this bridge was £1,400,000. The Grand Trunk Railway will then present an uninterrupted line from Portland to Michigan, with a uniform gauge of 5ft. 6in., extending 1,112 miles.

That place, Portland, observed Albert, reminds us of the fearful loss of another steamer—the unfortunate *Hungarian*—with every soul on board.

At this moment the Chairman joined the party, and the members of the Club took their seats.

We were speaking, continued Albert, of the *Hungarian*.

Aye, observed the Chairman, that Montreal Ocean Steam Company,

like others before them in their juvenile days, 'is paying the penalty of inexperience! The third steamer they have lost—and no one left to tell the tale,—that of the *Indian* was bad enough.

That of the *Indian*, added Albert, was shown to be a case of mismanagement from sheer ignorance of navigation; but the loss of the *Hungarian* savours of the desire there is in steamboats to *shave corners*. By the accounts given of her, which are scanty enough, she left Liverpool on the 5th February, and was rounding Cape Sable at night, and probably was considered to be further from the coast than she really was, for the ledges on which she struck are within two miles from the Cape; and had she not struck on them, there is a nest of dangers about the Seal islands, further on, which would have brought her up.

It is stated that there was a very heavy snowstorm about the time of the wreck from the S.E., the violence of which delayed the *City of Washington* a day at New York. The *Hungarian* was seen on Sunday evening, the 19th February, about six o'clock, steaming W.N.W. along the coast of Nova Scotia, and in the morning she was found a hopeless wreck on the rocks off Cape Sable, and not a vestige of life visible. It is supposed that she struck during the snowstorm and immediately sunk. There seems to be an opinion that she struck about midnight,—most of those on board thus passing in their repose from the cares of this world to their eternal sleep!

The *Hungarian* was the newest steamer, except the *Bohemian*, placed upon this line by Messrs. Allan Brothers and Co., and had made some of the quickest passages. She has been running about twelve months. The value of the vessel alone is estimated at £60,000. She was built on the Clyde by Messrs. Denny, of Dumbarton, and was of 2,200 tons burthen, and 400 h.p. She had on board about 1,200 tons of fine goods as cargo. The commander, Captain T. Jones, was well known at Liverpool, and in his profession, as an estimable man and a first class seaman. He was one of the most esteemed masters in the service of the company, and has left a widow and family to be numbered with others left by the crew and passengers, which it is stated consisted of 205 persons, not one of whom was saved.

It is much to be feared that this distressing loss must be attributed to that self-confidence which her captain had obtained and the desire to make a still better passage than he had done, encouraging him to hug the land nearer than discretion would justify him in doing. The *Hungarian* might not have been steering W.N.W., as above stated, but no discreet navigator would pass the Seal Island Light at night nearer than two or three leagues, and he must know that any attempt to make Baccaro Light would draw him into danger.

Some heartrending tales are told concerning this wreck, and it is singular that the *Hungarian* should have conveyed to England the survivors of the *Indian*, and on her very next voyage should have met with a similar fate.

Turning our attention from the rocks of Cape Sable to those of St.

David Head, on our own coast, continued Albert, we there find a similar fearful loss of a steamer with every one on board, which occurred on the 28th February; and all that seems to be known of her is that she was the *Nimrod*, an iron paddle-wheel steamer, belonging to the Cork Steam Navigation Company. She left Liverpool on the preceding morning, with her usual complement of passengers, for Cork; and on reaching the entrance of St. George Channel she encountered the tremendous north-westerly gale, which drove her upon the opposite (South Wales) coast, and caused her destruction. Not a soul belonging to her appears to have been saved. The vessel went down in deep water. It is supposed that she had over fifty souls on board.

It is most probable that her engines broke down, and her captain failed in his intention of making Holyhead Harbour.

The *Nimrod* was 600 tons, and 300 h.p. She was built in 1843.

Two other severe losses had to be added to the foregoing. One, the *Pomona*, a screw steamer, Captain Penn, from Odessa for London, laden with wheat, foundered in a heavy gale of wind. The passengers and eleven of the crew were saved; the remainder, fourteen in number, were drowned. She only left Malta the previous day. She was a new iron steamer, about 700 tons, chartered by Messrs. Robinson, of Mark Lane, charterers of the screw steamer *Ondine*, which vessel was in collision recently in the Channel, and immediately sank, with many lives. The loss of the *Pomona* and cargo is roughly calculated at upwards of £40,000.

The other is the loss of the *Luna*, an American ship, from Havre one day only for New Orleans, with upwards of 100 lives, on the rocks off Barfleur, near Cherbourg, about noon on Sunday, February 19th. She was seen off the coast, battling with the gale from N.W., till at length she appeared to become unmanageable, and was driven on to the rocks about 200 fathoms from the shore, where she speedily became a total wreck. Her perilous position was observed by the people on shore long before she struck, but owing to the terrible sea rolling in it was utterly impossible—indeed, beyond human power—to launch a boat through the surf to go to the assistance of the ship and her living freight, numbering 107 persons, the whole of whom, except one, perished. Two only reached the shore alive; one of them died almost immediately afterwards. The survivor, an Italian, named Clement, was unable to give any satisfactory details of the loss of the ship for two or three days afterwards, owing to his greatly exhausted condition. There were 76 passengers on board, of whom 47 were men, 27 women, and 1 child. The crew mustered 26 hands, besides a French cook for the passengers. The captain saw his imminent danger when off Barfleur, and attempted to beach the ship on a sand-bank situate between Barfleur church and the lighthouse, where there might be a chance of saving the passengers; but in running for it the violence of the gale and heavy sea drove her on the rocks. The coast is strewn with the wreck. Many bodies have been washed up.

The Chairman observed that it must always be a source of deep

regret to see these blots in the personal management of our commercial shipping, both in steam and sailing craft. It was not easy to say which were sometimes found to be in the worst hands. While steam gave an undue encouragement to confidence and displayed instances, as in the wreck of the *Indian*, of the most gross mismanagement,—a case that was perhaps not unknown on the other side of the Atlantic,—sailing craft were sometimes in equally bad hands. Indeed, what with wrecks, collisions, bad provisions, and all the evils resulting from such causes, it was somewhat difficult to say who was safe in commercial vessels in these days; and the time might come, if they continued, that all confidence would be at an end unless reform took place. It was a branch of the shipping interest that required looking into as well as that which was of a purely commercial nature, now undergoing inquiry by a Committee of the House of Commons. He had provided for a condensed view of the proceedings of that committee, which he feared, however, would run to a length too great for being included in their present minutes, besides which, that inquiry had not terminated. It would be found, he was certain, that the interest of the shipowner had been completely sacrificed in consequence of a general concurrence of events in the course of time, over which he had no control,—those changes which are gradually brought forward with the progress of nations. No doubt good would arise from that inquiry, if only in the exposure of things as they are; and he thought it should be followed by another which should be directed to the internal affairs of our commercial marine, which in several respects required setting to rights.

In reference to loss of life by wreck, which, indeed, was most deplorable, continued the Chairman, there were perhaps conditions in which to prolong suffering was scarcely desirable; such as those in which the distance of a wreck from land and the violence of the sea rendered a watery grave inevitable. Still there might be cases where a contrivance in which much ingenuity had been displayed would not be without its advantages, and such a one would be explained to the Club by their friend Albert.

The invention, continued Albert, is that of an experienced officer who was brought up in the Royal Navy, and is called "Peacock's Cork Poncho Mattress, or, Life, Limb, and Treasure Preserver," for saving life on board ships wrecked on a lee shore. It is, in fact, the bed you lie on, composed of granulated cork and horse-hair, forming a soft, comfortable mattress in two parts, united when in use in the berth. It has a hole through the middle of the centre web for the head to pass, and the two halves lie before and behind like an ordinary poncho with a girth strap. There are haversacks for holding gold specie, or preserved provisions, and holsters for a bottle of water or wine, also pockets for papers and a few biscuits. The pillow forms a cap to protect the head, and is buckled on to the top edge of the mattress; indeed, the poncho mattress, when on the person, completely protects the body from bruises or blows, and the wearer is carried in an upright position high above the waves, on the crest of

the surf, and landed at its furthest wash, his arms and legs being at perfect liberty; indeed, the whole is effectually secured to the person, preventing any possible injury, while it keeps him afloat without any exertion whatever. It can be put on in less time than a great coat. Mr. Ritchie, the patentee of the ordinary cork bed, gives it to the public at such a low price as will ensure its general adoption. It is very probable that had the *Royal Charter* possessed these poncho mattresses, or the still more recent cases of the *Nimrod* and *Hungarian*, the passengers and crews might all have been saved.

The exhibition of the model elicited the approval of the Club, under the conditions of wreck for which it was intended, and much admiration of the inventor's ingenuity.

Alluding to the serious loss of life continually occurring from wrecks, the Chairman observed that he hoped the time was not far distant when those philanthropic views which maintained the admirable life-boat system on the shores of this country would reach those of other lands. He had pleasure in receiving the accompanying paper, containing a statement of their recent proceedings, that would be consigned to the minutes of their present meeting:—

“The annual general meeting of the friends and supporters of the Royal National Life Boat Institution was held at the London Tavern on the 15th of March, Admiral the Earl of Shrewsbury and Talbot, C.B., in the Chair. The meeting was influentially and most numerously attended, and amongst others there were Admiral Sir George Seymour, K.C.B., T. Baring, Esq., M.P., Admiral Sir T. Herbert, K.C.B., S. Cave, Esq., M.P., &c.

The noble Chairman expressed the satisfaction he felt in presiding over the annual meeting of so useful and philanthropic a society as the National Lifeboat Institution. He felt assured that the more its truly important operations were known, the more they would be appreciated and encouraged. It was satisfactory to find that the institution was receiving considerable public support, but he hoped it would be still more extensive and liberal, in order to enable the society to maintain in a state of perfect efficiency its noble fleet of lifeboats, and gradually to increase their number.

Mr. Lewis, the secretary, read the annual report, which was unanimously adopted.

It stated that the total number of lifeboats, including those in course of construction, belonging to the institution, amounted to one hundred and one. A truly noble fleet, outnumbered by the navies of commerce and of war, but the largest life-saving fleet that the world had yet seen. The boats of the Royal National Lifeboat Institution had been in active service on sixty-one occasions during the past year. Two hundred and eighteen lives had been saved from thirty-nine wrecks, and five vessels had been assisted safely into port. For these valuable exertions the total sum paid to lifeboats' crews, was £733 18s. 9d. On these occasions, and on those of quarterly exercise, the lifeboats were manned by about 4,000 persons. In stormy weather

and heavy seas, and often in the dark hour of the night. The number of wrecks on the British Isles, and the loss of life therefrom, had been unprecedentedly large during the past year; no less than 1,646 having met with a watery grave. In the case of two wrecks alone, viz., those of the *Royal Charter* and the *Pomona*, upwards of 800 persons perished in the darkness of the night, without the possibility of any assistance. It was, however, consoling to find that during the past year 2,332 had been saved.

The total number of persons saved from shipwreck since the first establishment of the National Lifeboat Institution, and for rescuing whom the Committee had granted honorary and pecuniary rewards, was 11,401. Language failed adequately to describe the amount of happiness which the saving of so many thousands of persons must have conferred. During the past year 1 gold medal, 20 silver medals, 13 votes of thanks, inscribed on vellum, and £1,108 15s. 3d., have been granted for saving the lives of 499 persons on the coasts of the United Kingdom. Many of these services had been of the most gallant and noble character. The gold medal had been presented to Joseph Rogers, the Maltese seaman of the *Royal Charter*, who with a line round him swam through the heavy surf to the rocky shore, when that unfortunate vessel was wrecked on the Anglesey coast in October last, which line was the means of saving many persons, and which, had not the vessel broken up in so short a time, would undoubtedly have been the means of saving most of those on board.

The Committee acknowledged the assistance which they continued to receive from the Local Committees; from the Mercantile Marine Fund, through the Board of Trade; and from the Commodore Comptroller-General, the Deputy-Comptroller-General, and the officers and men of the Coastguard service.

The operations of the Committee may be thus briefly stated:— Since the formation of the institution it has expended on lifeboat establishments £36,948 5s. 8d., and has voted 82 gold and 658 silver medal for distinguished services in saving life, besides pecuniary awards, amounting together to £12,759 15s. 3d. During the past year expences had been incurred on either additional new lifeboat stations, or the replacing of old boats, incidental expences, and for exercising the crews of lifeboats, amounting altogether to £11,120 18s. 3d. This great and national work had, however, only been accomplished by the Society incurring liabilities to the extent of a further sum of £3,834.

The report concluded by alluding to the fact that not only was the National Lifeboat Institution now one of the most important benevolent societies in our land, but that its operations were known to all the maritime powers of the world. Some of these governments had had lifeboats built under the superintendence of the institution, which had already been instrumental in saving many lives. Englishmen resident in distant parts of the globe had also often sent tokens of their approval of its philanthropic labours. The Committee made their present earnest appeal on its behalf, in the full assurance that

those who would extend to it their support, would not only enhance a work of benevolence and mercy, but of national importance, and would thus aid in helping onward the best interests of the cause of humanity in our country.

Mr. R. B. Forbes, Chairman of the Massachusetts Shipwrecked and Humane Society, stated that along the coasts of his State they had between sixty and seventy life-saving stations, or an average of one station for every five miles. On looking at the wreck chart of the British Isles, he regretted to see that in some cases hundreds of miles still intervened between some of their lifeboat stations. Considering what the National Lifeboat Institution had already accomplished in behalf of suffering humanity, he hoped it would continue to prosper, and be enabled to pursue its course of usefulness; for among the many noble and benevolent institutions of England there was none better known and appreciated abroad than the National Lifeboat Institution. In conclusion, he moved,—“That this meeting has heard with extreme satisfaction that the National Lifeboat Institution has at present 101 lifeboats under its management, being the largest life-saving fleet the world has ever yet seen, and worthy of the philanthropy and commercial greatness of our country. Considering the benefit which the cause of humanity has derived, and does derive almost daily at this season of the year from the active services of its lifeboats on the coasts of the British Isles, and also the advantage which the good cause has received on the shores of some foreign countries and our colonies, by the use of lifeboats on the society’s plan, this meeting is of opinion that every exertion should be used to enable the National Lifeboat Institution to maintain its present important position, and to extend its sphere of useful operations,”—which motion was carried unanimously.”

There is another subject also, observed the Chairman, which has peculiar claims to our attention, as it has indeed to the patronage of every one who glories in the name of Englishman. It is the prosperity of that noble institution the Dreadnought Hospital in the Thames for Seamen of all Nations. As it has not appeared in our annals, I must claim the permission of the Club to make a few extracts from the last annual report of this excellent and most valuable institution.

“The number of seamen received during the past year as in-patients was 1,782. They have been admitted to the Hospital without difficulty, whether injured by casualty or suffering under disease. They have been carefully nursed, have had the best surgical and medical aid, have been liberally dieted during convalescence, and, occasionally, clothed and conveyed home to their families at the expense of the institution. They have also had the advantage of the spiritual ministrations of the Society’s Chaplain, who is in constant attendance.

Any one aware of the peculiar needs of a sailor, arising from his unsettled mode of life, or who has himself been laid on a bed of sickness at a distance from his home, will be devoutly thankful for the

ability (through the means of this institution) to afford assistance and comfort to this thoughtless and unselfish class of men. A further benefit conferred is that out-patients have had advice and medicine administered to them gratuitously to the number of 1,437, making the total relieved during the year 3,219. A society which has thus been the means of restoring so many men to the service of their country, is entitled to call for liberal support."

"The Committee refer, with much gratification, to the sums received from subscription boxes during the past twelve months, which is as follows:—

From the Shipping Offices in London	£515	1	5
„ the Shipping Master at Glasgow, most of which consists of Annual Subscriptions collected by him ..	147	2	1
„ the other Shipping Offices in Great Britain and Ireland	213	4	4
Total	£875	7	10

A grateful testimony is thus borne by the *seamen* themselves to the advantages conferred upon them by this institution. The shipping masters, whose avocations are arduous and incessant, have generously bestowed their best services in making these collections in behalf of the society. Captain Crawford, the Shipping Master of Glasgow, on the recommendation of the Committee, has been elected an honorary life governor of the corporation.

A large proportion of the seamen admitted to the Dreadnought are natives of the various trading ports of Europe, and of every quarter of the habitable globe; and it is gratifying to find a handsome annual donation acknowledged from the principal crowned heads of Europe, an example which will no doubt be followed from the United States."

"While the claims of the Seamen's Hospital Society are most urgent on those whose subsistence and wealth are procured by the toils of the mariner, they appeal to the sympathy of the nation at large, which derives such great advantages from the services of the brave fellows who man "the wooden walls of Old England."

As Christians, moreover, seeking, by diligent use of the various talents placed at our disposal, to testify our obedience and gratitude to the Saviour, who, for our sakes, became poor;—the Seamen's Hospital Society—which opens its doors without stint to those who, when sick and suffering, have neither home to receive them, nor friends to cheer them—is an institution which claims our warmest sympathy and our prompt support."

It will further serve to complete a general view of the results effected by the establishment of this hospital from its commencement to the present time, as well as of the countries to which the several seamen who were patients belonged, to append the following state-

ments from the secretary's report; and sincerely trust that wherever these statements are perused the foregoing sentiments will find a response in every breast, that will induce their readers to exercise their Christian feelings by contributing to the support of the *Dreadnought*.

A Statement of the number of men received into the Seamen's Hospital from its first formation in March, 1821, to 31st of January, 1860. Total since the commencement, 83,130.

	From March, 1821, to the 31st Jan., 1859.	From 1st Feb. 1859, to Jan 31st, 1860.
Number received.....	81,348	1,782
Under cure and convalescent, 31st January		169
	Total	1,951
Of which		
Discharged—cured	57,425	971
" convalescent	11,249	506
" relieved	2,689	112
" not cured	1,124	61
Absent, from surgeon's leave	1,017	23
Discharged to ships found them by the Society	1,415	0
Conveyed to their homes.....	290	2
Without certificates of good conduct.....	725	35
Expelled	619	14
Died	4,626	80
Under cure and convalescent	169	147
	Total.....	81,348
		1,951
Admitted as out patients.....	46,149	1,437
Clothed (wholly or partially) after being cured	3,513	102
Supplied with shoes and stockings only	3,321	11

Statement showing the different nations to which the patients mentioned in the foregoing table belonged, and the last service in which they were employed.

Englishmen	44,873	Brought forward..	74,850
Scotchmen	9,513	East Indians	2,303
Irishmen	6,948	West Indians	1,535
Welshmen	1,552	British Americans	1,139
Frenchmen	382	United States	1,891
Germans	1,364	South Americans	238
Russians	1,052	Africans	487
Prussians	1,883	Turks	18
Dutchmen	421	Greeks	95
Danes	1,252	New Zealanders	50
Swedes and Norwegians ..	3,674	New South Wales	44
Italians	859	South Sea Islanders.....	279
Portuguese	639	Chinese	47
Spaniards	438	Born at sea	154
	74,850		
		Total.....	83,130

In what Service employed.

Her Majesty's Navy	3,411
Hon. East India Company's service	1,798
Merchant vessels of different nations	77,921

Total 83,130

Subscriptions thankfully received by the Secretary at the Society's offices, 86, King William Street, London, E.C.; John Labouchere, Esq., Treasurer; at Messrs. Williams, Deacon and Co., Bankers, Birchin Lane; Messrs. Drummond, Charing Cross; and by all other Bankers; also by the different Navy Agents."

Among other current matters of the day which they had to place among their papers, was the completion of the telegraphic communication between Suez and India. At the meeting of the Red Sea and India Telegraph Company this was announced and much satisfaction expressed at the completion of the company's cable. There is at present no telegraphic communication between Candia and Alexandria. It is expected that the entire line will be opened from London to Calcutta in the course of two months. The first section, extending from Suez to Aden, with two intermediate stations at Kossier and Suakin, was laid in the middle of last year, and opened to the public on the 1st of October. The second section, from Aden to Kurrachee, with two intermediate stations at Hallani (one of the Kooria Moorria Islands) and Muscat, has also been laid, and will be opened to the public as soon as the necessary tests have been completed.

It was also stated that a large trade was springing up between San Francisco and Japan. Some skilful designers had been sent out by the Americans for the purpose of furnishing the Japanese merchants or artists with modes after which to manufacture articles better adapted to the American market. Mr. Gable, a missionary, had been refused a passage to Japan in an American ship by the owners, on the plea that the presence of missionaries and teachers of a new religion in that country might lead to trouble and hinder commercial operations.—This is a delicate subject, and we must take care what we do.

With reference to the Indus Steam Flotilla, report says the large passenger model steamer *Stanley*, after having been tested on the Thames, has been taken to pieces and despatched to India; that seven accommodation flats had been shipped; that six passenger steamers were being constructed; that six towing steamers and twenty-five cargo barges had left for Kurrachee; and that the eight remaining cargo barges were ready for shipment. The *Stanley* is now in course of erection at Kurrachee, and from the progress made may be expected to make her first trip on the Indus in the course of next month. Three other passenger steamers have been shipped, and the remaining three vessels of this description are now ready for shipment. The six towing steamers and twenty-five cargo barges arrived at Kurrachee in November last, with the necessary artisans and appliances, and the eight remaining cargo barges left some time ago the port of Liverpool for

Kurrachee. Every possible precaution has been taken both by the Government and the directors to obtain steam-vessels of the best description for navigating the shallow waters of the Indus. An experienced and able naval officer has been appointed superintendent of the Indus Steam Flotilla, and has already secured at Kurrachee the services of some of the best officers practically familiar with the navigation of the Indus. There is every hope of seeing at no distant period the entire flotilla of fifty-three vessels in active operation on the Indus. The commerce of the river, notwithstanding the many difficulties which obstruct it, continues to show a large and encouraging increase. "The demand for tonnage on the River Indus," says the commissioner in Scinde, "is still far in excess of what the existing number of boats can supply, though the number of boats is very rapidly increasing; the prices charged are consequently much in excess of what they will be when the means of river transport are increased."

In reference also to an attack on the steamer in the Niger, an account of which recently appeared in the *Nautical Magazine*, it appears that this hostility is attributable to jealousy of the enterprise on the part of those native tribes who occupy the territory between the interior and the mouth of the Niger. These people, from their position, are enabled to realise considerable profits, for it is through them that all goods and produce pass between the fertile countries of the interior and the large Liverpool ships that lie trading in the rivers. But by the ships of the expedition trading direct with the natives of the interior, a jealousy is caused which produces serious consequences. It is said that the expedition boats pay the natives of the places far up the river the same price for oil as is paid by the large Liverpool traders at the entrance of the river.

Our Chairman has truly said, continued Albert, that the shipping interest, by which must be understood that branch of it which affected the shipowner and his affairs, was in a most deplorable condition at this moment, arising, it appeared, from a great variety of circumstances as affected the numerous sources of profit which it involved. In the inquiry which has been going forward for some days the measures of this country have been generally condemned by the shipowners, and one went so far as to declare our legislative enactments regarding our shipping to be the most improvident, the most impolitic, and the most unjust that ever attended the legislation of any country. These, no, doubt were strong terms, but he believed, according to the evidence given before that committee, they were founded on actual fact. This opinion is pretty general concerning sailing ships; but we find, in regard to steamships, another saying,— "There can be no doubt, as regards sailing ships, it has been in a state of most unparalleled depression, especially since the autumn or winter of 1857. But if the question, as respects steamers, is confined to the particular trade in which I am engaged and interested, it has been one of the greatest prosperity. Steamships engaged in that particular trade have very much increased. Ten years ago that trade was principally carried on by sailing vessels from 100 to 300 tons, but they

have been entirely driven away by steamers. This, however, is but one class of vessels and one of the causes of deficiency; but what seems to be considered the principal is that deficiency of reciprocity which is denied to our ships by foreigners, and the running away with our intercolonial trade by cheaper freights than British ships can carry. It would seem that while the owners of sailing ships have suffered, those of steam-vessels have prospered; still there was no doubt the shipowners, as a mercantile body, had their grievances, which, it is hoped, will eventually find their remedy.

Before concluding their minutes, Rodmond was desirous of making a few observations. It was common in the mercantile marine of this country to deprecate the conduct of naval officers towards men under their command, and the impression still existed that Jack was treated better in the merchant service than in that of her Majesty. They had recently had before them the case of the *Accrington*, the captain of which ship, along with his mate, had incurred a retaliation for their brutal conduct towards their men, which was severe indeed; but who was there who had said it was unmerited. They had been poisoned to death, perhaps by one of the principal sufferers, and a court of justice at Southampton had ignored the case, without that expression of regret usual on such occasions. That was a case of cruelty disgraceful to our common nature. Here was another in which the perpetrators had been brought to justice. He was a friend to the mercantile marine of this country, and he believed that to rid that service of such monsters in human form as these men were, was what its best friends could desire. He hoped that the account of the latter case, as that of the former had been, might be preserved among their papers as specimens of the treatment which poor helpless mortals had really met with, and which others might still meet with, in a *certain class of ships* of the merchant service of this country, even in the present advanced age. Where and when will you find anything even approaching to this, concluded Rodmond, at any time in the royal navy of this country.

The proposal of Rodmond was carried with general assent.

“ At the Supreme Court, Wellington, New Zealand, December 1st, before resident puisne judge Mr. Justice Johnson, Captain John Straker, master, and Mr. Charles Straker, first officer, (brothers,) of the ship *Snaresbrook*, of London, were charged with the wilful murder, on the high seas, of Francis Muir, an apprentice, on board that ship. The trial occupied three days, and excited the greatest interest in the colony.

The evidence, which was very voluminous, proved the following facts:—The deceased was a youth of respectable connections and of good education, and joined the ship on the 27th of May last, at Gravesend, as an apprentice. His health was then good. From an early period of the voyage both prisoners appear to have treated him with more strictness than the other apprentices. The first act of ill-

treatment on the part of the mate occurred on the night of the 1st of July. He ordered Muir to go up the mizen rigging to do some necessary act at the gaff, and as he did not move quickly he followed him up with a rope, when the boy fell from the gaff on the poop, breaking a hencoop in the fall, and injured his shoulder. George Haggard, one of the crew, picked him up; he was insensible, and the captain, who was on deck, ordered him to be carried into the cabin, where he recovered in about twenty minutes, and complained of his shoulder. No bones appeared to be broken, although the flesh was much swollen. On the third day after his fall, the mate ordered him to work, and he was more roughly treated than any of the other boys.

About a fortnight after, the captain ordered the boy aloft, the mate was in the maintop, the mate telling the boy to bring him some tackle up. The boy got up about a third of the way, when he slipped, complaining that his feet were so bad he could not get up any further. He showed his feet to the captain. The mate, who was shouting all the time for him to come up, then came down, put a rope round the boy's waist, and hauled him up.

About the end of July a change in the boy's mind was observed, which many of the witnesses attributed to the fall and the ill-treatment, and he exhibited great want of cleanliness. A representation was made by the other boys to the captain that he was dirty and lousy. The captain ordered him out of his berth in the half deck, where the other boys' berths were, and told him to take up his quarters in the longboat. For upwards of three weeks Muir slept and lived in the longboat. This was a short time before his death.

Wilson, a seaman, in his evidence said there was a binnacle on the top of the longboat. The boy got in at the bow of the boat, and he appeared to him to be lying on the oars. He could not stand upright in the boat without standing in the water, of which there was from twenty-eight to thirty inches in the boat. He had nothing to sleep on. The only covering he had was an old woollen rug, his dress consisting of only trousers, shirt, and cap. He saw him some fifteen days after he had been living in this state, when he complained of his feet and legs, which were covered with large sores, eating into the flesh. He also complained of cold; the weather at the time was very severe, blowing and snowing the whole time. In the daytime he managed to crawl out and do what work about deck he could, both captain and mate kicking and beating him almost daily.

On the night of the 13th of August the boy went into the half deck without leave, and went to sleep on some wet sails, where he slept for four hours. At five a.m. the mate came on watch, and finding him absent, sent for him. The boy came, and the mate ordered him aft to the poop: he would not allow him to dress; the apparel he had on, a shirt and a pair of duck trousers, were wet. The weather was extremely cold, and there had been a fall of sleet. The mate ordered him up the mizzen rigging, where he fastened him with ropes, A witness, who was at the helm, said,—I went on to the poop at six

o'clock, a.m. I saw the boy made fast to the lee mizzen rigging on the starboard side. He was fastened to the shrouds, his arms stretched out, his toes just resting on the deck; his whole weight seemed to be suspended on his arms. The ship was lying over. His back was against the shrouds, and was more exposed than if he had been on the weather rigging. The mate was on the poop. I heard the boy ask him to let him go. He said,—“No; I will take the —soildering out of you.” The boy repeated the request three or four times; but was refused.

About twenty minutes to eight he was taken down, when he fell benumbed with cold. He had been lashed up two hours and a half. The mate ordered him aft to work at the pumps, and I saw the boy leave the poop. He crawled along the deck. He was kept on deck the whole morning, the captain and mate driving him up the rigging to reef sails, &c. In the afternoon the mate found him clinging to some spars. He ordered him away. The boy gave a foolish grin, and said something not to the purpose. His mind appeared to be going. The mate, after looking at him a few minutes, ordered him below. Three days afterwards (the 17th) the captain went down to see the boy. He found him lying on the wet sails. He ordered him to get up and wash himself. The boy asked if he might wash himself below. The captain said, No; and that if he did not get up he would have him dragged up with a rope. The boy went on deck, evidently suffering: but seeing the captain leave him and go aft, he returned, and lay down on the sails. In about ten minutes the captain returned, dragged him off, and kicked him up on deck, where he ordered a bucket of water, gave him a piece of canvas, ordered him to strip naked, and to scrub himself. It was snowing at the time. The boy did as he was desired, but the captain ordered him to wash again. The mate was standing over him all the time. The washing lasted some time, until the boy fell on the deck, and was sinking fast. Naked and benumbed, he crawled to the galley fire. After remaining there some hours, he was removed by two seamen below, evidently a lunatic. The poor fellow continued in this state for four days, when death put an end to his sufferings.

It appeared there was no surgeon on board. The captain, on hearing the boy was in a dangerous condition, sent brandy and oatmeal, but he was then past recovery.

At the close of the case, his Honour proceeded to sum up, which occupied four hours.

The jury found the mate, Charles Straker, Guilty of wilful murder, and the master Guilty of manslaughter.

The judge, in passing sentence of death on Charles Straker, observed that he had been found guilty of one of the most atrocious crimes that man could be guilty of. In the whole case he could not find any extenuating circumstances—not one feature of alleviation—not one touch of nature that could warrant him in recommending the Crown's prerogative of mercy. What motive could have induced him

to adopt such a systematic system of cruelty, God only knew. The poor boy—probably his (the prisoner's) superior in everything but physical strength—could have offered him no provocation. His Honour then noticed the cruel and unnatural course of treatment the boy had experienced on the voyage, and said what made the prisoner's crime so detestable was that it was the crime of cowardice; and if in future men in his position should be tempted to indulge in their inhumanity, the fate of Charles Straker would act as a warning. He could not buoy him with any delusive hopes. A great warning was required; a great punishment was prepared. He would have time for reflection to make his peace with an offended God. He hoped he would profit by those calm hours of reflection, which, unlike the closing life of Francis Muir, would be untouched by physical pain, by making due preparation for that state into which he must shortly enter. The prisoner was then left for execution.

Captain John Straker was then called up, and was sentenced to be kept in penal servitude for six years."

Secretary's Mems.

The King of Sweden and Norway has awarded a medal to Commander Montagu O'Reilly, R.N., in acknowledgment of his services in heaving off the rocks, last October, in Gibraltar Bay, the Swedish corvette *Ornen*, and the Admiralty have sent out this decoration to the Commander-in-Chief in the Mediterranean for presentation.

The British Government has just presented Captain Hermel, of the French vessel *Lusitano*, of Havre, with a telescope, for having rescued the crew of the *Birkenhead*.

Vice-Admiral Charnier is appointed to the command of the French naval division in the Chinese waters. The importance of this force, which, when completed according to present arrangements, will consist of sixty vessels, requires that the commanding officer should be of a higher rank than a rear-admiral. Vice-Admiral Charnier was second in command to Admiral Bruat during the siege of Sebastopol. He knows China, having been there formerly in a ship of which he was captain.

For the future all vessels employed in the conveyance of troops from port to port in the United Kingdom or Ireland are to be furnished with boats fitted with Clifford's or Kynaston's lowering apparatus.

An important meeting of the Great Ship Company has been held, at which a motion to increase the capital of the company by £100,000 was adopted after an animated discussion.

Intelligence has just reached this country that the Portuguese man-of-war *Mindego* had foundered near the island of Reunion, in the

Eastern Ocean, and that forty of her crew had been drowned. She foundered during a heavy storm. Several other vessels are supposed to have been lost in the storm. It was ascertained that a number had been damaged by it, although their names were not given.

The ports of Swatow and Taiwan have been opened, and the provisions of the American treaty have been extended to the British and other Powers.

WINDS AND TIDES IN THE STRAIT OF DOVER.

Sir,—It is so long since I wrote my last letter to you on the action of winds upon the tides in the Straits of Dover, that I fear both the subject and the writer may well be forgotten ere this; and yet it is so deeply interesting in itself, and the investigation would, I am convinced, be so full of benefit in its results to the whole maritime community, that I am loth to leave it without one parting word.

A parting word, for the present, I fear it must be, for the inconvenience of not residing upon the spot, combined with the difficulty in obtaining accurate information, or active and trustworthy co-operation while absent from it, renders me hopeless of doing anything, as yet, of value in the elucidation of the actual practical question,—What effect does such and such a wind produce upon the set and drift of the tides in the Gull Stream?

It seems to me that the utility of the whole question is contained in this nutshell.—Who shall extract the kernel?

My late deeply lamented father commenced a series of bottle papers, a short account of the earliest of which I sent to this publication, and the registry of their voyages would have been continued had not the conviction been forced upon me that it is of little or no use knowing that a bottle pitched overboard off the Foreland reached Dunkerque, the Texel, or even higher latitudes,—as some of them did,—unless we know also their *traverses* under the action of different winds. In fact, the inquiry seemed to be leading me away from my object—the Gull Stream—and to be assuming the character of a well known work,—*Letters from High Latitudes*.

With great reluctance, therefore, feeling I had better not fill your valuable pages or occupy your time with useless conjectures, I retired for a time in the hope that some one would advance some corroborative, or add some fresh information upon the subject. Months have elapsed and nothing has appeared. It may be that none possess the actual knowledge required here, but I think it is easily to be attained.

With all humility I make the suggestion, hardly daring to hope that it will be taken any notice of amid the multitude of such questions which must be pressed upon them daily. But if the noble

corporation of the Trinity House would give orders to their light-keepers to take notice of the set and drift of the tides in the Gull Stream, under the various aspects of light breezes, stiff breezes, and heavy gales, and then allow some trustworthy person to digest the results, they would be conferring a lasting and incalculable benefit upon the mariners of all nations.

I am, &c.,

A. B. MARTIN.

To the Editor of the Nautical Magazine.

WRECK OF THE SHIP "ST. ABBS" IN 1855.—*Inquiry for Survivors.*

A report having recently reached England from Ceylon that some of the passengers or crew wrecked in the ship *St. Abbs* are held in captivity in some place or island not mentioned, it is earnestly solicited of all persons who may visit or have communication with the ports and places on the East coast of Africa North of Mozambique, or with Madagascar or the islands in that quarter, that every inquiry may be made as to any Europeans being held in captivity or having been taken off floating wreck.

The ship *St. Abbs*, bound to Bombay with stores for the East India Company, was wrecked on the reef of Joao de Nova, in lat. 10° 10' S., about 150 miles North of the North end of Madagascar, on the night of the 14th June, 1855. The master and a few men saved themselves in a boat; one cadet only reached the shore, by swimming, out of three who attempted it, leaving three cadets and nineteen of the crew on the wreck, in all twenty-two persons.

At sunset on the third evening the ship was entire as before, but at daylight next morning she had disappeared. No part of the wreck or bodies drifted on shore, but three persons were seen floating on a spar in the distance.

There is the possibility that the poop or afterpart of the ship floated away with persons on it. The monsoon was fresh at S.S.E. and S.E., with a strong W.N.W. current, which may have carried a portion of the wreck towards the coast of Africa, into the track of native vessels trading from Madagascar to the coast and to the Red Sea, and thus some persons might have been picked up.

By the *Bombay Standard* of the 24th September, 1858, a correspondent from Zanzibar writes that "a part of the wreck of the *St. Abbs* has been washed on shore at Brava on the coast of Africa, in lat. 1° N., and that the cargo is being sold to parties trading to that place. Many articles had been sent to Zanzibar."

It would be satisfactory to learn:—

1st.—When this part of the wreck came on shore, and if it is likely that any person could have survived on it many days while it was floating.

2nd.—Whether any report has prevailed on the coast, or at Madagascar, that the passengers or crew of that ship were rescued and held in captivity.

3rd.—And if so,—Where? and what would be the best means of obtaining their release.

Any information on this subject will be gratefully received by the parents and friends of those supposed to be lost. And parties are invited to forward such information to his Excellency the Governor of the Mauritius, or to the Governor of the Cape of Good Hope, or to the Secretary of the Admiralty, London.

THE BOTTLE QUESTION.

Our Bottle Papers have grown out of our Chart, and we have taken another larger in hand that in due time we hope will be in the hands of our readers. In the mean time we are for keeping up our record, which has unconsciously been set aside by other pressing matters, and we now resume the string of these ocean travellers with the following, to be continued, we hope, until our resources are expended.

ROBERT PATTY.—Track *ab*.

British Consulate, Christiania, 20th April, 1858.

My Lord,—I have the honour to transmit herewith, for the information of those whom it may concern, the copy of a note found in a bottle, which was picked up on the beach of the island of Rödo, in Helgelund, a province on the northern coast of Norway, in lat. $66^{\circ} 40'$, long. $13^{\circ} 0'$ E. of Greenwich, on the 20th of December last.

I have, &c.,

J. R. CROWE.

The Rt. Hon. the Earl of Malmesbury.

Ship *Robert Patty*, of Boston, James H. Kelly, Master, from Port Baltic twenty-nine days; lat. $44^{\circ} 27'$, long. $43^{\circ} 12'$; May 29th, 1856. The finder will please advertise when and where picked up.

[This bottle seems to have been wandering for about one year and seven months; but affords, by the direction it has taken and the distance drifted, a good illustration of the effects of the S.W. winds.]

PERSEVERANCE.—Track *ac*.

H.M.S. *Perseverance*, 1h. p.m., 4th November, 1856, lat. $14^{\circ} 28'$ N., long. $50^{\circ} 38'$ W. at noon. Since ran W.S.W., true, eight miles; a swell from N.E. *En route* from Tenerife to Barbados.

J. M. M'DONALD, *Commander.*

Found on the morning of the 30th November last on that part of the coast of this island known as the Pointe du Vanelin.

WM. LAWLESS, *Acting-Consul*.
St. Pierre, Martinique, 11th December, 1856.

[This bottle seems to have been soon found, and has managed to drift with the equatorial stream about 250 miles in 26 days—something under 10 per day,—and is a good illustration of its effects.]

MELVILLE.—Track *ad*.

British Consulate, Greytown, Mosquito, 1st May, 1858.

Sir,—The accompanying paper was found in a bottle (the cork sealed) by a Mosquito Indian on the beach about five miles to the northward of Greytown, and one mile to the northward of Indian River, Sunday, 21st March, 1858. The man passed the same place the previous day, and thinks if it had been there he would have observed it, and states that the bottle had only recently been washed ashore.

I have, &c.,

GEORGE PATON, *H.M. Vice-Consul*.

The Secretary to the Admiralty.

H.M.S. *Melville*, San Antonio, Cape de Verdes to the Cape, 29th July, 1857, lat. 2° 27' S., long. 30° 18' W.; wind S.S.E., S.b.E., fresh squalls from E.S.E. This paper, enclosed in a sealed bottle, is thrown overboard as above. We crossed the line in 28° 30' W. the 28th July, and have been much baffled with the wind from S.S.E. and strong westerly currents.

HENRY TROLLOPE, *Commander*.

[Captain Trollope has the satisfaction of finding he has given in this bottle an excellent illustration of the general equatorial stream,—the bottle having gone about 3,450 miles in 235 days, or about 15 miles per day.]

CYCLOPS.—Track *ae*.

H.M.S. *Cyclops*, 6th November 1857, lat. 32° 10' N. D.R., long. 19° 7' W. Thrown overboard at noon; wind light from E.N.E.; steering S.W.¼ W. (compass). All well.

W. J. S. PULLEN, *Captain*.

Found in a bottle, sealed in black, at the island of Porto Sancto, two miles N.E. distant from the town, on the beach called Porto dos Frades, at 9h. a.m. on the 6th inst, and delivered to me to-day.

Porto Sancto, December 20th, 1857.

O. Administrador de Cincelho,

JEAN DE SANT HIMA DE VASCOS MUNIZ DE BIFFERT.

Westerly winds prevailed great part of the time at Madeira, and a strong southerly gale on 28th November.

G. HAYWARD, *British Vice-Consul*.

[Captain Pullen has afforded in this bottle a most interesting illustration of the effects of the temporary surface drift from the effects of wind. We should have expected this bottle to have gone to the southward and then westward, like all the rest hereabouts; but it has arrived at a place E.N.E. 120 miles from where it was left.]

PORCUPINE.—Track *af*.

Ardfinaeg, Island of Mull, Argyllshire, 19th January, 1859.

Sir,—The enclosed paper was brought to me yesterday by Archibald Macdonald, Ardachy, near Bunessan, who found the bottle containing it on the beach of Traysana, in the bay immediately East of the point of Ardalanish, on the morning of Monday last, the 17th. The man states it was only washed in on the previous night, and that no damp had penetrated through the bottle, the paper when taken out being as dry as it is now.

I am, &c.,

JOHN CAMPBELL,

Chamberlain to his Grace the Duke of Argyll.

To the Secretary of the Admiralty.

H.M.S.V. *Porcupine*, 10th of June, 1858, lat. 50° 9', long. 19° 40' W. From Cork bound to St. John Newfoundland: a light breeze from the southward, smooth water, and fine weather. From the time of leaving Cape Clear we have not experienced any current. All well on board.

HENRY C. OTTER, *Captain.*

W. STANTON, *Master.*

[One of the fruits of Captain Otter's attention to the subject, following the usual drift to the N.E. from the place where it was left, but most probably it had remained some days unobserved.]

PORCUPINE.—Track *ag*.

Llanelly, Feb. 18th, 1859.

Sir,—A bottle was picked up by Rees Bowen, fisherman, on the sands inside of the Barry Bar last evening, the 17th inst. The paper enclosed was found in it, and is forwarded as directed thereon.

I have, &c.,

SAMUEL PHILLIPS,

Teacher of Navigation.

H.M.S. *Porcupine*, from Cork to St. John, Newfoundland, noon, 15th of June, 1858, lat. 47° 52', long. 30° 42' W. Lying to under trysails; gale of wind from the N.W. Experienced a set of eight miles to the southward during the past twenty-four hours. Temperature of water, 56°. All well on board.

HENRY C. OTTER, *Commander.*

W. M. STANTON, *Master.*

[Is another of Captain Otter's results, showing the usual drift to the N.E. and agreeing with others left in those parts of the ocean.]

Nautical Notices.

SUNKEN ROCK IN BALABAC STRAIT.

Singapore, 6th February.—The *Osnabruk*, Hanoverian barque, Seetzen, from Cottie, which arrived here January 27th, reports having struck, January 17th, on what appeared to be a small detached rock

in the South Balabac Channel (China Sea). South Mungsee Island bearing N.N.E. 8 miles; North Gohovan Island E.b.S. 3 miles. To be docked for repairs.

[We preserve the above as it stands in the *Shipping Gazette*, as the important strait of Balabac, one of the thoroughfares between the China Sea and Pacific Ocean, has not yet been surveyed; and, consequently, until it has been, no chart of it is to be had on which dependance can be placed.—ED.]

SAN SEBASTIAN, *Spain*.—A letter in the *Shipping Gazette*, signed by eight foreign and eight British shipmasters, warns their brethren not to go to San Sebastian on any account whatever. No vessel drawing over ten feet can go into the mole with spring tides, and when in there is no protection. The bay is open to N.E. and N.W. gales, and no shelter within it; and a heavy charge is made for the loan of coir cables, which will not keep a vessel from breaking adrift and going on shore wrecked. They virtually say,—Take warning by us and don't go there, unless you wish to have your patience exhausted by Spanish law, and yourself fleeced by Spanish lawyers!

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 108.)

Name.	Position.	Where.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
7. Blackwater Bank	.....	Ireland, East coast	F.	33	9	Est. 1st July, '60. Altered to F. from R.
Arklow Bank	South end	Ditto	R.	30	10	Est. 1st July, '60. Altered to R. from F. Interval once a minute.
Kish Bank	North end	Ditto	..	..	..	Altered as per notice. (a.)
8. Cay Lobos	Gt. Bahama Bank	West Indies 22°32'8"N., 77°35'8'W.	F.	146	16	Est. 31st March, '60. Tower painted with red and white horizontal bands.

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

(a.)—On and after the 1st day of July, 1860, the lights at present shown from the fore and mizen masts of the light-vessel moored off the North point of the Kish Bank, at the respective heights of 26 and 25 feet above the level of the sea, will be lowered 6 and 5 feet, or each to the height of 20 feet above that level. The light exhibited from the mainmast will remain, as at present, at a height of 36 feet above the level of the sea, or 16 feet above the level of the two other lights. This vessel will carry a *black* ball at each mast-head.

This alteration is deemed desirable, it having been represented that the lights now exhibited are, when seen in one, liable to be mistaken for a single light.

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

Ireland, West coast, Inishbofin and adjacent coast of Galway, Comdr. G. A. Bedford, R.N., 1849, (5s.)

Ireland, West coast, Slyne Head and adjacent coast, Comdr. G. A. Bedford, R.N., 1848, (5s.)

Mediterranean Sea, Crete Island, &c., Standia Anchorages, Capt. T. Spratt, R.N., C.B., 1853, (2s.)

Admiralty, March 21st, 1860.

THE PREDICTED HIGH TIDES.

The predictions relative to the extraordinary high tides that were to take place on the 8th and 9th of March have been verified, and indeed were somewhat anticipated, for the tide on the 7th, as far as the River Thames at least is concerned, rose considerably higher than usual, and inflicted much damage.

On the 8th considerable excitement prevailed all along the banks of the river, and every possible precaution had been made to prevent disastrous effects. The tide in the morning was much higher than had been known for many years. The wind, which had been blowing for the preceding twenty-four hours from the N.E., had driven an immense volume of water from the North Sea into the estuary at the mouth of the Thames, and suddenly shifting on the flood to nearly due East, the accumulated waters rushed up the river with a velocity seldom known in European rivers. At three-quarter flood several vessels were driven from their moorings or dragged their anchors, causing indescribable confusion in the upper and lower pools.

In the afternoon the tide rose considerably higher than in the morning, and made fearful encroachments on the waterside premises. At three-quarters flood the tide, impelled by a strong gale from the E.N.E., swept over the embankment at Lambeth, deluging the roadway as far as the dwarf wall of the churchyard adjoining the archiepiscopal palace, and the wharfs on the banks, as far as Vauxhall Bridge. At Bankside, Pedlar's Acre, Belvedere Road, Bermondsey, Dockhead, and Rotherhithe, several of the wharfs and landing-places were laid under water. Before the tide had reached its full height, and notwithstanding that licensed victuallers and other tradesmen had their cellar-flaps earthed over, and other precautions taken, the overflow of water rushed into the basements and caused much damage. The North side of the river did not escape unscathed; the halfpenny steam-boat pier and landing, with the carriage-way, were overflowed some time before high water, and it required a great amount of labour to prevent the ground floor of the Fox under the Hill public-house being overflowed. A great number of wharfs from Millbank to Poplar were laid under water. On the river the confusion was indescribable. The rapidity of the flood-tide, aided by the violence of the gale, caused a

large number of vessels to part their moorings, and a great amount of damage was occasioned by collisions, which were exceedingly numerous. The marsh lands on the Kent and Essex sides are overflowed, and present the appearance of inland lakes.

In consequence of the precautions taken, but comparatively little damage was occasioned at the Dockyard at Woolwich. The wharfs were partially overflowed, and the floor of the mast-house was under water. At the Royal Arsenal the swell of the river inundated a portion of land near the canal, but no serious damage resulted.

At Southampton the tide was very high at mid-day, considering that the wind was northerly. If the wind had been from the S.W. the tide would have flowed over the quay. It was as high yesterday as is usually the case at spring tides when there is no wind to check them. The wind last evening had been blowing hard from North and N.W. for twenty-four hours. In consequence of this, and a strong tide against her, the Jersey mail packet arrived very late on the previous night. Soon after the second high water yesterday it came over suddenly dark, followed by a dense snow storm, which, however, only lasted for a short time.

For the last few days the tides of the River Mersey have been higher than for many years past. Yesterday the water rose to 20 feet 11 inches, or within a couple of feet of the parapet of the dock walls. In some parts of the town—Whitechapel, Paradise Street, and other low neighbourhoods—many of the cellars became flooded, owing to the sewers communicating with the river. Had the wind been blowing very hard the result might have been disagreeable, if not disastrous. Last night the tide was even higher than in the morning, it reaching up to 21 feet.—*Daily News*, 9th March.

MAGNETIC VARIATION.—Table showing the Mean Monthly Westerly Declination of the Magnet and the Mean Monthly Dip at the Royal Observatory, Greenwich, in the year 1859.

1859.	Variation W.	Dip.
January	21° 26' 27"	68° 20'
February.....	21 26 48	68 23
March	21 27 22	68 23
April	21 26 16	68 25
May	21 22 15	68 25
June	21 24 1	68 26
July.....	21 23 38	68 26
August	21 22 34	68 25
September	21 22 18	68 26
October	21 19 57	68 28
November	21 18 33	68 26
December	21 18 23	68 22

The mean variation has been found by the application of corrections (deduced by Mr. Glaisher from two-hourly observations taken during the seven years 1841-7) to the means of readings taken at 9h. a.m., 1h., 3h., and 9h. p.m. daily.

G. B. AIRY.

THE
NAUTICAL MAGAZINE

AND

Nabal Chronicle

MAY, 1860.

NOTES ON THE COAST OF JAPAN,—*Extract of a Letter. With Siebold's Vocabulary.*

We made a flying visit to the head of Aniwa Bay, and had an interview there with the aborigines, those hairy Kuriles; fierce looking fellows in the distance, but in reality very mild and peaceable. They are kept in complete subjection by their Japanese masters, who lord it over them in much the same manner as Europeans do over the Negro race. Their apparel is characteristic of the people: the coat is of some coarse kind of canvas, or sometimes seal-skin: the women are frightfully ugly; they seem to have no other kind of occupation but to find food and eat it. Unhappily, our information concerning them was limited to what we could observe, for we could not communicate with them either by word or deed.

When off Cape Noto we fell in with some shipwrecked Japanese, and offered them a passage to Hakodadi; but, poor fellows, they soon made us understand that they dared not accept it without permission from their chief. They gave us some information on Russian annexation, by which it appears that the island of Saghalin, from about sixty miles North of Aniwa Bay, has become Russian territory, and they have small military forts on each side of the island, in about the parallel of 50° North latitude.

In Peyrouse Strait we could not find a comfortable anchorage any where; but fell in with a dangerous rock, about 15 feet high, in the middle of it, and strong easterly currents constantly hurrying through, making it altogether one of the most harassing and comfortless pieces of navigation that a seaman could desire. The shores and islands are

alive with seals, and the noise they make in a still night is anything but pleasing to musical ears. Several were shot at Totomosiri and brought on board, being as much as four men could manage. Our sportsmen have but little, however, to boast of further than wounding a bear at Cape Notoro. Of course he managed to get away into the thick bush, where no one could follow him. It seems likely that in the winter great numbers of them resort there.

We cleared the strait of La Peyrouse and anchored at Hakodadi three days afterwards. Here we found H.M.S. *Highflyer* with the Consul-General of Japan and Mr. Hodgson the newly appointed Consul for Hakodadi. With the *Highflyer* we fired a royal salute when the British flag was run up the flag-staff for the first time at the consulate. But she had no time to spare, so she speedily left our consul to commence his functions and proceeded to sea. Two Russian men-of-war were at Hakodadi and apparently intent on remaining there, a portion of their crews still, as is customary with Johnny Russ, living in quarters on shore. On our way to Tartary from the Korea we had fallen in with a Russian gunboat at sea, and to call her attention to us fired several shotted guns across her wake. The commander of her called on board at Hakodadi, and surprised us not a little by saying, that considering the unsettled state of European politics, he thought it likely enough that Russia and England were at war again; and he had beaten to quarters ready to attack us. Fortunately for us both we were astern of the Russian, so that none of her guns could be brought to bear on us. Was this fellow simple enough to imagine that we really should have had a milling match, and found out a mistake when one of us had sunk the other!

At Hakodadi we remained well into October, giving our hands an opportunity of stretching their legs on shore, and recruiting health on fresh meat and vegetables, luxuries not generally met with on the coasts of Tartary and Saghalin. We purchased large quantities of English potatoes for three farthings a pound, and any amount of fresh salmon for a penny a pound; wild fowl were also very cheap; but we could not get bullocks without very great trouble, the Japanese being most unwilling to sell them to us.

From Hakodadi we proceeded down the West coast of Nipon to communicate with the port of Niegata, which, by the Elgin treaty, was to be opened for trade on the 1st of January. We first stopped at Tabu-sima, and placed that in its true astronomical position. Mr. Richards' position for it is incorrect, and no doubt must have been mistaken among the isolated hills of the mainland, for instead of its being 610 feet, it is only 150 feet high, and is in lat. $39^{\circ} 11' 53''$ N., long. $139^{\circ} 36' 39''$ E.

We stopped at Awasima for observation, and luckily escaped mischief. The wind shifting to the opposite point of the compass brought us on a lee shore, and we lost an anchor and 50 fathoms of cable. This was in October, and from that time to the middle of November we were about Sado, though our principal object was to communicate with Niegata. Twice we made preparations to land,

but a shift of wind compelled us to stand off and on, and at one time we had a heavy swell rolling in and no wind to work off. On landing at that place a band of officials sent from Jeddo were found, who had been and who were anxiously awaiting to settle with the captain of a British man-of-war whether the port should be deemed eligible for trade. They said, that from April to October, the wind blew off the land and the weather is generally fine; and that in the other half of the year, with N.W. and westerly winds, good anchorage would be found off the East coast of Sado. We were, however, obliged to leave without arriving at any definite conclusion; but so eager were the Japanese for trade that a letter was sent to us at Sado offering to deepen the entrance if a favourable report was made. This is a pleasing contrast with what we are given to understand of Japanese exclusiveness!

The land about Niigata is formed of very low sand-hills, and the entrance is only distinguishable in the offing by the masts of the junks at anchor within it. With the wind blowing on the land there is a break entirely across the entrance, and at all times a boat would enter with some risk. The best anchorage at Sado is off the village of Oda, where shelter may be had from all winds in the winter season. The South and West (outer) coasts of Sado are very bold, rocky, and steep to, and as far as we could judge afford no anchorage whatever. The shores about Sawa-umi Bay, round by Ongi to Riuwu Point on the East coast, are thickly populated, and the country highly cultivated. The scenery is very pretty indeed, and we were all much disappointed in not finding a safe anchorage, that we might have proceeded on an exploration of the country. The Japanese were on all occasions very civil to us, and never molested us in our work.

We made sail for the Korea, touching on our way for a few hours at the Oki Islands, where, from the conformation of the land, it was concluded that there are several good anchorages, and perhaps harbours; and as they lie in the direct route of vessels from China to places on the West coast of Japan and Hakodadi, it is to be hoped that the Japanese Government will allow them to be surveyed.

Official application, it is said, had been made to the Japanese authorities for permission to survey their coast. The reply was what might have been expected from this hitherto exclusive people. They did not wish any exploration or survey to be made beyond that of the ports opened for trade. Now as most of these have been already done, we shall be deficient in Japanese hydrography for some time to come, and what we shall obtain will be done by slow and small contributions, unless a change comes over the scene in these matters.

At Chosan Harbour, on the coast of Tartary, we found the natives just as forbidding, uncivil, and unapproachable as the Japanese whom we had left were kind. To be sure the old chief of the village, when we were nearly having a disturbance, was a pleasant exception to his countrymen. This old gentleman wrote on scraps of paper what he wished us to understand, but all in vain, for of course we could not make it out until we had returned on board. Here we found, how-

ever, that he welcomed us as friends, and was very glad to see us, a reception which from his manner we had nearly made out already. They were all very anxious that our boats should not approach their towns, and had we attempted landing there there is no doubt they would have openly resisted it. One good reason for their wishing us away was that this was their fishing season, when every bay and inlet of this shore is studded with fishing stakes and nets. They would not even sell us any, but the demand of supplies for the ship made to the governor soon obtained them. Our sportsmen had plenty to do on the island forming the southern shore of the harbour. In five days their produce were nine deer, and unfortunately many were lost wounded, as we had no dogs to follow them up. They were small musk deer, about the size of a full grown pointer dog, and the male instead of antlers had two large tusks curving downwards from the upper jaw. The Koreans catch one occasionally by driving it into the water, but never shoot them. Pheasants, quail, woodcock, snipe, duck, and teal, were occasionally shot, and no doubt in colder weather the sportsman would give a very good character of the place. Our Japanese friends at the military settlement, from their demeanour towards us, were not at all anxious to see us: but it seems not unlikely that the chiefs have got themselves into trouble at Jeddo by their allowing us to land there on our first visit. At any rate the military governor has been superceded, and there was a marked uneasiness and restraint in their intercourse during our last visit. They were also very anxious that we should not visit Tsusima in the Korean Strait.

Nevertheless, we passed a week there in December, looking into its various inlets; and here again we observed a feeling of restraint which we had not noticed before. The governor having died since our last visit, his successor would not allow us to have any supplies whatever, alleging that his orders from Jeddo forbade it. In fact, we were told we had no business up Tsusima, that if we wanted anything Nagasaki was the place to go to. Our interpreter seemed to think from their gestures that the late governor had considered it necessary to perform what they call the "happy despatch," that barbarous practice of quietly disembowelling themselves *à la mode Japanese*; which, if this had been the case, they were not inclined to allow, telling us that he died from sickness. No objection was made to our proceedings, but we had the usual number of guard boats always attending us, and although we had plenty of Japanese coin, we could not induce the people to sell anything to us. The weather was very cold, in fact much too cold for our pursuits,—so that what with this and repeated gales of wind and showers of hail and snow, we were by no means sorry to get away from the Korean Strait, and make the best of our way towards Port Hamilton, but meeting a head wind about half way across, bore up on the 12th for Shanghai. On the China coast N.W. winds drove us to leeward of the Yantsekiang, and we found ourselves on the evening of the 16th of December, about ninety-five miles to the southward of the lightvessel in the

Chusan Archipelago. This was very mortifying to us all after having been so long without letters; but the old proverb, "it is an ill wind which blows nobody good," was strikingly verified in our case; for on our way to Shangai we fell in with a disabled junk, which a gang of pirates had just left, and taking her in tow, we brought her safely into harbour, a service which met its due reward.

With the view of making the foregoing useful as well as interesting, we have added the following Japanese vocabulary from Siebold's account of Vries' early voyage.

Siebold's Japanese and Aino Vocabularies.

<i>English.</i>	<i>Japanese.</i>	<i>Aino on Jezo.</i>	<i>Aino on Krafto.</i>
Afterwards	sonotsugi	imakake	
Air	ki	páiri	
To be alive	ikite oru	bójur	
All	mina	obitts	
Anchor	ikari	kaje	kaida
And, still	sócite, to	kanna	
Animal	ketamono	kimo tsup	
To answer	kotafu	itasjaitats	ciechiwa
Arrow	ja	ai	ai
As	tokini	ike, tsiki	
To ask	tatsunemiru	isitan	
At last	tsuini	aine	
Atmosphere	sora	nisoro	
At present	ima	tane	tani
Aunt	oba	konnaripe	
Autumn	aki	tsjuk	
Axe	masakari	mukkari	mukar
Back	senaka	sethuru	sheduru
Bark	kino kawa	niga fukar'	nii kapu
To barter	tota furu	itasjare	itaschare-
To be	arisu	an	
Bear	kuma	hokujuk'	chugujukf
Beard	kutsihige	reki	rigi
Because	jotte	kusju	kuschu
Beginning	hazime	asinno	aschino
Belly	hara	honi	chuni
Bird	tori	tsikapp	tzkapf
Little bird	kotori	tsiri	
Bitter	nigai	balkar, sju	parakara
Black	kuroi	kunne	kunni
Blood	tsi	kep' kemi	kim
Blue	aho	sije	
Body	mi	netobake	nidobaki
Bones	hone	bone	poné
Bow	jumi (kiu)	gú, kusi, kunisi	guu ku
Bow-string	tsuru	gúka	kuga
Breast (chest)	mune	terar	
Breasts	tsitsi	tókab	to
Broad	hiro	tsiwa, tsiriusi	uschip

<i>English.</i>	<i>Japanese.</i>	<i>Aino on Jezo.</i>	<i>Aino on Krafto.</i>
Brother, eldest	ani	jûbi	jubu
" youngest	wototo	iriwaki, aki	aki
To buy	kâa	ihoku, itometsu	egokf
To call	jobu	hothui, hotoje	
Carcass	karada	netobake	
To catch birds	toraheru	tsikapp koiki	zefpkoïgi
Charcoal	sumi	pasipasi	pas
Chief (prince)	kami	mosiri kamoi	
Child	kotomo	bô, boho	po
Cliff	se	rakka	
Clouds	kumo	nisi, nisikuri	nischi kuri
Coat	kimono	mi (atsni)	imi, atush
Cock	wo	binne	
Cold	samuki (kan)	mei	
Cold	samui	jamu, mei, mean	mei
Compassion	itsukusimi	komebur'	koneburu
Countryman	fijak'sjo	toitasisiamo	
Crew	funakata	tsipo guru	
Criminal	aku nin	ujen gur	uwen
Cunnus	tsubi	pogi (hokki)	
To dance	wodoru	tapkaru, tafukari	tapkarawa
Day	akiraku	siribekere	schirihgere
Today	kon nitsi	tantoo	tan too
Daughter	menoko	matsihebo	mazenebu
Death	sini	rai	rai
Deep	fukai	ohoho, ohô	ogo
Dew	tsuju	munbe	muni wakka
To die	sinuru	rai	rai
Dog	inu	seta, sita, cheta	scheda
Door	to	aba	zchiri aba
Dress	kimono	tsimipu	imi
To drink	nomu	iku	igu
Dry	karetaru	sjats'	schats
Each	koto	kesi	keschi
Ear	mimi	kisijara	kischara
Ear-ring	mimikane	ninkari	ninkari
To eat	kû	ibe	imbe, ebe
Earth	tsutsi	toi	toi tui
Earthquake	naï (dsisin)	siri sjumui	schiri moi
Ebb	sihoi	sirari sjats	
Eelspear	jasu	opu, urei	
Egg	tamako	noki, nuki	zkapf nuki
Else	bets'	sinnai	
End	owari	ohari	
Enemy	teki	tomautare	
Entrails	tai tjô	kankam	
Evening	joi	sirionuma	unumani
Eye	me	siki	schiki
Face	kaho	nanu	nanu
Family	sin rui	awa	
Fat	abura (niku)	ke kiribe	kiû

<i>English.</i>	<i>Japanese.</i>	<i>Aino on Jeza.</i>	<i>Aino on Krafto.</i>
Father	tsitsi	hanbe	chambi
Female	wonna	menoko (Jap.)	minoko
Field	no	nupuka	nupka
Finger	jubi	asikibette	askibitz
Fire	fi	abe, nnszi	abe undahi
Fish	uwo	tsep' tsep'	zepf
To fish	sunatoru	tschepp koiki	inggari
Fishingrod	tsuribari	beraje, perai	apf, pira
Flea	nomi	taike	taigi
Flood	nisi siho	sirarihaa	
Flower	hana	ebui	ibuiki
Fly	hai, apu	fitsurube	hitsûrup
To fly	hasiru	basi, tsjasi	choiupfu
Forest	hajasi	teigur	
Foot	asi	kema	kima
Formerly	mukasi	fusiko	
Fragrant	kobaisi	fûrapiurka	
"	nihofu	furara karu	
Fruit	mi	ebuike	ibuiki
To get	motomu	tsipapa	okuwa
To give	jaru	jenikore	ingori
To go	ajumu	apukasi	apkas
Governor	matsi bugjo	matsijantono	
Gradually	ohi ohi	ubi ubi	ja ja ukere
Grandfather	zizi	ikasi, sasa	chambi
Grandmother	baba	sjunsti, hakko	
Grandson	nago	sitsupopo, imitaubon	
Great	oho	poro	poro
Green	mitori	tsuisjamu	schiusiam
Grief	mukkasiki	ramuikasite	oschiôra
Ground	fai	sirika	
Gulf	tadenami	kaibe	kui
Habitation	tokoro	kotan	kodan
Hail	arare	kaukau	kaukaubass
Hair (of the head)	kaminoke	ottobe, numa	schaba numa
Hand	te	teke, teki	tegi, tiké
Happiness	sjawase	jainirikarai	
Harpoon	jasu	opu, urei	opf
Hatred	nikumi	jesisi	
He	kare, ano fito	iki sja angur' (ille)	ikoro
Head	atama	bake	schaba
Health	sukujaka, sukojaka	ramurakke	katschara-schino
To hear	kiku	nu, inu, kunu	nun
Hearing	kiku	nû	nu
Heart	jani	unkotok'	
Heart	kokoro	sjanbe, sampêh	schambi
Hearth	irori	innunbe, abe	
Heat	atsusa	sirippuke	schischikf
Heaven	ama	rikita	ni schi uro?
Heavy	womoi	base, pase	paschi
Hen	me	matsne	
Herb	kusa	kina	
Here	koko	tan kotan ta	changino

<i>English.</i>	<i>Japanese.</i>	<i>Aino on Jezo.</i>	<i>Aino on Krafto.</i>
Hide	kawa	kabu	kapu
Hill	nobori	nuburi	noburi
High	takai	riiwa, ri, L.	riuwa
Horn	tsuno	kirau	
House	ije	tsise	zise, zisse
How much	iku	henbakkuno	chimbaguno
Humble	asasi	obaku	ugakfu
Hunger	fimozi	kemuramu	kemurampa
Husband	otto	hoku	chogu
Hut	koja	kasi	
I	watak's waré	ku, kuannit, tojô	kani tschogai
Ice	kohori	junru	
Illness	jamai	tasijumu, ikomi, siju	
Island	sima	mosiri	muschiri
Joy	mendô, ahare	jakata	
To kill	korosu	rapeke, ronno	raigiakka
Knife	kokadana	ibira, makiri	magiri
Lake	midsu umi	tô	to
Lately	kono aida	tetai	
To laugh	warafu	mina	mina
To lay	jasumu	sini	schine
Leaf	fa	hamu	chamu
Lean	jase	sjattekû	schattigu
Left	fidari	hari kiuturu	charik
Life	inotsi	sikkinoka	schikfnu
Light	karui	kosine	koschni
Light	fikari	heriats	
Lightning	ina fikari	kamui ne beke	kamoinibiki
Lip	kutsibiru	hatoje, tsjamon	
Little	tsiisasi	pon	ponno
To live	inotsi aru	sikkinu	schikfnu
Long, (time)	fiyasi	ohonno	ogonno
“ (measure)	nakasi	tanne	tanni
Louse	sirami	uruki, kii	uriku
Love	koi	usikkarahare	

(To be concluded in our next.)

THE CHINESE PORTS OPENED BY THE TREATY OF TIEN-TSING.

Nhiu Chwang,—in Mantchuria, at the entrance of the gulf of Leautong, is a port little known, but is considered will answer very well for the trade in cotton and woollen fabrics. The *Pekin Gazette* recently states that gold has been discovered near it, which before long will become of great importance. It is stated that the Russians

have taken quiet possession of the Korea, and that they are constructing fortifications at Broughton Bay, in 44° N. lat., from which circumstance their intentions are easily seen. It is a place that is very seldom frozen up in winter, and it is pretty clear that it has been adopted that in all seasons they may have a port for their ships on that coast.

Tang-Chan,—in the province of Shantung, has always been a port of considerable importance, and for a long time Chinese merchants, both of Canton and Shanghai, have carried on extensive business there. Even European merchants have occasionally sent their ships there with the view of trade. But the mandarins and Chinese merchants have crippled these attempts, and the ships returned as they went. The imports consist of raw cotton, woollen cloths, lead, iron, opium, sugar, &c.

Ships belonging to Siamese kings and aristocracy have visited this country in considerable numbers during the last year, bringing all kinds of Siamese produce, and taking in exchange silver and gold. The articles are of no great value, consisting of peas, corn, and rough pottery, which are sent to all the ports on the China coast. When this port is crowded there may be other things taken there of which we know nothing at present. This will be a matter for many years to come of more importance to the merchant than any one else on account of the weight and incumbrance of the articles.

Yang-tsi-Kiang.—The ports of this river, among which is *Chia Kiang*, will open a vast field of commerce, for the country is very fertile and well peopled. Unhappily, the last accounts brought intelligence from Nankin that the country was in the hands of rebels; but it is difficult to believe that the scenes of bloodshed and pillage that desolate the country would long continue if the European powers were to interfere and give that security which it wants.

Tai-wan,—one of the ports of Formosa, has been practically open for some years, as well as the whole island, in fact, where a port is to be found. The exports consist of rice, sugar, oil, and indigo. The trade of the island is in the hands of the Chinese, who for the last two years have freighted small merchant ships, as being safer for their merchandise than their own junks. The island is very fertile and rich in minerals. The coal there is taken in large quantities, but is not yet found fit for steamers. When the mines are well worked, it is not unlikely that it may be found as good as the English coal. The climate is good, but the people are poor. The imports are principally from Amoy. The eastern side of the island is inhabited by Indians, who are continually at war with the Chinese. On the North and western sides of the island there are at present a number of Chinese in slavery, and accounts say that the mountains abound with gold. Formosa needs only a working population to render it one of the richest islands in the world.

Swatow,—open for several years, is a great port for sugar. More than a hundred vessels were there last year, transporting it to the northern ports and Shanghai. It has always been a great place for

opium, and will be so for cotton, woollen yarn, and metals. A considerable amount of trade is carried on between this port and the straits of Malacca; but it will never be a place of extensive imports, because the water communication with the interior is very limited, besides which, it is too near to Canton.

Hainan Island is very fertile, its produce consisting of sugar, rice, oil, sesame, and several other articles. The people are barbarous, and more superstitious than in any other part of China. Small vessels have carried on a trade with this island; but since the commencement of the war there has been very little trade with European vessels, owing to the hostility of the mandarins. Macao carried on much commerce with this island, but the imports as yet are very few. Nothing of the interior of the island is known except from reports of the natives; but there is copper there, since rich specimens of it have been seen by those who have visited the island. The natives say that they are obtained from the interior, but it is difficult to get them as evil spirits dwell near the mines. The native traffic carried on from this island to Macao and Hong Kong, would be much more considerable than it is, but for the pirates that swarm on the sea and plunder all vessels with facility, being apprised by their agents of them as soon as they are ready for sea. This is an extraordinary fact, but is no less true, and will continue until these pests of mankind are swept away from the face of the waters. One or two good gun-boats between Hong Kong and Hainan, would be sufficient to put an end to these piracies.

THE ICY ATLANTIC.

"Where the ship in full sail with a fav'ring gale
Holds proudly on her way."

Busy old Time with his steady step, sometimes too fast and sometimes too slow to please all of us mortals, has again brought us the cheerful spring, and along with it the signal for emigration from our shore. Will that spring bring a cheerful summer to those who are for trying the soil of another clime? May it be so! But before they embark we would read them a lesson or two of what has befallen their countrymen on the treacherous sea,—those who left us, as they will do, on the same errand in years gone by. Through their influence it may lead to more care on the part of those who have charge of them. And if our warning conduces in any way to this good end, and leads to their being safely landed on the distant shore of which they are in search, our lesson will not have been read in vain.

When Dibdin of old sang the "Dangers of the Sea," he forgot all about *Ice*! The Bard of the ocean, the favourite one of British seamen, always made light of danger! His was a nobler theme than

this. And although he celebrated in song those of old "rude Boreas" and

"A leak beneath the chestree sprung out,"

in the Bay of Biscay, a navigation where ice is little known and less thought of, the love of country and loyalty to her throne were more appropriate and more noble subjects than an ice-clad ocean for the seaman's muse.

"Go patter to lubbers and swabs do you see
About danger and fear and the like,"

he might well reply to such matters. Has not England reaped the benefit of those principles with which he nerved the British seaman? Have not her wooden walls rang "again and again" with the thrilling cheers of those whose glorious achievements were before them, and performed deeds of valour that have raised her to that high station which she fills in the foremost ranks of the world? How often "mid storms on the ocean," while it was yet lashed into foaming billows by the furious gale, have those gallant hearts, in jovial companionship over "the flowing bowl," pledged "sweethearts and wives" far away, and in Dibdin's inspiring song bid defiance to the enemies of their land, and given ample proof that

"While other lands tyrannic sway enthalls,
Britain's best bulwarks are her wooden walls."

Such were the themes of Dibdin, and how often has the sea, too, been the poet's theme, with no less claim to it than the deeds of which it has been the scene! If the land has its charms, so has its sister element the sea. If the fairest features of the elder-born, in sunny or in wintry climes, have claimed the poet's strain, so have those of the majestic sea. There is no landscape, however fine, that cannot be equalled in magnificent grandeur by the sea. Boundless to mortal sight, fathomless *considered*, fair, but, alas, too treacherous, the sea has been looked on as the emblem of eternity! Whether seen in its most inviting or its most terrific aspect, the sea ever presents a picture suggestive of the most profound reflection! Speaking at once by its comprehensive simplicity through the eye to the innermost recesses of the heart! Were ever grandeur and majesty combined, they are so presented by the sea!

Among all the comparisons that have been applied to the sea, has it ever yet been likened to man's better half,—the fair sex? The idea at once suggests itself that the land should be first considered in all its various qualities for their equivalents in man himself, differing in his character and propensities as land differs in nature. As to the land, here we find it solid and steady, there it is loose and shifty,—here it may be found kindly and yielding, there it is crabbed, grudging, yielding nothing,—here it is rich and productive, there it is poor, barren, and unprofitable,—here it is generous and open, there it is parsimonious and closed; what coincidence may be found between

man's nature and his mother earth in the different parts of this world which he inhabits, each extreme corresponding with that bias of disposition that directs his movements in it.

Now let us turn to the partner of his joys and sorrows, his blessings and his evils, "lovely woman," and her analogies of character to the sea. Like unto the ocean, here she is found placid and charming, there she is furious and forbidding,—here she is lively and cheerful, there she is dull and dismal,—here she is gay and sparkling, there she is heavy and inanimate,—here she is deep and profound, there she is shallow and thoughtless,—here she is lively and engaging, there she is cheerless and cold,—here she is calm and attractive, there she is passionate and repulsive,—here she is grand and majestic, like the sea, but, never like the sea, there she is mean and contemptible, and yet presenting in her manifold forms of character and disposition all the blandishments and changes of the sea, as the land in its various qualities represents those of her partner—man! But the land is the scene of strife and calamity,—and is not the sea equally that of deadly combat, sufferings, and distress, as the emigrant, too, in his perilous voyage to another land can too well testify. But to protect him from the latter by stimulating those who have charge of him to exercise that precaution which has saved others, is the object we have now in view.

What has become of the steamship *Pacific*? She left our shores a year or two ago!

"Where is she? Like a well-trimmed bride,
She sailed in bright array,
And light hearts with her on the tide
Embarked,—but where are they?"

Alas! the question has not yet been answered, and the only clue to a solution of it is afforded by the following letter from New York, dated 26th February, 1856.

"Eighteen weary, disagreeable, stormy days brought us on Sunday morning to New York. The captain, who had crossed the Atlantic 243 times, declared he had never had such a bad trip as this. The ship had scarcely got out of the Mersey when the head wind began increasing to a gale, against which we had to fight until we reached this shore. When two days out the fog became so thick that we could not see the length of the vessel. On the third day floating ice began to make its appearance, increasing to such an extent that we could only feel our way. For two days and nights we kept crawling along, the captain hoping to get out of it every moment. Fog, fog, fog! nothing but fog and ice!

"On the third day, at seven o'clock in the morning, we saw a spectacle which none on board will ever forget; it was, in fact, the finger of Providence, and some more deserving than I and others must have been on board. The whole veil of fog rose like a curtain, and we looked upon an ocean scene beautiful, fearful, and grand. The atmosphere as far as the eye could reach was clear; the sun shone brightly

on a continuous chain of icebergs above a hundred feet high, intermingled with fields of ice. Chain after chain burst upon the sight, and the sight was awfully impressive. In a less time than it has taken to write this the curtain descended, and all became obscurity again. The captain took the hint and turned his ship towards England for the remainder of the day, and towards the South at night, not resuming his course to America until the following morning.

“After eighteen days’ passage we arrived at New York, where we learnt that the *Pacific*, another steamer belonging to this, which sailed fourteen days before us, had not arrived, and I fear she is lost, with all on board.”

Search, too, has been made on either side of the Atlantic, but the “chain after chain” above mentioned only suggests the fearful reality that such ice was fatal to her but a few days before it was so providentially revealed to the steam-ship *Atlantic*, in which the author of the foregoing letter left Liverpool only fourteen days after the *Pacifica*. For as yet no living soul, nothing, no vestige, of her, has been found to reveal a tracing of her fate.

Were the same question asked about that once fine steam-vessel, the answer conveyed in the following paragraph would state all that is known of her also!

That ill-fated screw steam-ship the *City of Glasgow*, with her 480 souls on board, has long been given up. As may be remembered, she sailed from Liverpool on the 1st of March, with 111 cabin and saloon passengers and about 293 steerage, her crew numbering 76, including the commander, Captain Morrison, and from the period of her clearing the Mersey up to the present moment not the least tidings have been heard of her. The breaking up of the immense fields of ice to the northward of the bank, which were borne down the Atlantic in masses, it is said, of some 200 or 300 miles in length, no doubt overwhelmed the vessel in an attempt to force a passage, and caused her almost immediate destruction, not a soul escaping. The *City of Glasgow* and her cargo were insured for £50,000.

What a comfortable assurance that last sentence must have been to the relatives of the unfortunate four hundred and eighty individuals who have perished in the wreck of that ill-fated vessel. One is inclined to ask,—Did they or the owners of the vessel obtain even a portion of that?

Well, it is truly said,—“What can’t be cured must be endured;” but it is disheartening—nay, indeed, it is appalling—to reflect how soon a crowd of human beings, embarked in the strongest of ships, may be launched into eternity on encountering ice! But the cautious wary seaman says,—

“When treacherous fog prevails, oh, then beware,
For danger, wreck, and death are lurking there!”

Concealed as it might be in a dense fog, the ship may run headlong against a berg as she is skimming along on her peaceful course, and in

such a direction that the very effect of the concussion may bring the towering mass upon her decks, burying her in its fall, and carrying her by its ample masses with all on board to depths below!

The oversetting of these bergs is a common occurrence. Thus we find Admiral Robinson noting in his journal on the Labrador coast,—“Observed an iceberg oversetting, and many appear breaking up. When the action of the water, or the raised temperature of it (from the Gulf Stream), dissolves the foundation of these floating masses, the superincumbent weight topples them over, after the manner of the splendid somersault we have now witnessed. This change of poles, however, produces of course diminished height, but no great change in their character, the submarine portion presenting on being brought into the upper world the same appearance as before.”

A ship being under such a mass as that alluded to would be no more seen. One crash and all is over! the horrors of which would be too painful to dwell on. But when icebergs are seen under favourable circumstances, when the sky is clear, the sea smooth, and the wind light, they present the most imposing spectacle. The *Voyage of the Chanticleer to South Shetland* placed that vessel frequently in the midst of them, and the following description was compiled by the author of that work from the notes of one of her officers. Pursuing her course down to that southern land on a scientific expedition, we find them thus alluded to:—

“The weather being remarkably fine and the sea smooth, we had an excellent opportunity of witnessing the beauties of the surrounding icebergs, for it requires a brilliant sun and a light calm day to see them to advantage: it is then only that the glowing descriptions which have been given of them can be realized. At other times they resemble mere floating mountains. A light air wafted us alongside one; indeed, we actually came in contact with it, and by means of spars boomed it away from the sides of the vessel without receiving any damage whatever. The height of it was about eighty feet, the sides of it presenting a surface of the most exquisite polish, surpassing even that of the boasted Parian marble: it was of a beautiful cerulean colour, perfectly translucent, with veins of an elegant verditer. In fact, the whole was splendid and magnificent, and its variegated colours afforded us a treat which it was worth while coming even to South Shetland to witness.”

Thus the dangers of these floating mountains depend on the state of the sea and the weather. The *Chanticleer* rubbed her sides against one with impunity, and Admiral Robinson above-mentioned says,—“During the war, in the *Prometheus*, I used to work round icebergs and batter them with shot for exercise: *en revanche*, their kindred have often frightened me out of my life, and fragments have knocked against mine ancient Favourite [the ship he commanded] more vehemently than was good for her.”

The beauties of icebergs have been alluded to by navigators, as the author of the foregoing observes:—“Much has frequently been said

about the grand and imposing appearance of icebergs; and the fantastic shapes of these floating mountains, gilded by the glorious rays of the sun, together with their enormous magnitude, in part justify it. It is not often, however, that the sun shows his face here; and when he does not they lose all their borrowed splendour, and appear nothing more than huge masses, void of interest to the spectator except as objects of danger. The 'fairy palaces with gilded domes,' which fancy pourtrays in their rugged forms, vanish with the departure of the frost and the sunbeams which give them birth.

"We saw some very large icebergs in the course of the day, many between two and three hundred feet in height, and double that in extent. One that we subsequently saw was estimated at two miles in length, and between three and four hundred feet in height. But if the magnitude of some of these icebergs produce astonishment in the beholder, how much would this be increased when we consider that only one seventh part of them may appear above the surface of the water. Thus, an iceberg two hundred feet above the surface, may have fourteen hundred feet below it, making a total of sixteen hundred feet.

"This conclusion has been formed from experiments in the North, made with solid cubic pieces of ice; but it is one that cannot hold good entirely with icebergs, because they are far from being cubes, and must in consequence of their varied forms have much less weight above water, and consequently will not float so deep.

"Having made some experiments of this nature, I deduced from them that in cubic pieces of ice one seventh part only remained above the surface of the water. I also placed a cone of ice on a cubic piece from the same iceberg, and found that the cube easily floated and sustained the little pyramid, the height of which was more than double the depth of the cube below the water. I also floated irregular shaped masses, and found their heights above the surface to vary considerably: in some it was equal, in others it was greater than the depth below it; proving that no inference can be safely drawn as to the depth to which an iceberg extends from the surface with reference to its height above it, and that all depends on its form.

"In corroboration of this, I may further observe, that while we were in contact with the iceberg off the island, we determined its height with reference to the vessel's masts to be not less than fifty feet. Now this would have required a depth of 350 feet to float in, according to the conclusion deduced from a cubical piece: but it was floating in ninety-six feet, for we obtained soundings at the same time with sixteen fathoms of line.

"Icebergs are justly termed marine avalanches, and are formed in deep ravines, being a collection of snow and ice accumulated in some sheltered precipice. In course of time the part next to the precipice becomes melted, and it is launched by its own weight with a prodigious crash into the sea beneath it."

These observations are highly interesting in reference to the depth at which icebergs float. There can be no doubt, however, that many

ground on the banks of Newfoundland, and deposit on those banks fragments of rock and gravel which they bring with them from the place of their origin.

The cliff of the frozen ocean of the Arctic regions is of course the birthplace of these formidable dangers of the North Atlantic, as that of the Antarctic is of those of the Southern Atlantic. And as the former finds a ready outlet for them out of Baffin Bay by Davis Strait, they are found to be more abundant from that source than from the sea to the eastward of Greenland. When a northerly wind prevails in those seas, they float majestically before it, those of Baffin Bay sailing down the coast of Labrador by Newfoundland, thence gaining the more temperate waters of the Gulf Stream, reach about as far as lat. 40° N. and long. 40° W., in the middle of the Atlantic Ocean. Whereas those East of Greenland long before they reach the northern latitudes of Great Britain, are swept away to the Eastward by the S.W. wind, which, with the warmth of the surface water, it is said even keeps a considerable portion of the coast of Norway free from ice. Thus it is that the shores of our island are clear of those floating masses, while they are common enough on those of Newfoundland, and many miles before Newfoundland or America is approached, lurking in the sea perhaps under cover of fog, are ready to dispute the right of way with any ship that has the temerity to try her strength with them. Not that our seamen have the hardihood to do this intentionally; but there are sleepy ships as well as others that are wide awake, there being a soporific influence in the former which effectually closes the eyes of all on board, excepting perhaps the man or the boy at the helm, and the first intimation of the presence of an iceberg to these is a collision, which has proved that ice is stronger than even wood and iron, by the rush of the sea through her bows, a prelude to the ship being abandoned, if she does not founder head foremost with all on board. This is no exaggerated case, as the following, from many others, will prove.

A letter from St. John, Newfoundland, says,—“The barque *Rose*, of Plymouth, waterlogged and abandoned, with her ensign (union down), union jack flying, and a piece of plank displayed, on which was written, ‘July 5th, 1856, barque *Rose*, of Plymouth, ran into an iceberg in long. $46^{\circ} 50'$ W., lat. 49° N., staving in all the starboard bow, taking away bowsprit and foretopmast; ship making water fast, all hands employed at the pumps,’—was seen on the 15th July in lat. 47° , long. 40° , by the *Hebe*, Captain Richardson, arrived at this port. The *Hebe* further reports a large blaze was seen the same night, supposed to proceed from the disabled ship having been set fire to by some other vessel.

This vessel “ran into an iceberg,” and it can scarcely be supposed that she did so with her eyes open. And here is another which met with a similar fate, announced like the former in the papers of the day.

Intelligence has been received at Lloyd’s of the total destruction of the ship *Mary*, of Yarmouth, in the Atlantic Ocean, whilst on her

passage from Liverpool to Boston. On the 15th of February, the ship being in lat. 47° , long. 43° , she was suddenly beset by icebergs, and before the captain could extricate the vessel, she was struck on the port bow, and her timbers stove in. Through this aperture the water rushed, and the crew had barely time to get out the boats when the vessel went down. From the suddenness of the catastrophe, they were unable to save food or water, and for five days and four nights they were tossed about in open boats without sustenance, two dying from exhaustion. On the 20th of February (1854) they were desecured by a fishing vessel, and they were landed at St. John, Newfoundland, where they received every attention that their deplorable situation required.

These are not solitary cases of such accidents, they are merely quoted to show what may be anticipated by the passengers of our emigrant ships unless precautions are adopted to avoid them.

Admitting that the "good ship," as our merchant vessels are generally termed in their papers, with her living cargo reaches half seas over and escapes the perils of the sea, such as springing a leak and foundering in a few minutes, or taking fire and burning to the water's edge, or coming in collision with another ship and sinking shortly after, a very common occurrence in these days in sleepy vessels such as those above alluded to,—and admitting that she is not abandoned waterlogged either,—she has then to run the gauntlet of the ice. The duty of the captain has now become still more important than before. For it is to him that all on board are entrusting their lives, and he is to take those precautions to protect his ship from a similar fate to that of the *Rose* or the *Mary* above mentioned. And as soon as the vessel has reached the longitude of 40° W., these cares begin. The time of the year is of little consequence: icebergs may be expected at all times, and precautions for meeting them should be adopted.

Since our intercourse with America has increased so much as it has of late years, our acquaintance with icebergs has become proportionally extended. In the olden time, as we have shown, we heard little or nothing about them; but no doubt they were as common then as they are now. In those days, however, that acquaintance with them was limited to ships of war, among which such accidents are unheard of. And why?—Because a good look-out is always kept. But when our mercantile shipping have to pass this same icy sea, our papers abound every year with such accounts as we shall now append to these observations.

When steam-power commenced its repeated voyages across the Atlantic, one of the earliest accounts we had of this icy sea was from Captain Hosken, who commanded the *Great Western*, and who says of it,—

"Under the impression that ice to the extent it has been seen this year has never before been heard of in these latitudes, I give you the following particulars for the information of your readers:—On Sunday, April 18th, the ship steering West, at 6h. p.m. first saw one iceberg

on the starboard bow; at 7.30 passed it, at that time four or five others in sight; at 9.15 passed several small pieces of ice—slowed the engines. In a few minutes after, the ship was surrounded with light field ice, which appeared similar to a field I ran through on the 11th of February, 1839. This induced me to go slowly, with the hope of getting through, as I had done on that occasion; but by 9.30, finding it became closely packed and much thicker, prudence dictated our escape by the same channel we had entered. I then stopped and attempted to get the ship's head to the eastward by turning ahead and astern until there was room for her to come round. In the course of this operation the ship had occasionally at least two streaks heel given by either wheel passing over large masses of ice. At 10.15 succeeded in getting the ship's head to the eastward, and by 11h. entirely clear. From that time went slowly, passing several icebergs; the night at times very clear, the aurora borealis very bright. At 3.30 a.m. of the 19th, again got embayed in the ice, stopped, hauled short round on our keel, and steered out E.b.S., coasting the ice for five or six miles; 4.20, kept her to the westward, running through innumerable icebergs until 8.30, when we passed the last iceberg and point of field ice.

"When the sun arose the ice was visible as far as the eye could reach in an unbroken line from N.E.b.E. by the northward to N.W.b.W., at the same time icebergs innumerable in every direction, forming one of the most magnificent sights I ever beheld.

The first iceberg we saw was in lat. 43° , long. $48^{\circ} 30'$; and the last in lat. $42^{\circ} 20'$, long. 50° . I am quite sure there was an unbroken field of that extent; and from what I heard from Captain Bailly, of the American packet-ship *United States*, I have no doubt the field ice extended, with very little break, to lat. $40^{\circ} 30'$, where Captain Bailly fell in with it on the morning of the 18th.

"Some of the icebergs I estimated at little, if at all, less than a mile long, and from 150 to 200 feet high. This field of ice was in large masses, some of them not less than twenty feet square, by six feet thick or more.

"The temperature of the water, when within two miles of the first iceberg seen, fell suddenly from 50° to 36° ; air, 40° to 36° .

"When in the ice the water was 25° , air, 28° ; during the remainder of the night and the following morning, the water was not higher than 30° , nor the air higher than 32° .

"Immediately after passing the last ice the water became 36° , and the air 42° .

I am, &c.,

JAMES HOSKEN, *Captain.*

(To be concluded in our next.)

DIFFERENTIAL DUTIES ON SHIPPING.

It is pretty well known that one of the principal, if not the chief cause of the present depression of the Shipping Interest is the want of that generous reciprocity on the part of foreign countries in not following the example which has been set them by England, of reducing the duties on our ships in their harbours, as we have done for theirs in ours. The commercial treaty with France, however, seems likely to lead to better things, and as the whole subject has been recently so ably explained by Mr. Lindsay in Parliament, and is likely to be followed by important results, we deem it of sufficient importance to preserve for future reference what he has said, as the foundation of the anticipated measures on the subject of *Differential Duties*.

Sir, I rise to propose the following motion:—"That an humble address be presented to her Majesty, praying that she will be graciously pleased to enter into negotiations with the Emperor of the French, with the view of making a treaty for the reciprocal abrogation of all discriminating duties levied upon the vessels and their cargoes of either of the two nations in the ports of the other; and for procuring such alterations in the Navigation Laws of France as may tend to facilitate the commercial intercourse, and strengthen the friendly relations between England and France."

After the statement made in the early part of the evening by the noble lord at the head of the government, that he did not mean to offer any opposition to this motion, I should content myself with simply proposing it to the house, were it not that from the peculiar nature of the subject to which it relates there are two parties who must give to it their assent before it can be attended with any practical effect. This house may adopt the resolution, but it can lead to no result unless it shall also meet with the approval of the government of France; and I therefore deem it expedient that I should go at some length into the question with which it deals. I believe that although the change which I advocate is desirable on the part of England, it would be still more beneficial to France.

Those Navigation Laws which we abolished in the year 1849 had been imitated by France and other countries. They had been framed so long ago as the year 1651, and they had been in operation since that period until the year 1849, with the exception of those alterations which had been made in them under Reciprocity Treaties concluded sometime after the commencement of the present century. By them it was provided that no goods from Asia, Africa, or America should be imported into this country in any but British ships, and that from Europe no goods should be imported except in British ships or ships of the country where the goods were produced. There were, besides, lists of what were called "enumerated articles," which could only be imported, under any circumstances, in English vessels; and there were double duties against foreign ships for Light Dues, Harbour Dues, and other charges.

Those laws remained in force until the year 1850, when the measure for their abolition, which had been passed in the preceding year, came into operation. They were somewhat broken in upon by a Treaty into which we entered with Turkey in the year 1809, and which was our first Reciprocity Treaty. But the first great blow next struck at them was the Reciprocity Treaty which we were compelled to conclude with the United States of America in the year 1815. By the laws previously in force we prohibited the Americans from bringing us their own produce in their own ships. They protested, and very properly protested, against such a provision, but their remonstrances had hitherto been made in vain. At last they gave notice to our government that they would be obliged to exclude the ships of England from their ports unless we made a material change in our Navigation Laws. The British government paid no attention to that threat, and then the government of the United States levied a duty of one dollar per ton on every British ship entering their ports; and not satisfied with that, they imposed a differential duty of ten per cent. on all our manufactures imported in British ships. The result was that we were driven to the necessity of forming with them a Reciprocity Treaty, which placed American ships entering our ports upon the same footing, with regard to duties and local charges, on which they placed our ships entering their ports.

Shortly after that we had to make a similar concession to almost every other country. Every one conversant with that subject must be aware that in the year 1822 the Prussian government complained of the effect of our Navigation Laws on their trade, and threatened to exclude our ships from their ports unless we changed those laws. The consequence was that Mr. Huskisson found it necessary to conclude a Reciprocity Treaty with Prussia upon the most liberal terms which had previously been adopted, in the case of the United States of America, in 1815. Then followed our Reciprocity Treaties with other countries, including France, with which we entered into a treaty of that character in the year 1826. France, it might therefore be said, had imitated our policy in that matter throughout its two early stages. She had followed our exclusive system, which we had commenced in the year 1651, and which she had "imitated" in the year 1664; and she had afterwards concluded, as we had done, Reciprocity Treaties.

It will, perhaps, be advisable, considering the subject which I have now in view, that I should here state what it is that we have lost or gained by the policy which we have pursued upon this subject. In the year 1720 (the earliest period for which we have any returns) under the protective system, there cleared outwards from our ports 430,000 tons of British shipping; and in the year 1810 there cleared outwards from our ports 1,600,000 tons; showing an increase of 1,170,000 tons in these ninety years. Hon. members might think that was a large increase; but as throughout that period we had the command of nearly the whole carrying trade of the world, he believed it ought really to be regarded as a very small increase, and it would

appear still more so when it was compared with the figures of other epochs. The middle stage of our Navigation Laws was that of a Reciprocity period. In the year 1820, before the operation of the Reciprocity system, there cleared outwards from our ports 1,670,000 tons of British shipping. In the year 1849 we abolished our Navigation Laws, and with them the Reciprocity system, and in the year 1850 there cleared outwards from our ports 4,700,000 tons of British shipping; showing, under a partial free trade, an increase of upwards of 3,000,000 tons in a period of thirty years, while under a strict protection the increase had amounted to only 1,170,000 tons in ninety years. In the year 1858 there cleared outwards from our ports 6,440,000 tons of British shipping, which give in the eight years an increase of 1,740,000 tons—a greater increase than that which had taken place in ninety years under a close protection. But as it might be said that these returns did not give a correct view of the state of the trade, I must direct the attention of the house to a statement of the tonnage of the ships which we owned. In the year 1830, under the Reciprocity system, we owned 2,500,000 tons of shipping; and at the end of last year we owned nearly 6,000,000 tons; showing, during that interval, an increase of 3,500,000 tons. Look, too, at the other advantages which accompanied the change. Look at the great improvements which have taken place in the models of our ships; look at the application of the screw to navigation; look at our magnificent steamships constructed of iron; above all, look at the vast increase in our commerce which this free trade in shipping has materially assisted; and I believe you will readily admit that the free trade policy was a wise policy, and that it has greatly benefited not only the country generally, but the shipowners themselves.

Now, as I have already said, France followed the example of our ancient Navigation Laws. She thought that they were founded upon a wise principle; and I fear she still considers that to be a policy which it is her interest to pursue. By her first Navigation Law she levied 50 sous per ton on all foreign ships frequenting her ports. In the year 1687 she made the law almost an exclusive one against foreigners; and not satisfied with confining her coasting trade and the trade with her colonies to her own ships, she actually imposed a duty of 30 francs per ton on all exports from her West Indian colonies, and a duty of 50 francs per ton on all imports into those colonies; and those charges had to be paid by her people for the purpose of encouraging the enterprise of her shipowners. But France, as I have already stated, wisely entered into Reciprocity Treaties, and her treaty with this country was concluded in the year 1826. I shall now proceed to allude to the state of her Navigation Laws as they at present exist. There is, first, her coasting trade, which is strictly confined to her own ships, any foreign vessel engaging in that trade being liable, as well as its cargo, to confiscation. There is, next, the direct trade—that is to say, such a trade as that between her and England—and, by the Treaty of Reciprocity, that trade is placed upon the same foot-

ing in the two countries. There is, thirdly, the indirect colonial trade of France. That trade also, it may be said, is entirely limited to French vessels, the differential duties to which foreign ships are liable being so high that they are practically excluded from any share in it. Then there is the indirect foreign trade—such a trade, for instance, as that between New Orleans and Havre, or that between Brazil and Bordeaux. From that trade, too, English ships are almost wholly excluded, because the differential duties to which they are liable are so high that they could not enter into the competition. I wish the house to observe what has been the result to France of the policy she has thus pursued. In the year 1787 she had 164,000 tons of native shipping employed in her trade with foreign countries; in the year 1830 she had only 156,000 tons engaged in that trade; so that in the course of those forty-three years that portion of her shipping had decreased by 8,000 tons. In her colonial trade, which is entirely confined to her own ships, she had in the year 1787 not less than 114,000 tons of shipping; she has now only 102,000 tons; so that there has been in the forty-three years a decrease of 12,000 tons in that strictly protected trade.

Another very remarkably fact is, that while the protected branches of her shipping have decreased, there has been an increase in those branches of it which were unprotected, and had to engage in a competition with other nations. On comparing the entrances and clearances of France for the year 1856, with the mean number of annual entrances and clearances during the five years from 1851 to 1855, I find that although in the protected trade with her colonies there was an increase of 16 per cent., in 1856 there was a decrease of 17 per cent. in her strictly protected trade with her French possessions out of Europe; and that in her fisheries, which were guarded with unusual care, there was a decrease of 4 per cent. But in her non-protected trade with European countries there was an increase of 10 per cent., and in her non-protected trade with countries out of Europe there was an increase of 11 per cent. What I say is this, that while the policy which has been pursued by France towards this country, in a commercial view, has been injurious to us, it has been far more injurious to France. Let us examine the question with respect to the number and the tonnage of the French ships, and contrast them with ours. In 1787 France owned 500,000 tons of shipping; in 1850, sixty-three years afterwards, she owned only 688,000 tons. Her shipping had only increased, therefore, in sixty-three years, 188,000 tons. In 1835 I find France owned 15,600 vessels; in 1840, instead of any increase, I find she only owned 14,800. The house may say that although the number of vessels is small, their tonnage may be large. What is the fact? Why, that out of 14,800 vessels there were 10,000 under 30 tons, and 3,000 between 30 and 100 tons. France, in 1838, owned 680,000 tons of shipping, but instead of increasing she appears here to be on the decrease, for I find that in 1844 she owned only 604,637 tons of shipping. Taking the whole period,

from 1838 to 1858, I find that the increase in her shipping, under her protective policy, was only 370,000 tons; whereas, if I look to the increase of British shipping during the same period I find it has increased from 2,890,601 tons to 5,609,623. So, while the French shipping has increased only 370,000 tons under her protective policy, British shipping has increased under a free and enlightened policy no less than 2,800,000 tons.

What is the case with respect to steam? I find that while we had, in 1838, 82,716 tons of steam vessels, in 1858 we had no less than 488,000 tons; while France, which in 1838 had 9,693 tons of steam shipping, had only increased in 1858 to 66,587 tons. Thus while we have increased upwards of 400,000 tons of steam shipping in the last twenty years, France has only increased about 55,000. The house will remember what France has given in the shape of large bounties for the creation of a steam merchant fleet, and yet with all her protective policy in her favour she can only show an increase in sailing vessels of 370,000 tons as against an increase in British sailing vessels of 2,800,000 tons, and in steamers an increase of 55,000 as against 400,000. Why is all this? France has a greater seaboard than any other country in Europe. Its seaboard is studded with magnificent ports along the channel to an extent of no less than 150 leagues; on the shores of the Atlantic it has a seaboard of 130 leagues; and on the shores of the Mediterranean it has a seaboard of 90 leagues. Her situation is all that they can desire for carrying on a very large maritime trade. France is also increasing at an extraordinary rate in her general trade, for I find the increase of her special commerce from 1827 to 1836 to have been 10,000 million francs; from 1837 to 1846, 15,000 million francs; and from 1847 to 1856, to have been no less than 22,000 million francs. That is a commerce which includes only her own manufactures and her own produce, and articles which she imports for her own use; yet in the ten years from 1847 to 1856 the increase in that special commerce has been the immense sum of 20,000 million francs.

How is it that with a splendid situation for carrying on large mercantile pursuits, with such a large seaboard studded with magnificent harbours, with a vast and rapidly increasing commerce of her own, that the shipping of France is almost at a standstill? I will tell you why. It is because the shipowners have been taught by their legislators to depend upon the government instead of depending upon themselves. As with individuals we seldom see those who have been left well provided for so energetic as men who have to make their way in the world themselves, so it is with nations. It has been proved by the policy of this country that when British shipowners were left to their own energies and their own resources, they went on increasing largely, and I have no hesitation in saying if the Emperor of France had adopted as wise a course of policy the shipping of that country would be greatly increased and materially benefited, and its commerce generally would be vastly increased. Now, sir, observe how unjustly these laws operate upon the French people themselves. It was stated

before us the other day in the Merchant Shipping Committee, by an intelligent witness, that in one particular branch of trade alone, which was a very small branch, the difference of freight paid between the French and English ships on sugar imported from our possessions in the East to France, was no less than £300,000. Of course France pays that. It is not possible, but if it were possible to show what the people of France are suffering and paying in trying vainly to increase their merchant navy, I have no hesitation in saying that the people of France would at once appeal to the government and demand a change in the navigation laws for their own interest. Because, if in a small branch of trade in which only about 180,000 tons of shipping are engaged, the people of France have to pay every year £300,000 for the benefit of that trade, what must it be with the trade of France as a whole. France, with her vast commerce, has not got a merchant navy one fourth sufficient to enable her to carry on her own trade; consequently, she is obliged to come and seek shipping from other countries, and, in spite of her protective laws, foreign shipping, to a very large extent, entered the ports of France. I find, in 1857, the total number of entries in French ports was 4,162,000 tons; but of that number no less than 2,550,000 were foreign ships: so that by far the largest proportion of the carrying trade of France is conveyed in foreign ships, and if we could get at an estimate of the differential duty paid upon that 2,550,000 tons of shipping, it would be found that the people of France are taxed to an enormous extent in their vain attempts to create a merchant service and a foundation for her navy. The people of France are beginning to find that this policy of protection to shipping is a mistaken policy for their own interest. Honourable members may have seen by the public press, the other day, that the merchants and planters of Guadeloupe have memorialized the French minister in the colony, and have represented to him the very great inconvenience to which they have been subjected from the want of a sufficient supply of French tonnage to carry their sugar and other produce to France; and only the other day I had a letter from a large East India house, and though I do not wish to weary the house with extracts, this is so important that I must beg permission to read it. It is from a merchant and shipowner at Bordeaux to the head of an East India house resident in London, and is an answer to a communication with respect to the rice market in the East. The gentleman had written to the French merchant to know if he could supply him for the incoming year as on previous occasions. The following is his reply:—

“I have received with much pleasure your letter of the 24th of November, and thank you for the information it gives me on business in rice this year. I must tell you that rice is no longer admissible, except by a French flag, since the beginning of this year; that is, that it pays a duty of 9 francs per 100 kilogrammes if by a foreign ship, which excludes it completely.”

I find, sir, that in 1847, France imported 3,000 tons of rice; but in 1856, when the duties on rice and other grain were suspended, she

imported not less than 50,000 tons of rice from the British East Indies, showing the enormous benefit which in this case France derived from a free trade policy, by which they allowed ships of all nations to convey rice from our possessions in India to the ports of France.

But this is not all. Take the case of the manufacturers, and here again I beg to refer to another important communication. About a fortnight since I made a speech in regard to this same question, and it so happened that the words which fell from me found their way to the French press, and were somewhat extensively circulated. And in consequence I received a communication from a large manufacturer carrying on his business in a northern town of France:—

“I am interested,” he says, “here in jute-spinning, and our trade in France will be much hindered, if not ruined, if the present differential duties are continued; and as these duties are injurious both to the British shipowner as well as to the French manufacturer, while not in reality serving the French shipping, I thought your influence might be brought to bear on the subject.”

Well, sir, the only answer to be given to the French manufacturer is,—“Really, this is more a question for the French manufacturer and the French people than it is for the British shipowner. Memorialise your government to release you from the trammels by which you are bound; agitate throughout the country for the repeal of the laws, to the repeal of which you must look for advantage as a manufacturer, and by so doing do good to the people and also to the shipowners of your country.”

Well, sir, while we at least are impressing upon the French government that, in justice to us, still more in justice to their own shipowners, and, above all, in justice to the people of France, they should make a material change in the navigation laws of that country, let us not forget that we also have a duty to perform to France. We still levy Light Dues on the ships of France entering our ports, as we do on the ships of all other nations. But France lights her shores free. She makes no direct charge on the ships of England under the head of Light Dues. There are other small taxes, more annoying, perhaps, than of pecuniary importance, which we still continue to levy upon the ships of France frequenting our ports, from which freemen are entirely exempt. I believe these charges are well known as freemen's charges. France, upon various occasions on which we have endeavoured to obtain reciprocity from her, has made these charges the ground for not entering into reciprocal dealings. I think such excuses have been frivolous, but still they have been made, and I say we must be prepared to remove those charges, which are still levied at eighty-three ports throughout this country.

We must exempt the ships of France from all such charges as freemen's charges; we must exempt them from Light Dues; and when we have done so, we shall have placed the ships of France in all our trade on the same terms in every respect as our own ships. Having done so, it is to be hoped that the Emperor of the French will be willing and ready to meet us in making this change, which is more essen-

tial to the interests of his own people than it is to the interests of the people of England. To what extent it is desirable that that change should be made, it is not for me to say. That is a matter which must rest with the government of France itself. If I had anything to say in the matter, if I was a Frenchman interested in the question, I should urge the total and unconditional repeal of the navigation laws of France, and I should urge it not merely on the ground of justice to the shipowners, but of justice to the people of France. If the French government is not prepared to go to that extent, and to say that the navigation laws should be totally repealed, they ought at least to put the trade between our colonies and their possessions in the same position as the direct trade is now placed; that is to say, they ought to abolish all differential duties levied on goods conveyed from our possessions and colonies to France in British ships. In that trade, which is peculiarly our own, we ought at least to be placed on exactly the same footing as our ships are now placed with respect to the direct trade. The noble lord (Lord Palmerston) has been good enough to say that this motion is not to be opposed, and that so far as the government is concerned, it will be allowed to pass this house. Allow me, however, to take the opportunity of saying to the noble lord that something more is wanted. If this resolution is adopted by the house, it will be in the shape of an Address to her Majesty, and it will be the duty of the government to lay it before the Queen.

But there is another duty connected with it beyond that,—a duty which is most important; and I do trust that her Majesty's government, if the motion is carried, will use its most strenuous efforts and every argument in its power to impress on the government of France that if the Treaty of Commerce just ratified is to produce the good both nations anticipate,—if it is to increase their commerce and bind them more closely together in their friendly relations, and thus tend to prevent war, then I feel it to be essential that a great change be made in the navigation laws of France, so as to enable the more free interchange of commodities, and remove the irritation which these differential duties create, and which tend to produce angry feelings, and too often, with them, war. I wish my feeble words could reach the palace of the Emperor and the Senates of France, but far more do I wish that they should reach the hamlets and the homes of the heavily taxed and toiling millions of that fair—that sunny land. The question, as I have endeavoured to show, is of far greater importance to the people of that country than it is to England; but in the interests of progress, and, above all, of peace, it is one of vast importance to both. However prone man is to evil,—however desirous to vindicate what he considers *right*, by might, no nation can desire war.

To her Gracious Majesty I move this Address. I know that she ever has and ever will mourn the sacrifices of her people on the battle field; that she will ever be ready to put forth her hand to aid the cause of peace: and I cannot but feel that her great ally, the Emperor of the French, must equally deplore the dread havoc which war creates, and that he will be ready to join our Queen in the adoption of

such measures as are likely to render more secure the peace of Europe, and promote the happiness and prosperity of the people. There can be no happiness in their palaces when the harsh note of war is sounded. On questions such as these they must hold even stronger feelings than the people, for in the uncertainty of war their own destinies are at stake, and in its results depend the stability of their thrones and kingdoms, and often their personal liberty. They, indeed, must be deeply interested in any movement which tends to join nations together in the bonds of peace and goodwill.

NAVIGATION OF THE PACIFIC OCEAN.

(Concluded from page 193).

The variable winds near the equator are generally from West, and will serve with the equatorial counter-current. But should these be found from East, great care must be taken against the westerly current, and always cross the equator if possible far East of the meridian of the Sandwich Islands, with the view to make the land of the eastern part of this archipelago. In passing the island of Hawaii, give it a berth of at least forty miles, as within that distance calms continue for several days.

Return Routes from the Sandwich Islands to the Coasts of Chili and Peru, passing Tahiti.—A ship leaving the Sandwich Islands for Chili or Peru, touching at Tahiti, should run to the southward as far as the parallel of the South part of this island, then steer so as to cross the equator if possible East of its meridian or at least on its meridian, for in case when nearing this archipelago the S.E. Trade is found, it will be troublesome to get to the East against current. A vessel therefore should make for the eastern part of these islands. It is always easy to reach them then whichever way the wind may be.

A ship leaving the archipelago of Tahiti for Chili or Peru, should run through the S.E. Trades, keeping full and by, and get on the parallel of 34° or 35° South, where westerly winds will be found, with which she may run to the American coast.

The passage from Tahiti to Pitcairn may sometimes be made rapidly by crossing the southern part of the Pomotou Archipelago, but the greatest caution is required to avoid running on the low islands of these latitudes.

From the Sandwich Islands to the American Coast.—A ship from the Sandwich Islands to the N.W. coast of America should run northward through the N.E. Trade to gain the westerly winds, with which she will easily reach the coast. As she approaches it great care must be taken to keep North of the port to which she is bound, for she will probably find N.W. winds and a strong current setting her South. It is a general rule always to make the land North of the

desired port, on account of the prevailing northerly winds hereabouts with southerly current. Although the Sandwich Islands are seated near the northern limit of the Trades, during the winter months South or S.W. winds are found there. In the other seasons fresh easterly winds prevail.

A vessel leaving these islands for Chili or Peru should cross the Trades, keeping clean full without caring to be set West provided that she get South, supposing that she has not to touch at Tahiti. The winds of the northern zone being generally from E.N.E. and N.E., Tahiti may be reached on one tack. When not stopping here it will be useless to try to pass East of it, and a loss of time attended with trouble in hugging the wind, with a strong westerly current at a rate of twenty to forty miles a day. In all cases, unless going to Noukahiva, it will be better, instead of navigating among the islands between the two archipelagoes in a dangerous and difficult navigation, to pass West of Tahiti. Having passed it, we should run southward as far as the parallel of 30° South for the prevailing westerly winds, and then run with them to any port on the coast of Chili and Peru, taking care in approaching the land to be well South of that port.

The late Lieut. Bowers has left the following general remarks in his little work entitled _____ and being useful information to seamen, we insert them here as confirming the conclusions arrived at by the matter which precedes them.

My numerous voyages in these seas having made me familiar with the general and local navigation, a few words on the subject will not be deemed irrelevant or uninteresting. The Trade winds in the Pacific are similar to those in the Atlantic, in the tropic of Cancer blowing between the North and East, and in the tropic of Capricorn between South and East. Near the coast they are confined within the tropics, but as they recede take a wider latitude.

The above, however, may be said only to apply beyond a line one hundred leagues distant from, and parallel to, the coast, in the Southern Pacific; within which line they are subject to many variations. From September (the commencement of spring) to April (autumn) from Chiloe, or latitude 41° S., to Coquimbo, latitude 30° S., the wind is for the most part S.S.W. But from April to September strong monthly gales,—during which these seas will be found any other than pacific,—prevail. From all this it is apparent that the coasting navigation must be regulated in general with reference to the season of the year; subject to which, however, there are many other points, which the navigator will do well to attend to. In general the following remarks, the result of many years' personal experience, may be depended on.

Ships coming from Peru, southward, during the northers, should be careful not to get to the southward of their port. At any other season of the year Juan Fernandez, or Mas a Fuera, may be made with safety, both being high and bold. Those falling to the northward of their destination during the summer months, when the S.S.W. wind prevails, at a distance of thirty or forty leagues off shore, need not

tack, as the wind, drawing to the westward as they stand in, will be found to favour them so as to lay up E.S.E., which with the variation 17° or 18° easterly, will enable them to "claw" to the southward. On a passage from Arica to Valparaiso, I once beat a much faster sailing vessel than my own by four days. Finding ourselves, as we stood in, to leeward of our latitude, and only looking up E.N.E., my companion tacked, while I continued my course, and availing myself of my local knowledge of the coast, reached my port.

The passage from Lima to the intermediate ports of Cobija, Arica, Islay, and others adjacent, may be made to advantage in a good sailing craft, by keeping about thirty leagues off shore, and tacking twice only in the twenty-four hours; standing off all night, and in all day; the wind generally veering two or more points with the sun. When once in the latitude of your port, stand boldly in as before directed, the wind invariably inclining westerly as you draw in, so as not unfrequently, during the first two or three hours of the sea breeze, to bring you up to S.E. The exception to this rule is in September and the three following months; when it will be necessary to keep in shore, being assured in the night, during this interval, of a fine land breeze. The coaster should contrive to be close in by eight or nine in the evening, and if from Islay, or Arica, to Cobija, or Iquique, should steer off due S.W. This places him in the best position for availing himself of the sea breeze the following morning, which commences at S.S.W., and goes gradually round as the sun gets up to S.S.E., generally dying away after sunset, when, after a short interval of calm, the land wind from East sets in for the night.

The whole of the coast from Cobija to Quilca being perfectly bold, with a clean sandy bottom close in, offering tolerable anchorage every two or three leagues under the different points, may be approached without apprehension; albeit, there is constantly a heavy swell from the S.W., and a lee current inclining off shore at an angle of about two points. In the vicinity of Quilca it runs due W.b.N., at the rate of one mile and a quarter per hour. Until recently, this port has been laid down forty miles too far to the westward, an error which has often occasioned much delay and inconvenience.

Lying at this place once, when H.M.S. *Fly* was expected, I observed her in the offing steering wide of the port with studding sails set on both sides. By firing several guns with a double charge of powder and wadding, I succeeded in drawing her attention, when, instantly hauling up, she was enabled by means of my night signals to fetch in. On pulling on board to pilot her to her anchorage, Captain Martin, fully sensible of the great inconvenience and loss of time I had prevented, thanked me very cordially. Since this period, however, excellent and correct charts, copied from an accurate survey made of the coast by the officers of the French ship *Clorinde*, Baron Macaux, have been published, which all masters of ships navigating this coast would do well to procure.

At Islay, vessels may anchor in ten, twelve, or fourteen fathoms, close into the mole, and steady with a hawser to the small black rock

that will be found there; even when the swell sets in, vessels may ride with little strain. The country craft, however, frequently part their rotten cables, on which occasion they put to sea. At this place a scanty supply of water brought from a distance of four miles, is turned with much ingenuity to the different parts of the town and mole, by means of a sort of hollow tile, placed in a manner similar to those in the roof of a house. At Arica ships should never anchor in less than ten fathoms, on account of the heavy swell, which in shallower water would cause them to strike.

At all seasons of the year, on leaving Peru for Chili, it should be the practice in general—as in crossing the Trades in the Atlantic—to steer sufficiently off the wind to allow the fore top-mast studding-sail to draw; or, if blowing hard, with a rough sea, as is frequently the case in this mis-called Pacific, sufficiently free to leave a strait wake. This, at a hundred leagues from the land, at which distance, as before remarked, the regular Trade blows and the wind hangs well East, will soon carry you into the variables, the most prevalent of which are westerly. Numerous infallible tokens give timely notice to the seaman of his approach to the land. At thirty leagues distance the albatross, and next the cape hen (a large black bird with a short tail and stunted wings) are seen; then a heavy swell from the S.W., with the seaweed, may be regarded as never-failing indication. In making the passages, though for years I never hove a log or took above three observations, I was never deceived in my reckoning.

From Cape Horn, or the southern parts of Chili, in the winter, with North and N.W. gales, I should recommend to stand to the westward by day, and put about on the leeboard tack by night; for the same reasons that, it may be remembered, I have in a former part of this work recommended the reverse in the northern hemisphere; the wind in the southern generally shifting in a sudden squall from N.W. to S.W. or West, and blowing so furiously as to endanger any vessel taken aback, which would be the case if on the starboard tack. This, it is but too probable, was the fate of the Anglo-Spanish privateer *Valdez*, (previously Algerine,) Captain Mitchell, which fitted out in Rio, in 1824, under the auspices of the Spanish Ambassador at that port, and last seen in a high southern latitude, where she had captured a large Genoese ship, which she sent into Chiloe, was never more heard of. In this ill-fated vessel perished most of the Peruvian cavalry officers, among others the colonel, Count San Miguel, taken in a transport from Ylo, after the defeat of Santa Cruz.

The passage round Cape Horn has lost all those terrors inspired by the ill success and inexperience of Anson and the earliest navigators. But, although become an every day affair, the mode of passing it is still a matter of dispute among navigators, some insisting that the in-shore, others the off-shore, passage is the best. For my own part I am for the latter. Without doubt good passages have been performed in-shore, but a much greater number of severe ones; off-shore you avoid a strong N.E. current, running from or close round the cape, and extending past the eastern Falklands; for this I usually allowed a

mile and a half per hour, and found it not a bit too much. Moreover, the weather in general is clearer and the sea more regular; I should therefore recommend to pass wide of the Falklands, well to the southward of the cape, and not to haul to the northward until in the 38th degree of longitude; by attending to this, one is enabled to stand well on in the event of N.N.W. winds.

In the year 1820, a fine little brig, belonging to Weymouth, commanded by an individual whose knowledge of chronometers or lunars extended no further than their names, attempted to double the cape for Valparaiso. Trusting to what he thought a good dead reckoning, which placed him on the chart in the 80th degree of longitude, he shaped his course to the northward accordingly, hauled in for what he conjectured to be the land about Conception, killed the remainder of his live stock, and treated his passengers in the true style of "Fair wind and fair allowance." His surprise and mortification may be easily imagined, on finding himself, instead of being within a few days' sail of his destined port at the entrance of the River Plate.

ON THE CONVEYANCE OF TROOPS TO AND FROM INDIA.

Sir,—Several articles have appeared in your useful work from time to time on managing the transport of troops and others to and from India. These subjects may not be looked into yet by those who have the power to remedy the evils complained of; yet it is as well that they should be kept in mind, for they show how easily a method proposed long since in the *Nautical*, would have prevented the terrible waste of life and the severe sufferings of helpless women and children, who have fallen the victims of neglect and mismanagement.

Your numbers for January 1858 and 1859 have amply pointed out the certain means of preventing such occurrences as have recently disgraced our mercantile marine in the cases of the *Accrington* and the *Great Tasmania*. In those numbers it may be seen how easily those proceedings might have been avoided. The adoption of the plan of a transport committee of nautical men, both in England and in India, therein proposed, for the general superintendence of those ships which are destined to carry troops and others, and sending them to sea in a proper state, would have rendered such things impossible by their being under the responsibility of the Indian Council; especially as, at the present time, no nautical man appears in that body, and hence the greater reason why those proposed committees should be formed, since the conveyance of about 13,000 men out and 5,000 home annually will appear to have become a regular business. Such committee would have hired no vessel except under a certain contract and certain conditions. Not only would a proper ship be selected, but the commander would have been approved of by the committee and the cha-

racter of officers well looked into, so that a drunken captain, chief mate, or doctor, who were the cause of all the brutality and misery on board the *Accrington*, would have been impossible.

In the present defective state of our Merchant Shipping Act, which has never been revised by nautical men, there is actually no punishment either for drunkenness or tyranny! In the articles from 239 to 270, which profess to treat on discipline, it is remarkable that *drunkenness* is only named in one instance, and this relates merely to the loss of a ship occurring thereby. The word *tyranny* is not even alluded to, and yet how much we see of it,—look at those two cases, and that of the *Snaresbrook*!

In the French mercantile marine (where nautical men manage nautical matters) they have effectually met these offences by the following stringent articles, thus:—"Art. 78.—Every captain, master, or commanding officer who is guilty of drunkenness while in charge of the navigation of the ship, shall be punished by a imprisonment of fifteen days to one year." He may also be rendered incapable of holding any command for an interval of six months to one year. In case of repetition the interdiction from command shall be final. "Art. 79.—Every captain, master, or commanding officer who permits or tolerates on board of his ship abuses of power; or who, except in cases of extreme necessity, strikes his inferior or a passenger, shall be punished by six days to three months' imprisonment. The offender may likewise be deprived of his command for the space of six months to two years. The punishment shall be doubled if the blows are inflicted on a boy or an apprentice. If the blows have rendered the aggrieved party incapable of work for thirty days, the offender shall be punished conformably to Art. 309 of the Penal Code."

With respect to the *Great Tasmania*, the coroner's jury at Liverpool has acquitted the owners, captain, and officers of all blame; and in this case (contrary to the usual practice) the victualling of the troops was to be left to the military authorities in India, the owners merely being paid £6 per head for their passage! The inspection of sea provisions by military officers can be but a mere matter of form, as it is a duty they have never been brought up to. Neither could they be competent judges as to the probable leakage of casks, or the most common casualties. Even nautical men are not all capable of doing this duty; but in this case good care would be taken that a purser, ship's steward, or other experienced person should do it, when so large a body of men have to be provided for.

A permanent transport committee to manage this constant moving of troops would remedy all these defects; and as your journal, Mr. Editor, is of too practical a character to be merely the medium of complaints without pointing out their remedy, I shall again revert to the principal points as to the formation of a Transport Committee, which should have their office under the same roof as the Indian Council. It should consist of the two experienced East India captains now there, combined with two retired commanders of East India ships, who have performed the most rapid and successful voyages to and

from India, with a military officer who has been a few voyages round the Cape. This committee of five persons should have the whole responsibility of seeing ships off in a proper state, whether from the Thames or the outports.

The Transport Committee in Calcutta should consist of the Master-Attendant, with two retired commanders of merchant ships, and one military officer experienced in India voyages. At Madras and Bombay, where the embarkation of troops is not so frequent, the Master-Attendant should be empowered to form a committee of three experienced persons as required, who should be paid a certain remuneration per day for their attendance to this duty.

The following are the terms and conditions upon which alone ships should be hired for the conveyance of troops and others on the part of the Indian government:—

1st.—Ship to be approved by the Transport Committee as to soundness of hull and sailing qualities by regular surveyors.

2nd.—Commander and chief mate to appear before the committee to be approved as to character, power of objection reserved.

3rd.—A crew of not less than four men and one boy to every hundred tons register, including officers, and foreigners in proportion of only one-fifth of the foremast men.

4th.—Stipulations as to sufficient anchors, cables, sails, cordage, and other stores.

5th.—Strict inspections as to provisions and water, as also the proper accommodation for the troops.

6th.—Power to prevent overloading, and to enforce clear decks for working ship.

7th.—Extension of pilotage as far as the West end of the Owers in ships outward-bound from the Thames.

Any person well versed in the casualties of India voyages can see at once that the above measures are most easy of adoption, and capable of being carried out both in India and this country; that they would save a large amount of life and property, and would land the men in a state of perfect health, fit for immediate service, as they still continue to be in those first-class ships which are well officered, and where the owners for their own credit send their ships to sea in a proper state, but which under the present system seems to be mere chance work.

A Transport Committee at head-quarters could hold such communication with those in India as would also prepare them for the requirements of the season. Except in cases of urgency, troops should never be sent off to India in the winter months,—particularly from the Thames, when a long and wet beat down channel may be expected, highly detrimental to the health of the men in preparing them for so long a voyage. If the authorities were themselves well versed in these nautical matters, they would never allow troops to embark from the Thames, but would have a point of embarkation as far as convenient to the westward, which would save, on an average, at least three weeks of miserable confinement in the ship. West Cowes,

Portland, or Plymouth would afford great advantages for that purpose, and at either of these places a regular depot might be formed. The only arguments which have ever been brought against this plan are additional expense and the danger of desertion,—ideas which can only exist with those who have no personal experience in the matter. The object is to get the troops off in good health, independent of the risk of collisions in a close navigation, or having to bear up for the Downs in heavy gales and thick weather without pilots! evils which recently caused the total loss of the *Blervie Castle* and *Earl of Eglinton*, although, fortunately, with no troops on board at the time.

With respect to desertion, it could never occur with regular depots formed at the seaports named, as the troops would be shipped off at once to the transports, and the risk of long marches and railways would of course be avoided.

If some stringent measures of this kind are not taken by the Indian authorities they must expect to hear continually of such cases as the *Accrington*, *Snaresbrook*, or *Great Tasmania*. A Transport Committee is necessary not only for their own defence, but in justice to the great number of military passengers and others who are continually afloat in their service, and who are entitled when embarked to every comfort, safety, and protection which can be given them under the British flag.

I am, &c.,

TRIDENT.

To the Editor of the Nautical Magazine.

A BREEZE IN THE CHRONOMETER MARKET.

It is generally considered by the uninitiated that there are only two parties concerned in buying that important article the chronometer: viz., the manufacturer and the purchaser, or he who applies it to its purpose. The latter also naturally enough considers that he sees in one and the same person of the former both the manufacturer and the trader. Such, however, is not generally the case, as will be seen in the following.

It has fallen to the lot of this Journal to be the means of communicating to the Nautical World some important steps in the progress of the chronometer, both as to its improvement as one of the most valuable contributions to navigation and geography, and as to its marketable value as an article of merchandise. In its character as the friend of the navigator our volumes bear testimony to the efforts of Dent, Eiffe, Molineux, Loseby, and others, perhaps, also, that do not now occur to us,—men who have severally aided to improve its more important parts,—while the name of the former maker stands conspicuously forward as the first who broke down the barrier of that

high price which kept it out of the seaman's hands. Thus, while progress was made under the encouragement of our government in the improvement of the weakest and most vulnerable part of its composition under the auspices of that same government, a name which had contributed to these improvements reduced the cost of it to the purchaser about one half. The chronometer, which in the year 1826 cost one hundred guineas, (for in those days the craft scorned pounds, requiring guineas,) only thirteen years later was purchased for just half that sum. The premium system of £200 and £300 had ceased, and the chronometer was coming down to the rationality of commerce, to be dealt with as a marketable article, dear enough even then, but perfectly inaccessible to the ordinary run of mankind in maritime circles. The chronometers above mentioned are eight day machines, but the ordinary two day chronometer, which at the first named period had its exalted price, first appears with its modest price of forty guineas in the year 1834, or eight years afterwards, which also would be about half the price it had obtained eight years previously.

The world, however, keeps moving on. Progress is the order of the day, and even these sums in the year of grace 1860, would appear to be far more than it is necessary to give for a good chronometer! We have heard occasional rumours of a less price than forty guineas for a new chronometer, and we might have gone on contented with an occasional growl at forty guineas, such as John Bull considers himself authorised to make, when, thanks to a revolution in business, arising perhaps from the present low state of the shipping interest, or any other cause with which we have nothing to do, there appears to be another move among the chronometers. The chronometer that we have been discontented at giving forty guineas for, and the dealer also at receiving that price, is now actually offered to us at twenty-five pounds.

The attention of our nautical readers is requested to the following letter:—

12, Orchard Street, Portman Square,
London, W. April 4th, 1860.

Sir,—As a manufacturer of chronometers all my life, desirous of following the impulse of the age, and believing the course I have adopted will be advantageous to scientific and commercial men without sacrificing the interests of the producer, allow me to offer the nautical and scientific world generally, through the medium of your pages, *chronometers at manufacturer's prices.**

In submitting my proposition thus to the world at large, I feel satisfied that the position I have held as a manufacturer will prove a sufficient guarantee as to the quality of my chronometers. Furthermore, I beg to call your attention to the fact that a chronometer, Pennington, No. 12, made by my grandfather, is, I should think, one of the oldest of government chronometers, since in the year 1804 it was sold to the Admiralty, and has been repaired at different periods since

* See advertisement on wrapper.

by my father and myself, and even at the present day is equal to any new chronometer. I wish also to call your attention to the fact that one of my late father's chronometers obtained the prize of £200 in the *first year* of the late government trials.

Perhaps you will kindly allow me to take this opportunity of mentioning that for many years past owners of chronometers have been put to great inconvenience and expence from the balance springs of their chronometers becoming rusty. Seven years since I seriously set to work in order to remedy this evil, and after much pains and cost I succeeded in producing a composition which has proved to be most efficacious. Having applied it to more than six hundred chronometers of my own making, I am in a position to assert that it is effectual. Many instances of chronometers having been in sea water have been brought under my notice, with the steel work entirely destroyed by rust; but those which had their springs covered by my process, still continued in a state of perfect preservation. I have not had one case in which my application has failed.

With apologies for this intrusion on your pages,

I am, &c.,

JOHN PENNINGTON,

Chronometer Maker.

To the Editor of the Nautical Magazine.

Thus then, Mr. Pennington and his forefathers, it now appears for the first time, have been hitherto content to be manufacturers. But that gentleman now adds the occupation of dealer to that of manufacturer, preferring, for reasons of his own, the patronage of the public to that of the trade.

We congratulate the nautical and scientific world at large on this prodigious step made by Mr. Pennington, for they will be gainers as well as himself. Indeed, the spirit of enterprise which induced him to step aside from the ordinary routine of business, well deserves the encouragement which it will meet. He comes before the public as the dealer himself as well as the producer glad to obtain even then something more than the profit to which as a manufacturer he has always been accustomed. Such a course must secure to any one that patronage which on its own account it fully merits. But it is right we should add our testimony that the chronometer to which he has alluded as sold to the Admiralty in 1804, stands the oldest on the Admiralty books, and that even now it is doing service in the Australian Seas.

It is not long since we gave our opinion on Mr. Johnson's mode of preventing chronometers being injured by damp, and rejoiced at finding he had succeeded in doing this by hermetically sealing them. We were not then aware of Mr. Pennington's method, which seems to have been used by him for several years, and without that process effects the same object. Such is the difficulty of finding out facts, and another proof how true it is that—

“Of their own merits modest men are dumb.”

On the whole we repeat our congratulations on every hand that the world may now be no longer without good chronometers, but also that such chronometers are of a reasonable price, a boon for which we were first indebted to Dent, and now to Pennington,—names which history will not forget.

It is clear now that the progress of the chronometer from its maker to those hands which have to use it, has been seriously checked, clogged by the profits which the dealer had to obtain from it. As a capitalist, the dealer has bought up the article from the modest workman, thus securing to himself the market, and living by the enormous profit of his outlay. But for the dealer, whom we may rather call the monopolist of the market, the use of this valuable article would have been more common than it is among our not over rich seamen. The market, however, is overstocked from various causes at last. The dealer has had his day, and the manufacturer now may deal for himself, not only to his own advantage but immensely to that of his customer.

It remains then for Mr Pennington to show that by going direct to the public, with the same modest demand for his produce as will secure to him that moderate return for his material and labour that he has been hitherto receiving from the dealer or middle man, it is for him to show, as he is now doing, that he no longer requires the aid of this gentleman. And Mr. Pennington well deserves success, for science will profit also, and the public will thereby be the gainers. *Nous verrons.*

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

The business of the Club was opened by an announcement from the Chairman that at length the Cape is lighted,—the identical Cape called with good reason the Cape of Storms by the Portuguese navigators, and so wisely dubbed the Cape of Good Hope by their monarch,—that a glorious first class light, from a collection of lamps forming one, such as England usually produces, now spreads its beams from a height of 272 yards above the level of the sea beneath it, looking down on the Diaz Rock, that imperishable monument left by nature to perpetuate the renown of the first navigator who had the good fortune to double the southern promontory of Africa.

Yes, he doubled the Cape, added Albert, but what else did he do, or has any of his countrymen done, for the sons of Africa? It may be very truly said that his countrymen, the early Portuguese, astonished the world by their maritime discoveries; but very little of this kind of enterprise would astonish the world in those days. And what did they really do? They crept along the coast from North to

South on the western side, and from South to North on the eastern side of that continent; they left their names wherever they went, and what else?—they established a town at Mozambique, which is as miserable a place now as it ever has been, and instead of carrying the blessings of civilization and commerce into that country, they have kept it with its people in the same benighted condition in which they found it! looking on the country with no intentions of improving its resources, and its people as only fit for slaves! Such has been Portuguese patronage for nearly four centuries. Where is there even a chart made by them of that African coast? When did they ever, in all that lapse of time, even survey it for the benefit of navigation, great navigators as they were supposed to be? And as for lighting it, not even Mozambique, their great rendezvous, nor the whole of the African coasts, East or West, can boast a single Portuguese light!

And, added Rodmond, if they had lighted that coast, and no better than they have done the approach to their harbour of Rio Janeiro, they had better have let it alone; for there is but poor dependence even on their light of Cape Frio!

No, continued Albert, Africa has nothing to thank Portugal for; and really owes what benefit she has and it is to be hoped will yet derive, to British and French enterprise, for the Liberian establishment must be considered as arising from the former.

I don't remember, in all my experience, observed the Chairman, having seen a Portuguese chart of even their own coast.

Old Pimentel or Franzini made one, said Albert, some time in the last century; but as for any modern survey all I have met with was some years ago a beginning of that of the Tagus, which I believe is not finished yet. Heaven help the world that has to depend on Portuguese exertion, or liberality of sentiment either in their government or the people for the advancement of civilization or the arts and sciences. They are something like their Spanish neighbours, of whom it is truly said, *Su socorro viene tarde en el dia*; which may be rather translated, "their help instead of late in the day," never comes at all! Look at the beautiful charts of the French, the Belgian, the Danish, the Prussian, the Russian, and the Norwegian coasts, and then look for those of Portugal, aye, perhaps even the Spanish, but of the Portuguese where are they? No where! Their hydrographic surveyors are an unknown genus,—their navigators are long gone by with their history, and the Portuguese of 1860 are just where their forefathers left them—in the lurch, outstripped by all other nations in the word progress;—a word unknown in their mother tongue! And yet what classic coasts in maritime history are theirs! coasts from whence discovery took its earliest and longest flights, but forgot to carry with it the blessings of civilization!

Well, observed the Chairman, every nation must be judged by her works;—deeds not words for the benefit of our brother mortals, is no bad motto, and I think the selection of a light-tower for the obverse to Britannia on the new coin, the bronze penny, a very happy one, to

which the 402* establishments of that kind on the shores of Great Britain and Ireland, independent of those of her colonies, justly entitle her to adopt. Good proofs they are of ships and commerce and her magnificent navy, and well should this be looked to. Most truly has it been said, that it is through her navy England's voice is heard, and the weight of her arm most feared. Other Powers may stretch their boundaries beyond rivers or mountains; but far as the waves can reach is the only natural boundary of England. When we speak of maritime supremacy, we arrogate no arbitrary or exclusive sway; we do but signify the vital condition of the greatest colonial empire the world has ever seen. Other Powers may add ship to ship and gun to gun to minister to a vain-glorious ambition; the duty and right of England is to carry the flag of her own ancient freedom and to keep her *beacon light* burning clear on the broad highway of the seas.† These were the sentiments of the Club, said the Chairman:

* The Chairman was quite right,—the numbers stand thus:—England, 211; Scotland, 113; Ireland, 78; Total, 402.—Ed.

† The following is added by the Secretary, in reference to the Chairman's remarks, from the *Naval and Military Gazette*:—

From last May to the present time there have been launched seven line-of-battle ships: First rates,—*Victoria, Howe, Prince of Wales*; second rates,—*Duncan, Frederick William, Revenge, and Irresistible*.

For one moment compare the bulk of these floating giants with that of the time-honoured old *Victory*, built in 1765, a famous three-decker in her day, carrying 100 guns, and yet measuring only 1,750 tons.

In the same period three ships have been removed from the effective list,—the *Queen Charlotte*, 104, built in 1810 (carried Lord Exmouth's flag at Algiers), name now changed to *Excellent*, and made gunnery ship at Portsmouth; *Implacable*, 72, built in 1805, a training-ship. *Carnatic*, 72, built in 1823, was never commissioned, made a coal-depot.

Ships of the Line in Commission and Ordinary.

<i>Built.</i>	<i>First Rates.</i>	<i>Tns. Gns.</i>	<i>Built.</i>	<i>Names.</i>	<i>Tns. Gns.</i>
1852	<i>Duke of Wellington</i>	3760 181	1848	<i>Aboukir</i>	2627 91
185	<i>Marlborough</i>	4000 131	1852	<i>Agamemnon</i>	3074 91
1860	<i>Prince of Wales</i> . . .	3994 181	1854	<i>Algiers</i>	3340 91
1857	<i>Royal Sovereign</i> . . .	3765 131	1853	<i>Cæsar</i>	2767 91
1860	<i>Howe</i>	4236 121	1854	<i>Exmouth</i>	3100 91
1854	<i>Royal Albert</i>	3726 121	1858	<i>Edgar</i>	3094 91
1859	<i>Victoria</i>	4126 121	1858	<i>Hero</i>	3148 91
1858	<i>Windsor Castle</i> . . .	3099 121	1854	<i>Hannibal</i>	3136 01
	<i>Second Rates.</i>		1859	<i>Hood</i>	3281 91
1810	§ <i>Impregnable</i>	2406 104	1858	<i>James Watt</i>	3083 91
1828	<i>Royal Adelaide</i> . . .	2446 104	1840	<i>London</i>	2598 91
1827	* <i>Royal George</i>	2616 102	1839	<i>Nile</i>	2598 91
1815	*§ <i>St. Vincent</i>	2612 102	1831	* <i>Nelson</i>	2617 91
1855	<i>Conqueror</i>	3283 101	1824	* <i>Neptune</i>	2705 91
1858	<i>Donegal</i>	3245 101	1854	<i>Orion</i>	3340 91
1859	<i>Duncan</i>	3727 101	1853	<i>Princess Royal</i> . .	3129 91
1853	<i>St. Jean d'Acre</i> . . .	3200 101	1823*†	<i>Prince Regent</i> . . .	2613 91
1842	† <i>Albion</i>	3110 91	1838	<i>Rodney</i>	2625 91
			1857	<i>Renown</i>	3317 91

he would now turn to our glorious mercantile navy, which only wanted looking after, for after all its blemishes there were elements in its composition that have enabled it to brave the world,—and those blemishes he yet hoped to see removed. He had received a paper referring to some of these which their friend Albert would read. It had appeared in the columns of that invaluable journal the *Shipping Gazette*, and referred to the inquiry into the Shipping Interest.

In reading this paper, said Albert, there are some sentiments of the writer with which I do not agree. A person who will uphold the treatment on board the *Snaresbrook* deserves the same, and his remark on deep soundings amounts to nothing; however, here it is:—

“One remark made by Mr. Dunbar ought not to go unnoticed. He said that a ship of his with forty-five hands on board had to put back into the Downs and ship two hands more before they could work her;

<i>Built.</i>	<i>Names.</i>	<i>Tns.</i>	<i>Gns.</i>	<i>Built.</i>	<i>Names.</i>	<i>Tns.</i>	<i>Gns.</i>
1833	* <i>Royal William</i> ...	2098	91	1848	<i>Colossus</i>	2589	80
1859	<i>Revenge</i>	3146	91	1853	<i>Cressy</i>	2539	80
1840	* <i>St. George</i>	2674	91	1842	<i>Goliath</i>	2595	80
1841	* <i>Trafalgar</i>	2694	91	1859	<i>Irresistible</i>	2642	80
1855	<i>Victor Emanuel</i> ..	3086	91	1847	<i>Lion</i>	2589	80
1833	* <i>Waterloo</i>	2718	91	1848	<i>Mars</i>	2576	80
1860	<i>Frederick William.</i>	3240	86	1849	<i>Meane</i>	2600	80
1839	* <i>Queen</i>	3099	86	1853	<i>Majestic</i>	2566	80
1824	§ <i>Asia</i>	2289	84	1842	§ <i>Superb</i>	2583	80
1828	§ <i>Bombay</i>	2279	84	1836	§ <i>Vanguard</i>	2609	80
1831	§ <i>Calcutta</i>	2299	84				
1797	‡ <i>Canopus</i>	2257	84				
1827	§ <i>Clarence</i>	2288	84	1798	§ <i>Achille</i>	1981	78
1825	§ <i>Formidable</i>	2289	84	1798	§ <i>Foudroyant</i>	2060	78
1821	§ <i>Ganges</i>	2285	84	1841	§ <i>Hindustan</i>	2029	78
1832	§ <i>Monarch</i>	2286	84	1839	§ <i>Indus</i>	2096	78
1826	† <i>Powerful</i>	2296	84	1817	§ <i>Agincourt</i>	1747	72
1831	§ <i>Thunderer</i>	2279	84	1810	§ <i>Egmont</i>	1760	72
1824	§ <i>Vengeance</i>	2284	84	1815	§ <i>Wellesley</i>	1746	72
1855	<i>Brunswick</i>	2600	80	1844	§ <i>Boscawen</i>	2212	70
1844	<i>Centurion</i>	2590	80	1842	§ <i>Cumberland</i>	2114	70
1841	† <i>Collingwood</i>	2584	80	1851	<i>Sans Pareil</i>	2334	70

Third Rates.

Being 8 first rates,—4 of 131 guns and 4 of 121.

60 second rates,—2 of 104, 2 of 102, 4 of 101, 26 of 91, 2 of 86, 11 of 84, and 18 of 80 guns.

10 third rates,—4 of 78, 3 of 72, and 3 of 70 guns.

Total 78.

By further deducting eight, which may not be seaworthy, from the above calculation, I think we may fairly claim to possess seventy sail of the line. The following ships are building or ordered:—

Second Rates,—*Gibraltar*, 101; *Anson*, *Atlas*, *Bulwark*, *Belvedere*, *Caledonia*, *Defiance*, *Repulse*, *Robust*, *Royal Alfred*, *Royal Oak*, *Triumph*, and *Zealous*,—being one of 101 and twelve of 91.

[* Signifies old 120-gun ship raised. † Converting into steamer. ‡ Taken from the French. § Sail only.]

and that an American ship one hundred tons less went to sea with twenty-one men. This he attributes to the greater use of machinery on board of the new marine of America than the old marine of England. It is surprising to hear such an observation from a practical gentleman like Mr. Dunbar. He must surely be aware that all the machinery of any value for saving labour, such as chain-cables, patent windlasses, patent anchors, self-reefing topsails, and many others of a similar kind, was invented in England, and first used on board of her merchant ships. Even their pretended invention of deep-sea sounding is to be found in Dr. Jardin's *Universal Geography*, published 150 years since. I have known ships fitted out with winches, so that every rope could be taken to one.

There is, however, one invention which must be attributed to America, and I believe solely used on board of American ships—I mean revolvers. If the crew of an American vessel disobeys orders, the captain can arm himself and officers with pistols and cutlasses and command obedience in the same way that a pirate might. The mate of an American ship can go among the crew with a dagger in each breast, a revolver in each pocket, a lantern in one hand, and an iron bolt in the other, to knock down the first that he perceives hanging a slack back, grumbling, or looking sulky. If the captain of an American ship gets into trouble either with the inhabitants of the port he may be at, or with his crew, or through any other cause whatever, his consul is sure to be in court to advocate his case in the most stern and positive manner, as has been proved at Cork and Cowes, and many other places, where the American consul did not only see that the law was justly administered, but even endeavoured to influence the decision of the magistrates, which causes the American officer to walk out of court with a smile on his countenance.

But the case is quite different with the British captain. All is punishment for him, but no protection from any quarter. Thus the Board of Trade, the magistrate, the Local Marine Board, the owner, the underwriters, can all punish the British shipmaster; but none can render that support which is necessary to enable him to perform that arduous and complicated duty which his government has imposed on him lately. The crew of a British ship can deny any duty or destroy any amount of property with impunity. They can heave blocks, buckets, handspikes, oars, or any other thing overboard, sell bread, beef, ropes, cut warps, sails, or anything else if the master do not see them, which they will look out for. Although he could prove that there had been no communication with any other ship or person but his own crew, still there could be no conviction. If they have a mind to go to sleep and let the lights go out, the ship swing over her anchor, run on shore, or on board of any other vessel, there is no redress for the master, although the Board of Trade will not hesitate to take his ticket of leave from him for what they have taken all means out of his hands of controlling. I had occasion lately, through stress of weather and loss of sails, to bear up for a harbour of refuge; but because I would not go where the mate pleased, he told me positively

that he would do no more duty, either as mate or seaman. When I arrived in port I stated the case to the British consul. He informed me that if my mate was the greatest rogue, thief, vagabond, even murderer, that ever crossed the ocean I was bound to keep him. Such were the very words used to me when I represented the danger and utter impossibility of navigating a ship with such a person on board. He replied that the fault was not his: he had his instructions, and must obey them.

About the same time a seaman on board of another British ship at a foreign port refused to do any more duty. The master applied to the consul to have him taken out of the ship. The consul asked if the man had used any personal violence to the master, when the latter said that he had not. The consul replied that he could not take the man out of the ship for only refusing to work. It appears by this that a British shipmaster must be knocked down and kicked about the decks before he can get any remedy. As for the simple offence of receiving the best of meat and wages, and refusing to do anything for it, and stopping the progress of the voyage, it is a fault of no consequence in the estimation of a consul. If we ask their advice respecting port charges, harbour dues, &c., they know nothing about it, and tell us that if we have got our receipts that is quite sufficient: if we want anything more we must complain to our government. Should we have any dispute with merchants or brokers, and apply to our consul, he tells us that we had better settle it, no matter how much we may be injured by doing so; or, if we will not do that, then we are told to employ a lawyer, but never makes his appearance at court to see that we get justice. In fact, we often find the carriage of the person that we have the dispute with waiting at the consul's door, to give him a drive in the country or an invitation to dine, at the very time that we come to ask his assistance. Of course to advise us against the interests of such accommodating gentlemen would be unmannerly in the extreme. For a proof of this see a letter that appeared in the *Shipping and Mercantile Gazette* from some captains at Barcelona, where the consul said that he would sooner see a drunken sailor come before him any time than the master of an English ship to complain against the inhabitants of the place.

However, I must do the consuls the justice to say that none of them agree with this order of things. They all blame the lethargy of the home government, and tell us to seek redress there. A mate can leave his ship while taking in a cargo, which he ought to keep an account of, go on shore, get drunk, fall asleep, and by doing so get £13 deducted from the ship's freight when she arrives at her destination. When the master seeks redress before a magistrate, he is told that he must not only pay the mate his full wages, but costs besides. If a mate gets drunk at sea and endangers the lives of all on board, it is the same. Or if a master stops on board until his ship is safe in dock, every one knows that he is then bound to leave her to report. The mate and carpenter being the two principal and best paid officers on board, the captain leaves them in charge to see the ship properly

moored, pumped, and the ropes coiled up; but as soon as the captain is out of sight these faithful servants go too. According to the letter of the law such a wilful neglect of duty is punishable with the forfeiture of one month's wages, but the magistrate says no. There is no help for the unlucky master.

Surely the man that has to be answerable to merchants, magistrates, owners, underwriters, and an endless variety of other parties, for the due performance of the voyage, the care and preservation of the cargo, the ship, the stores, the crew, the passengers, and numberless other items, concerns, affairs, and cares, ought to be allowed some support from his officers at least to enable and assist him in the perilous and complicated duties that devolve on him. If the master thinks that some kind of order might be maintained by imposing a small fine for neglect of duty or destruction of property, it cannot be done without the signature of one of the crew, and it is hardly natural to suppose that they will assist to mulct themselves; but should any of them be friendly enough with the master to sign this deed, it must be told to all hands twenty-four hours before the ship arrives at her final port of discharge. A distance that a ship would run in twenty-four hours with a fair wind, might take three weeks with the wind contrary; all of which time the crew are in a state little short of mutiny, saying that they may as well be hung for a sheep as a lamb, and swearing vengeance on whoever has signed the obnoxious document.

In former times it was customary for masters to endeavour to humour the men a little by giving them an extra bottle of grog, or some other artifice, to get them in good working trim when the ship was approaching the harbour or other difficult navigation, so that they might exert themselves when wanted; but since the introduction of the Merchant Shipping Act (which has deranged the whole British merchant service), the master, at the very time when he wants his men in the best working order and the greatest exertion from them, is obliged to rip up all the past grievances which may have occurred during the voyage, and tell each man what his punishment is to be. As may be expected, all order is at an end after this. They may still manage to go through the motions, but anything like exertion is out of the question. Whoever will consider this regulation will see the foolishness of it at once, for, whether right or wrong, neither party can alter it until they get on shore, before a higher authority than themselves; therefore, to commence with such things at sea can be calculated for no other purpose than to cause confusion and disorder on board.

Various reasons have been assigned for the increase of disasters at sea since the operation of this law. Although no one has remarked it, I have no doubt that the official log-book has contributed its full share. It is a well known fact that the massacre on board of the *Majesty*, of Whitby, was occasioned by this instrument, and perhaps many more that have never come under my notice. For the twenty-

five years that I was at sea before the passing of the said act, I do not remember hearing of a single murder on board of a British ship, except the *Tory*, of Liverpool, and the *Saladin*, of Newcastle; but since it became law hardly a month passes over but murder or manslaughter on board of ships forms part of the police intelligence of your paper.

Although I neither have time nor you room to describe all that might be said on this subject, yet I think enough has been shown to prove what kind of machinery it is that enables an American captain to get as much work done on board of his ship with twenty-one hands as a British captain can with forty-seven. Every right-feeling man loves the laws of humanity, but at the same time that we make laws to protect one part of the community we ought not to leave the other part unprotected, to compete with those who find it cheaper to use a cow's hide or a revolver than a purse. Such partial humanity has nearly reduced the beautiful and fertile island of Jamaica to a wilderness already. Previous to 1850 the sailors might as well take what the master thought proper to give them as seek justice at law; now it is quite the reverse. A master may as well give them what they have a mind to ask as look for redress in court. Surely, those who have read the sentence passed on the captain of the *Defender*, in 1849, and that on the mate of the *Snaresbrook*, in 1860, cannot deny the truth of the above remark. The former was passed out of court without a stain on his character, for exactly a similar crime to what the latter was to be hanged for without the least hope of mercy. This is flying to opposite extremes and gives satisfaction to nobody, but renders the letter of the law valueless, the judgment and sincerity of the magistrates questionable, for it shows clearly that their verdict is biassed by the public whim of the day, and not by the pure love of justice. This is what makes people continually cry out for new Acts of Parliament, whereas the real evil lies in the judgment of the administrator, and not in the law. If the Merchant Shipping Act be excepted, the law was right enough and contained sufficient provision for the protection of master and men, and only wanted to be honestly applied. The remedy is simple, for if a seaman be ill used in any respect, or cheated out of his wages, by all means let him have justice; but if he is well used, honestly paid, and then either embezzles or destroys the ship's cargo or stores, or refuses to perform his duty, let the injured party have justice as well. Nothing else will ever give universal satisfaction.

I am, &c.,

A BRITISH SHIPMASTER.

Now all these remarks might be very well, continued Albert. The British mercantile navy must not be disgraced with those conflicts between the officers and crews. Like those of our American neighbours, there is doubtless much to be done in the way of setting to rights, but which it is hoped will be effected without the use of *their* knuckle-

dusters. For his part he did not believe in such things himself, but cases are so common that he thought the following extract from our police reports was worth preserving among their papers as a notice of what is to be expected on board American merchant ships. The magistrate appears to have given a correct opinion of the invention.

Mr. John Allen, an Englishman, with a pretty considerable spice of the American manners about him, was brought before Mr. Selfe, at the Thames Police Court, on Saturday last, charged with having violently assaulted a Negro, named William Stevens. Mr. Smith conducted the prosecution, and Mr. Young defended. The defendant is the chief mate of the colonial ship *Clara Hickman*, of Yarmouth, Nova Scotia, and the complainant, a tall and powerful black man, is one of the crew, and shipped at Boston, United States. On Friday morning the chief mate ordered the second mate to go aloft and reeve a rope and make fast a block. When the job was done the chief mate complained that it was not done properly, and called Stevens a nigger and other abusive epithets. The complainant said he did not reeve the rope of which the defendant complained, and told him to speak to the second mate. The defendant ordered Stevens in a peremptory manner to "shut up," and after some more words, put his hands in his pockets and made fast to each a heavy brass "knuckle-duster," a diabolical instrument of American invention, and jumped down from the topgallant forecastle on to the deck, and struck the complainant a violent blow on the mouth with the right hand, which completely severed the upper lip and caused him to bleed profusely. This was followed up by other blows inflicted by the knuckle-dusters; the seaman was knocked down, and he was kicked while he was down. The complainant appealed to the captain of the ship, who said he had nothing to do with it, and ordered the complainant to his duty. Stevens was about to leave the ship to obtain redress, when the captain took up a winch handle and threatened to beat him with it if he attempted to leave the ship. The captain was persuaded not to use the winch handle, and Stevens then went on shore. He was in a horrible plight when he came before the magistrate for a warrant. The complainant also said that the defendant had struck other men on the voyage with the brass knuckle-dusters.

For the defence it was urged by Mr. Young that this complaint was made to enable the complainant to get his discharge from the ship, instead of returning to Boston in compliance with the articles; that the complainant was very insolent to the defendant, and they began fighting. They were parted by the captain.

Mr. Selfe said there was some discrepancies in the evidence for the defendant, but the testimony given for the complainant was clear and distinct. He had no prejudice against Yankees, nor inclined to favour black men. He believed the only assault was committed by the chief mate, and he was sorry that such a cowardly and atrocious mode of injuring a man had been committed under the British flag. It was brutal and unmanly to beat a man with brass knuckle-dusters. He

fined the defendant £5, and ordered that £1 of the penalty should be awarded to the complainant as costs.

If I mistake not, observed the Chairman, a writer in our old companion the *Nautical Magazine*, has lately more than once shown up the defects of the Mercantile Marine Act now alluded to; that the whole subject of discipline has been treated by those who knew nothing about ships or sailors, clerks, who had never seen a ship, could not have done their work worse than the manner in which that subject has been treated. He has contrasted the French system with ours, and it would not be the first time we have copied from our opposite neighbours with advantage to ourselves if we would take a leaf from their book on this subject. It is well known what the quarter deck of a ship of war is, and why should not that of the merchant ship be the same.

But he had other things to turn to at present. The following report had been sent to him on the subject of testing the anchors and chain cables of our mercantile marine, which he thought should be recorded among the minutes of the Club as the first measure of its kind: it runs as follows:—

The select Committee appointed to inquire into the manufacture of anchors and chain cables for the merchant service, and who were empowered to report their observations, together with the minutes of the evidence taken before them, have considered the matters to them referred, and have agreed to the following Report:—

1. That at the outset of this inquiry, it was established in evidence, that the loss of chain cables by parting, and of anchors by breaking, is of rare occurrence in her Majesty's navy; and that this appears to arise from their having been subjected to a sufficient test before they are received from the contractors, and also from their being thoroughly examined, and in many cases re-tested, when returned into store, or before they are again issued for service.

2. That a variety of witnesses, chain-makers, shipowners, engineers, and persons conversant with shipping, examined before the Committee, concur in the opinion that it is highly expedient that chain cables and anchors for the merchant service should be subjected to an adequate test before they are used, as it would be the means of saving much life and property.

3. That a considerable portion of the cables now made for the merchant service are of inferior iron and defective workmanship.

4. That the Corporation of Liverpool and Harbour Trust of that port have for many years employed a testing machine of limited power, which is kept in full employment; and that since this inquiry was ordered by the House of Commons, it appears that the Harbour Trust, to meet the demands of that port, have decided on the erection of machines of greater capacity and power. That it is also in evidence that, during a period of five years, of cables sent to the Liverpool testing machine, 82½ per cent. are imperfect cables.

5. That in Sunderland two testing machines have been for some time in operation, which, although private property, are accessible to all, and that the superior character of chain cables made in that district is in a great measure due to the results of these testing machines.

6. That from the evidence of all the witnesses examined, your Committee has formed the opinion that nothing but the use of proper testing machines can afford any guarantee for the soundness of the cables or anchors, as defects may exist, either from badness of material or imperfect welding, which no inspection can detect; and so closely can the tenacious quality of iron be calculated, that chains may be made to bear a given strain, which would break if the least excess of it were applied.

7. That though instances have been adduced by some witnesses to support the opinion that the application of a severe strain in testing has an injurious effect on a cable, this idea seems to the Committee to be completely refuted by the evidence of Mr. Willcocks, and by the results of experiments made at Woolwich, and referred to in his evidence.

8. That all the witnesses examined agree in the utility of a test, and some of them, including all the manufacturers of chain cables examined, desire that its use shall be compulsory, as many cables are now sold with false certificates.

9. That good grounds having been established in this inquiry for recommending the adoption of public tests, the only questions which remain are, the authorities into whose hands this duty should be confided, and the regulations that should be enforced.

10. That your Committee are of opinion that bodies enjoying the confidence of the mercantile and shipping interest, and whose local residence will insure an adequate superintendence, (such as dock trustees,) are the proper persons to undertake this duty; and that the regulations under which they act should be approved of by the Board of Trade.

11. That in order to suit the convenience of manufacturers of chains and anchors who have testing machines on their own premises, the Board of Trade, on receiving a requisition from any such manufacturer, should appoint inspectors to attend the testing of any chains or anchors, and give certificates, according to printed regulations to be framed for that purpose, of the strain applied to them, which should be the test applicable to their size.

12. That although the Committee cannot overrate the advantage of having the chains of every vessel subjected to a test, they are unwilling to recommend that the test should be made compulsory; but as they have recommended the general use of testing machines, they consider that all ships launched after the 1st of January, 1861, which come under the provisions of the Passenger Act, or are employed by any department of her Majesty's government, either in the conveyance of emigrants or troops, should be required to produce certificates that their cables have been properly tested.

It is somewhat remarkable that no allusion, observed the Chairman, is made in the Report to testing machines in the Thames, of which there are said to be two.

In reference to the subject of wrecks, the Chairman was happy to state that no further loss of life in that monstrous way like the *Hungarian* and other vessels, had been reported since that deplorable event, and it was to be hoped that Boston steamers would no longer be found hugging the dangerous Nova Scotia shore to their destruction. Although the wrecks during March amounted to 166.

In reference to the successor of Captain Harrison in the command of the *Great Eastern*, Albert stated that the Directors had appointed Captain Vine Hall to the command. A more fitting appointment could not have well have been made: he is an officer who possesses many of those qualities which gained for the late commander his high position. Captain Hall has had a large amount of experience in the command of ships of the first class in the Mediterranean, South America, Australia, and India. His conduct in connection with the *Croesus*, of 2,700 tons, which on arrival in Sydney was found to be frightfully leaky, many of the plates having started, gained him the approbation and friendship of the late Mr. Brunel. There was no dock into which he could put his ship, and with great perseverance he succeeded in forming a caisson, which is described in the *Nautical Magazine* for 1854, by which he was enabled to repair and bring home the ship with a most valuable cargo. When the *Croesus*, with troops and stores for the Crimea, was destroyed by fire off Genoa, his conduct received the highest approbation from the Admiralty. As captain of the *Golden Fleece*, with troops for India, he made the quickest voyage on record between England and Calcutta. In 1857, Captain Hall was elected an F.R.A.S., and was the first officer in the merchant service who took a first-class certificate in the steam examination under the Mercantile Marine Act. Great exertions, it is said, are making to complete the ship as soon as possible for sea.

The Chairman observed, that the members of the Club were no doubt informed of the circumstance that one of our naval officers had been basely murdered at Lima. It had turned out to be the work of one of those vile ruffians for which that part of the world about Callao was celebrated, and had no connection with political matters. He thought the following account of the transaction should appear among their papers,—out of respect for the profession as well as that of the Club for the memory of an excellent and deserving officer,—generally respected and loved by those who knew him.

Lima, February 12th.

I have to record that another victim to the atrocious neglect of this government has been added to the list of assassinated foreigners, headed as it is by H.B.M. late Chargé d'Affaires here, Mr. Sullivan. Capt. Lionel Lambert, commander of H.B.M. war steamer, *Vixen*, left in perfect health his hotel at three o'clock in the afternoon to take a bath

in the river. His friends were expecting him to dinner, but he never returned; he must have been murdered between half past three and five o'clock. The body had been washed down from the spot where the deed was done at least half a mile or more. He was not in uniform, but on his person a closed dispatch, addressed to Captain Miller, was found. His rings and watch were stolen, of course,—the miserable booty of the murderers. The deceased had not died without a struggle. In the *post mortem* examination it was found that besides the fracture on the back of the head, (caused, it is thought by a stone,) his forehead was fearfully cut, and both his wrists were black from the struggle in which he lost his life. The deceased was a brave officer, having distinguished himself during the Crimean war; he was young (twenty-six years) for the responsible office which he held, but not too young to inspire the confidence and esteem of all who knew him; and his loss is not only deeply lamented, but will be severely felt by all friends of the circle he had formed in Lima. The remains were interred yesterday in the English burial ground of Bellavista; the funeral was attended by the members of the foreign diplomatic corps, the officers of the various men-of-war and of the other vessels lying in the harbour, by all the English merchants in Lima and Callao, and an immense concourse of sailors and English artisans formed a long procession from the beach to the cemetery. The usual honours were observed when the body was lowered to its final resting place.

As the business of the Club was about to terminate, a letter was placed in the hands of the Chairman, the subject of which he considered claimed for it immediate attention,—and which was then read.

The great sufferings of the troops on board the *Tasmania* make it desirable that all commanders of ships should be aware that fresh provisions, both cheap and abundant, can be quickly obtained at St. Cruz, on the N.E. side of the island of Flores, one of the Azores; as also at the bay of Fandes, on the western side of the same island. Twice I have hove to for a few hours off St. Cruz and taken in as many bullocks, pigs, sheep, fowls, &c., as were required for a few days' fresh mess for the invalid troops on board my ship.

On the 27th of July last we fell in with the *Fitzjames*, about four hundred miles from Flores, which island lay directly in her homeward track; the ship was very leaky and the crew in a fearful state from scurvy; they were out of fresh provisions, as their anchor had dragged off the narrow bank of soundings near James Town, St. Helena, and they drifted to sea with more than a hundred fathoms of cable out, which took their weak crew so long to heave in, that they were too far to leeward to attempt to fetch the island: therefore they started on their homeward passage without the fresh provisions which the captain had actually ordered from his agent, who had been alongside,—a painful illustration of the old saying, "There is many a slip between the cup and the lip." We were able to supply them with enough for three

or four days' consumption, and sent them into Flores for more, where all they wanted was on board in a few hours. The captain in his letter of thanks on her safe arrival in England, told me that his crew got speedily well, and that he had no doubt his ship and the lives of most on board were saved by this timely supply of fresh provisions, as, said he, many of my crew were much exhausted, besides ten who were not able to move. He also said, that he was not aware that supplies could be obtained at Flores, neither did he think that it was generally known amongst commanders of ships.

As it was some years since I touched there, I wrote to ask the captain what he paid for his stores. His answer was,—for a bullock £4, for potatoes 3s. the bushel, for eggs 5½d. the dozen, for fowls 12s. the dozen, &c. That he “received every kindness, assistance, and attention from Mr. M'Kay and his family.” Which, by the way, is a striking contrast to the way in which the inhabitants of that island were soon afterwards treated by the commander of the *Wanderer*. I trust he will meet with the punishment he so justly merits. A few such as he would soon render the island useless to the passing ship.

Knowing how speedily scurvy prostrates the system, and how quickly fresh provisions restore health. I have little doubt but that several lives and much misery would have been saved if the *Tasmania* had spent a few hours at Flores. And I strongly recommend that all ships should examine their stores before passing the friendly and useful island. For it must be remembered that it is at the end of a long voyage that scurvy makes such rapid strides towards destruction. Further particulars, with slight sailing directions, will be found in the December number of the *Nautical Magazine* for 1859.

I remain, &c.,

HENRY TOYNBEE.

Now although this important subject had lately appeared, as above mentioned, in the pages of the *Nautical Magazine*, yet as too much publicity could not be given to it, he thought it should be mentioned in their minutes, and that passengers of ships in such conditions would then insist on the commanders of ships in similar conditions touching at Flores, as there was good reason for believing that they were averse to doing so from some cause or other,—but in respect of a chart for the purpose, no chart was required, further than the general one by which the ship was navigated.

Secretary's Mems.

The Forté, 51, will convey to the Cape of Good Hope his Excellency the Hon. Sir George Grey, Governor and Commander-in-Chief of that colony, and family.

The beautiful poem on the Lifeboat, by Mrs. Hartley, is to be had of the author, at York Place, Bideford, Devon, and of the Secretary of the Institution, Adelphi.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 222.)

Name.	Position.	Where.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
9. Santander	Is. Mouro, Spain	43° 28' 8" N., 3° 45' 7" W.	F.	141	12	Est 15th Feb., '60.
10. Gulf of Riga	Runo I., S.E. part	57° 48' 1" N., 23° 15' 5" E.	F.	200	16	Est 1860. While navigation is open. Instead of former on N.W. part.
Dager Ort	.....	.....	..	..	..	} On 27th May will cease to undergo alteration. (a.)
Swalfer Ort	.....	.....	..	..	..
Lyser Ort	.....	.....	..	..	..
Fil Sand	.....	.....	..	..	..
11. Kalbåden	Gulf of Riga	Off Glosholm	F.	vesel		Est. 1860. Changed from red to white light.
Grund	.....	Off Revel	F.	vesel		Est. 1860. Changed from three to two lights. (b.)
Revelstein	.....	.....	.....	.....	.....	Est. 29th Feb., '60. Interval not given. Once every half minute. (c.)
12. Ship Island Shoal	Gulf of Mexico	28° 55' 1" N., 90° 55' 9" W.	R.	110	17	Est. 29th Feb., '60. Interval not given. Once every half minute. (c.)
13. St. Thomas Harbour	.....	.....	..	..	..	See notice. (d.)
14. THE CAPE	Cape Point	Africa, 34° 91' 2" S., 18° 29' 5" E.	R.	316	26	Est. 1st May, '60. Interval 13 seconds, every minute. (c.)

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

(a)—On and after the 13th of July, 1860, the lighthouse on Dager Ort will have a *fixed white* light varied every *minute* by a bright flash. On Swalfer Ort there will be a *revolving white* light (the period of revolution is not given). On Lyser Ort the light will be *fixed white*.

On and after the 13th of August, the lighthouse on Filsand Island will exhibit the same *revolving* light as heretofore.

(b)—*Lebiadnikova Shoal*,—7½ miles West of the North point of Hogland, will in future be distinguished not by a flag but by a beacon with three white and three red streaks, and a double broom, that it may not be mistaken for the Hogland Shoal, N.N.W. ¼ W. 2 miles from the North point of Hogland, marked by a flag.

The 6 fathom bank discovered in 1859, 9 miles eastward of Ekholm and 1½ mile N. 42° W. (true) from the North part of the Kalk-grund, will in future be marked by a *black* instead of a white buoy.

Namsi Bank.—The 5 feet water on the Namsi Bank will in future be marked by a *black* buoy.

Harbour Lights at Revel.—In reference to notice to mariners, No. 42, dated 15th of October, 1859, information has been received at the Admiralty that the lights are exhibited from the wall at the entrance of the new military port of Revel, and not from four lightvessels as previously reported.

(c)—On the appearance of the above light, the lightvessel lying off the North side of Ship Island Shoal will be discontinued.

(d)—A small detached coral rock, carrying 17 feet least water, has recently been discovered 165 fathoms to the southward of the S.W. Triangle Rock, off

the eastern point of entrance of St. Thomas Harbour. It is about 100 feet in diameter, with 7 fathoms close to.

Judge Berge's house (the only flat roof building above the town of Charlotte Amalia, on the second hill from the West), kept well open West of Möhlenfels Point, or Contant Mill on with Cowell Point, leads West of it; but large ships from the eastward should keep East Gregerie Channel well open until the West point of Water Battery is in one with the East end of the northern church, bearing N.b.W. $\frac{1}{4}$ W., the fairway leading mark into the harbour.

(e)—The light will be visible all round the compass, except when bearing between S.S.W. and S. $\frac{1}{4}$ E., and also between S.S.E. $\frac{1}{4}$ E. and S.S.E. $\frac{3}{4}$ E.

The illuminating apparatus is catoptric or by reflectors of the first order.

The lighthouse, formed of iron and 30 feet high, is painted white: it bears N.b.W. $\frac{3}{4}$ W. (N. 49° W. true), distant 925 yards from the Diaz Rock, close to the South extreme of Cape Point: from the Anvil Rocks it bears N.N.W. $\frac{1}{4}$ W. (N. 54° W. true), distant about 1 $\frac{3}{4}$ mile; from the Bellows Rock it bears N.N.E. $\frac{3}{4}$ E. (N. 1° E. true), 2 miles; from the South-west Reef it bears E. $\frac{1}{4}$ N. (N. 55° E. true), 1 $\frac{1}{4}$ mile; and from the Whittle Rock it bears S.W.b.W. $\frac{1}{4}$ W., 7 $\frac{1}{4}$ miles.

Caution.—A westerly current sets round the cape, running N.W. from the Bellows Rock, which always breaks; the Anvil only breaks at low water in a heavy swell. Sailing vessels should not pass between these dangers and the cape unless with a commanding breeze. The rocky patch named the South-west Reef lies W.b.S. $\frac{3}{4}$ S. (S. 42° W. true), one mile only from the S.W. extreme of the cape, and there is foul rocky ground between it and the shore.

Vessels from the eastward will clear all dangers off Cape Hanglip by not bringing the light to bear more westerly than N.W. $\frac{1}{4}$ W. A tongue of low land stretches from that cape 1·2 mile in a S.W. $\frac{3}{4}$ W. direction, so that it must be passed carefully in hazy weather, especially by those vessels bound to Simons Bay. Those for Table Bay from the eastward, after rounding the Cape of Good Hope and passing Slangkop Point, should not shut in the light with that point until the lights on Green Point are seen bearing E.b.N. $\frac{3}{4}$ N., a course which would lead about 2 miles to the westward of the Vulcan Rock, off the northern point of Hout Bay. The course for Table Bay may then be safely shaped.

Vessels from the westward for Simons Bay, after rounding the Cape of Good Hope, having brought the *southern* end of the lofty Zwartkop Mountains to bear N.W.b.W. $\frac{1}{4}$ W., should keep the light on Cape Point between S.S.W. $\frac{3}{4}$ W. and S.W. $\frac{3}{4}$ W., until the Roman Rock Light bears between North and N.b.W. $\frac{1}{4}$ W.; they may stand towards it. The rocks off Miller Point on the one hand and the Whittle Rock on the other are thus left half a mile distant.

In hazy weather when the whitewashed mark and beacon for the Whittle Rock may not be clearly seen, there is a dark peak over the southern side of Hout Bay, which being brought on with Elsey Peak bearing N.b.W., will lead clear, but close, to the westward of the Whittle Rock.

Remember there is no buoy on the Whittle Rock.

The bearings are magnetic. Variation, 29° 40' W. in 1860.

MEIER ROCK, Channel to Kemong Harbour, in Ta-ou Island, S.E. part, Coast of China. Dries at Low Water Springs.

Kemong, January 10th, 1860.

Sir,—I have the honour to report to you the existence of a rock not laid down in the Admiralty chart, sheet vii, of this coast (1843), nor mentioned in the *China Pilot*.

This rock is situated in the middle of the principal entrance of this port, and is only visible at low water spring tides. During my stay here, from the 18th December, 1859, to the 12th January, 1860, it was only seen twice, one or two feet above the water.

I took the following compass bearings from it, viz:—the East point of the rocks stretching from Quang-ta Island South, and the East point of the Island Nam-pan S.W.

As there are many European ships now engaged in the coasting trade of China, I thought it might happen that after my departure some other ships would come to this place. So I would not neglect to inform my brother seamen, by the medium of your valuable magazine, of this hidden danger. Before my arrival no European ship had brought a cargo here; but the Chinese shippers know the existence of the rock well enough.

I am, &c.,

FELIX MEIER,

Captain of the Hamburgh Barque Kingman.

To the Editor of the Nautical Magazine.

P.S.—As there is no name given to the town on the chart, I thought it best to send you a copy of the same with the name inserted, that you might find the place and the rock.

[Our best thanks are due to the captain of the Hamburgh barque *Kingman* for his attention to this important danger, and for taking the pains which he has done of making it known, as well as for correctly placing it on the chart.—ED.]

THORNDIKE SHOAL, Pacific.

[The shoal alluded to in the following notice, which we find in a recent number of the *Shipping Gazette*, does not appear to have yet taken its place in the chart. We shall be thankful for any report of it from our readers, and trust that when opportunity offers a verification of it may be obtained if it does exist, along with a confirmation or not of its position, as would not only enable us to lay it down with some approach to certainty, but also with some pretensions to its character and dimensions.—ED.]

Melbourne, 17th January.—The Master of the *Alice Thorndike*, which arrived here December 28th, reports a dangerous shoal: the West end of which was in lat. $6^{\circ} 24' N.$, long. $162^{\circ} 22' W.$

AUSTRALIA.—*St. Vincent Gulf*.—*Newly Discovered Danger*.

Notice is hereby given that a rock, awash at low water springs, has been discovered in the upper portion of *St. Vincent Gulf*, on the eastern shore, within six miles of the beach.

The following bearings were taken from the position of the rock, which is marked by a Black Nun Buoy moored outside the rock in eight feet at low water:—Mount Lofty, S. 40° E.; the Hummocks, N. 10° W.

Navigators in beating up or down the gulf should carefully avoid this danger, and not stand in under three fathoms at low water, the rise and fall at springs being nine feet.

B. DOUGLAS,

Master of the Trinity House.

Trinity House, South Australia, December 17th, 1859.

[We repeat the foregoing as received, but should like to have the bearings of some other conspicuous objects named in the chart, especially of Mount Barbara, and perhaps Mount Rat, on the peninsula or western shore, before finally placing it on the chart.—ED.]

It is reported that the *Lord Raglan* struck on a rock three miles S.E. of Port Mengroal in March last, and is lost. She was on her way to Kurrachee, but as no such place appears *yet* on the chart we shall be thankful for any information concerning it.

VOLCANIC REGION NEAR THE EQUATOR IN THE ATLANTIC OCEAN.

We have had to refer to this subject in the course of our pages, and preserve the following interesting addition to it from the report in *Mitchell's Maritime Register*. The great earthquake of Lisbon was felt at the Canaries, a distance above 700 miles:—

Report of the ship *Florence Nightingale*, Gales, from Liverpool for Arica and Islay, at Stanley Harbour, March 12th, 1859:

Sailed from Liverpool January 1st. Passed Tuskar Light on the 3rd. Passed Madeira on the 12th. On the 25th, St. Paul Rock lying in lat. 0° 55' N., long. 29° 23' W., bearing N.W.b.N., distant about ten miles, we experienced a severe shock of an earth (or sea) quake. It commenced with a rumbling noise like distant thunder, and lasted about forty seconds. I am perfectly familiar with earthquakes, having experienced many on the West coast of America; but I never felt one so severe as this. Glasses and plates jingled so much that I wonder they held together. Several articles were shaken from

off the after hatch, and the ship felt as if grinding heavily on a reef of rocks. The cry of "The ship's ashore!" burst simultaneously from the lips of all on board, and the watch below came tumbling up in great haste. I was very much startled, and ran to the ship's side to look for bottom; but soon recovering myself, I allayed the panic by explaining that it was only an earthquake. The first of the morning the sky was clear; the clouds thickened towards noon, and at the time of the earthquake it was densely overcast, sultry, and oppressive. The sea had been short and irregular, but was succeeded by a heavy swell from N.E., which lasted several days. I do not know that there can be any connection between the quake, sea, and sky; it may be merely a coincidence. I state only the fact. Temperature of the sea $80\frac{1}{2}^{\circ}$, no difference from the shock.

On February 24th, in a heavy gale, we passed Staten Island. From this time we had a succession of hard gales from S.W., attended with much hail. On March 2nd, in lat. $56^{\circ} 30' S.$, long. 66° , we were struck by a sea, which carried the rudderhead away, and I was compelled to bear up for Stanley Harbour, at which place I put in on the 5th.

Now, one word respecting the facilities for repairing ships in the Falkland Islands:—There is not a piece of wood that will make a mainpiece for my rudder,—which I have been obliged to scarf. Carpenters' wages, £1 per day; blacksmiths' work can be done; pilotage in, 4s. 6d. per foot; out, 1s. 6d.; water, 2s. 6d. per ton; beef, 3d. per lb.; mutton, excellent, 6d. per lb.; vegetables, cabbages and turnips, 3d. per lb.; wild geese, 1s. each; rabbits, 5d. All parties afford every assistance to a ship in distress, but the carpenters' wages are really too high. I am credibly informed that these men work on shore at from 6s. to 8s. per day, but when a ship really requires them they will not work under from 16s. to £1.

Port William, the outlet of Stanley Harbour, is very easy of access, but, in consequence of the lowness of the land, is but a blind port. It lies to the North of Cape Pembroke, on which is a lighthouse. By standing well in and then going aloft, a bird's-eye view of the place can be obtained: it stretches beyond you like a lake, the projecting points and islets standing out in clear relief. I name this because several mistakes have occurred.

Wind appears to be the great drawback to Stanley Harbour. There is usually through the day half a gale blowing, even with a tranquil sky and when outside it must be nearly calm. I ought perhaps to name that Mr. Lane, the manager of the Falkland Island Company, is making every effort to render this harbour such as will induce ships to call wanting provisions or having received damage, and he hopes soon to be able to erect a patent slip,—a thing which, notwithstanding all notices, has never existed here yet.

[We commend the above remarks to the attention of those who think about laying down electric cables in the Atlantic. Besides this they will find many more of the same description in the pages of this work.—ED.]

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

- Ireland, West coast, Donegal Bay, with view, Capt. G. A. Bedford, R.N., 1853, (5s.)
 Mediterranean, Adriatic Sea, Cape Promontore to Grossa Island, (3s. 6d.)
 Mediterranean, Adriatic Sea, Grossa Island to Porto Rogosnizza, (3s. 6d.)
 Mediterranean, Adriatic Sea, Porto Rogosnizza to Melida Island, (3s. 6d.)
 Brazil, Maldonado Bay, Mr. Krabbé, Master, R.N., 1859, (1s.)
 East Indies, Sumatra Island, West coast, 2 sheets, Lieut. Edeling, Dutch Navy, 1857, (each, 4s.)
 New Zealand, Manukau Harbour, Comdr. Drury, R.N., 1853, (5s.)
 Nova Scotia Pilot, Admiral Bayfield, 1859, (1s. 6d.)
 British Lights, corrected by Comdr. Dunsterville, R.N., to April, 1860, (1s. 6d.)
 North coast of Europe Lights, corrected by Comdr. Dunsterville, R.N., to May, 1860, (1s.)
 Mediterranean Lights, corrected by Comdr. Dunsterville, R.N., to May, 1860, (1s. 6d.)
 West India Lights, corrected by Comdr. Dunsterville, R.N., to April, 1860, (1s.)
Admiralty, April 20th, 1860.

New Books.

PRACTICAL SAILING DIRECTIONS and Coasting Guide from the Sandheads to Rangoon, Maulmain, and Akyab, &c. By N. Heckford. Coard, Holborn.

There are not many more dangerous pieces of navigation for ships that have not yet fallen under the investigation of the maritime surveyor than the gulf of Martaban, where a tide of 5 and 6 knots is occasionally to be found setting among sands and channels of which our charts give us nothing. And yet this is within a very few days sail of the great capital of our East India possessions. Captain Heckford, with a large stock of experience in those unknown waters off the mouth of the Irawaddy, and a plausible and commensurate amount of zeal in favour of his brother seamen has with great credit to himself published it in the above convenient form. Such as the chart is he has added to it soundings and observations taken by himself, and compiled a valuable set of directions which embody that experience. In fact, the seaman in command of a ship bound to Rangoon, Akyab, or thereabouts, will be grateful to Captain Heckford for this valuable compilation, to which we perceive he has added directions for the entire bay of Bengal. We shall be glad to find this dangerous navigation taken up by our East India maritime surveyors: but, however they may lay down the coasts and define the limits and depths of the channels of the Irawaddy, they will profit by the directions of Captain Heckford, and cannot but preserve them for the navigator.

THE
NAUTICAL MAGAZINE

AND

Nabal Chronicle

JUNE, 1860.

THE ANDAMAN ISLANDS,—*Bay of Bengal.*

The Andaman Islands, in the South-East part of the bay of Bengal as they appear on the chart, are very well known to seamen. But there is little to be added to their very limited stock of information concerning them from our best gazetteers, and that little has perhaps been derived more from the occurrence of wrecks on their coasts than any other cause. Providence, however, who wills all the affairs of this world, brings them about by various means, and the acquaintance we shall now gradually obtain of this group, passed and repassed every day by our ships, may add another proof to the truth of the old adage,—“’Tis an ill wind that blows no one good.” The Indian mutiny had its ample share of evils, and as banishment was one of the punishments assigned to the mutineers, deserters, and rebels concerned in those evils, the Andaman Group appearing to be well adapted for such a purpose, a commission was accordingly appointed to proceed there and report to the Indian Government on the subject. That report, with its appendix of interesting and useful intelligence, is now before us, and our first extract shall be the report itself,—to be followed hereafter by some others that will be no less interesting and useful of that ill known group of islands.

This singular and interesting group, placed in the track of one of the greatest commercial highways of the world, is chiefly remarkable
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for its complete isolation from the civilization and progress by which it is surrounded, and for the ill-defined terror with which it still continues to be regarded by the mariner.

The sum of our knowledge of the Andamans may be stated in a few words.

They are a collection of islands, surrounded by most dangerous coral reefs, which are gradually forming innumerable islets as each becomes lifted above the surface, and which are peculiarly perilous to vessels in their vicinity, in the violent hurricanes that occasionally sweep across the bay of Bengal.

They are covered to the water's edge with the dense and luxuriant vegetation of the tropics, and enclose some of the grandest and most picturesque harbours in the world.

They are essentially volcanic in character, hilly on the eastern coast, and a collection of flat salt marshes on their western aspect, where the vegetation is less luxuriant and the hills gradually subside into small hummocks.

They are extremely deficient in animal life, and the birds inhabiting them are comparatively few; but the reefs and bays abound in shell and other fish.

The most singular feature connected with them is, however, the paradoxical race by which they are scantily peopled.

It is impossible to imagine any human beings to be lower in the scale of civilization than are the Andaman savages. Entirely destitute of clothing, utterly ignorant of agriculture, living in the most primitive and rudest possible form of habitations, their only care seems to be the supply of their daily food.

Their inhospitality and implacable hostility to strangers, with their reputed cannibalism, have caused them to be regarded with terror and aversion by all who have approached their shores.

The little that is known of their manners and customs proves them to be without religion or government, and that they live in perpetual dread of the contact of any other race.

Their origin is a mystery which will probably never be solved, as the traditions of so absolutely barbarous a race, if they have any, are not likely to throw light upon such a question.

The earliest authentic account of them is that of the two Muhammedan travellers, which has been so often quoted. It is subjoined, as extracted from Pemberton's *General Collection of Voyages and Travels*.

“Beyond these two islands lies the sea of Andaman: the people on this coast eat human flesh quite raw; their complexion is black, their hair frizzled, their countenance and eyes frightful, their feet are very large, and almost a cubit in length, and they go quite naked. They have no sorts of barks or other vessels; if they had, they would seize and devour all the passengers they could lay hands on. When ships have been kept back by contrary winds, they are often in

these seas obliged to drop anchor on this barbarous coast for the sake of water, when they have expended their stock: and upon these occasions they commonly lose some of their men.”*

It is abundantly evident that these travellers did not themselves visit the Andamans, and that their account is borrowed from the tales current in neighbouring countries at the time. The natives of these islands most probably possessed canoes long prior to the period referred to.

The following description of the Andamans and their inhabitants, extracted from Hamilton's *Account of the East Indies*, contains a more specific and apparently trustworthy description of their habits than that of the Muhammedan Travellers.

“The islands opposite to the coast of Tenasserim, are the Andamans. They lie about eighty leagues off, and are surrounded by many dangerous banks and rocks: they are all inhabited with cannibals, who are so fearless that they will swim off to a boat if she approach near the shore, and attack her with their wooden weapons, notwithstanding the superiority of numbers in the boat, and the advantage of missive arms of iron, steel, and fire.

“I knew one Fergusson, who commanded a ship from Fort St. George, bound from Malacca to Bengal in company with another ship, going too near one of the Andaman Islands, was driven, by the force of a strong current, on some rocks, and the ship was lost. The other ship was driven through a channel between two of the same islands, and was not able to assist the shipwrecked men; but neither Fergusson nor any of his people were ever more heard of, which gave ground to conjecture that they were all devoured by those savage cannibals.

“I saw one of the natives of these islands at Atcheen, in anno 1694. He was then about forty years of age. The Andamaners had a yearly custom to come to the Nicobar Islands, with a great number of small praws, and kill or take prisoners as many of the poor Nicobarians as they could overcome. The Nicobarians again joined their forces, and gave the cannibals battle, when they met with them, and one time defeated them, and gave no quarter to the Andamaners. This man, abovementioned, when a boy of ten or twelve years of age, accompanied his father in the wars, and was taken prisoner, and, his youth recommending him to mercy, they saved his life and made him a slave. After he continued so three or four years, he was carried to Atcheen to be sold for cloth, knives, and tobacco, which are the com-

* “It is most certain that, upon a strict inquiry, most of the stories of man-eaters have been found to be fables void of all foundation; but it must be allowed, in regard to our author's account, that what he says has never been disproved; for the very latest accounts we have of the Indies give these people the same character that he does.”

The travels of two Muhammedans through India and China. Pemberton's *General Collection of Voyages and Travels*, London, 1811, vol. vii., p. 183.

modities most wanting on the Nicobars. The Atcheeners being Muhammedans, this boy's patron bred him up in that religion, and some years after, his master dying gave him his freedom; he having a great desire to see his native country, took a prau, and the months of December, January, and February being fair weather, and the sea smooth, he ventured to the sea, in order to go to his own country, from the islands of Gomas and Pulley-vey, which lie near Atcheen. Here the southernmost of the Nicobars may be seen, and so one island may be seen from another from the southernmost of those to Chetty-Andaman, which is the southernmost of the Andamans, which are distant from Atcheen about an hundred leagues. Arriving among his relations, he was made welcome with great demonstrations of joy to see him alive whom they expected to have been long dead."

"Having retained his native language, he gave them an account of his adventures; and, as the Andamaners have no notions of a Deity, he acquainted them with the knowledge he had of a God, and would have persuaded his countrymen to learn of him the way to adore God and to obey his laws, but he could make no converts. When he had staid a month or two, he took leave to be gone again, which they permitted, on condition that he would return. He brought along with him four or five hundred weight of quicksilver, and he said that some of the Andaman Islands abound in that commodity. He had made several trips thither before I saw him, and always brought some quicksilver along with him. Some Muhammedan fakirs would fain have accompanied him in his voyages, but he would never suffer them; because, he said, he could not engage for their safety among his countrymen. When I saw him he was in company with a Seid, whom I carried a passenger to Surat, and from him I had this account of his adventures."*

This account, however, will not bear strict analysis, and is evidently a mixture of fiction and fact, from which it is difficult to extract the truth.

The writings of Blair, and the chapter in Col. Symes's *Embassy to Ava*, with the extracts from Colebrooke's *Journal*, are the earliest reliable authorities to which we have access.

The latter published a vocabulary of the language of the Andamaners, which will be found in the Appendix, and which, if correct, would seem to prove the existence of different dialects in the Great Andaman, for not a single word of it was understood by the individual brought to Calcutta in January, 1858.

In the *Calcutta Monthly Register* for November, 1790, is a brief account of the Andamaners, evidently written by one of the surveying party. It is worthy of reproduction, as the work in which it appeared is scarce and somewhat inaccessible, and as it contains the remarks of an intelligent trustworthy observer. It fully corroborates the statements of Blair and Colebrooke.

* Hamilton's Account of the East Indies. Pinkerton's vol. viii., pp. 430, 431.

“The Andamans are on the eastern side of the bay of Bengal; they bear about S. $\frac{1}{2}$ W. of Point Negrais, about 130 miles distant. The Great Andaman extends in length nearly North and South about two degrees and a quarter of latitude! viz., from 14° to $11^{\circ} 45'$ N. The Little Andamans are a cluster of islands in the latitude of about $10^{\circ} 30'$ N. The longitude of the Andamans is about six hours and eight minutes East of London.

“These islands, from their situation and appearance, had long been considered by navigators as possessing no importance; they were, therefore, little known or attended to by our eastern rulers. Pulo-Penang had been given by the King of Quida to Mr. Light, and by him to the Honourable the East India Company; and a settlement had been recently established there, when the Hon. Commodore Cornwallis, with the squadron under his command, arrived in India.

“Shortly after the commodore’s arrival, the harbour of this new settlement and that of the Great Andaman, were minutely and accurately surveyed, by order of the Supreme Government, and the proper officers ordered on that duty; but the particulars of their official reports, or the consequent intentions of government, have not yet been made public.

“Port Cornwallis is situated on the eastern side of the Great Andaman, and is discovered to be a noble capacious harbour, with most excellent anchorage, and capable of containing three hundred sail of ships of the largest size or greatest burden.

“The face of the country is covered with lofty trees and thick underwood; the former affording most excellent timber either for domestic uses or shipbuilding. The soil, however, is excellent; and if we may judge from the experiment made by the gentlemen of the fleet, who cleared a spot of ground, and upon sowing various seeds, found them thrive beyond their expectation, it is capable of bringing all vegetables to as great perfection as any other part of India can boast.

“From the temperature of the climate, we are led to imagine, that upon a further trial, we shall rather be induced to confirm than to alter this opinion. During the S.W. monsoon a cool steady breeze constantly predominates, and at the other part of the year, when the N.E. monsoon sets in, the wind is sometimes intensely sharp during the night, but decreases into a gentle sea breeze during the day. As a convincing proof, however, of the salubrious air and healthy atmosphere with which heaven has blessed this hitherto forlorn part of the globe, we need but instance that out of two hundred men belonging to a ship upon this voyage, towards the close of last year, there was not a single invalid; but, on the contrary, several who had left Bengal with troublesome complaints, were completely restored to health very shortly after their arrival.

“The manner in which these islands were peopled, is a matter of mere conjecture. We are told, that when the Portuguese had a settlement near Pegue, two of their ships, with cargoes of slaves on board, amounting in number of men and women to 300, were cast

away there; and as the inhabitants are of the Coffree cast, it must be allowed that probability favours this opinion or conjecture. They are a strong robust set of Coffrees, and in their appearance and mode of living, resemble much what Cook describes to us of the inhabitants of the S. W. part of New Zealand. Both men and women go entirely naked; the former armed with bows and arrows, which they employ in shooting fish for their subsistence. In this instance we perceive a want of instinct, which neither fails the rude inhabitants of New Holland, the simplicity of those of the Sandwich Islands, nor the gloomy uncultivated mind of the Nootka Sound men; who all employ some kind of a hook and line for the purpose of catching fish. The women at low water wade the mud flats and search the reefs for cockles and other shell-fish; and as the tide rises, they retire to their huts to roast this casual provender. When a supply of fish fails them, they roam into the woods in quest of wild hogs and rats, (the only animals that were perceived in that country,) and which they are sometimes fortunate enough to procure, as the bones about their huts testify. These are, however, by no means plenty, and it is to be supposed, from the few that were seen by our people, that they are a *dernier* resort, when the calls of hunger are very pressing.

“So far, we have been able to give a brief account of the origin and manner of living of these people; who are probably destined by the hand of Providence to come under our protection, and to participate in the blessings of civilization. The shyness they have hitherto shown, and the want of confidence they have betrayed, may easily be accounted for; nor is it to be doubted, but that when once they experience the advantages of commerce, and the benefit of our friendship, our intercourse will be permanent; and that they may be taught to enjoy the fruits of a well directed industry and a civilized government.”*

The inhabitants are dwarf Negrilloes, strong and robust when their supply of food is abundant, as it was during the time of our visit; intensely black; and possessing most of the physical characters of the true Negro, with the exception of the projection of the heel.

The individual captured at Interview Island was singularly quiet and docile, imitated readily the acts and gestures of those by whom he was surrounded, and never from first to last exhibited the smallest indication of ferocity.

Two of the unfortunate savages killed in our encounter at South Reef Island, whose bodies were brought on board the steamer, exhibited the same characteristics as their captured comrade. They were more robust, but of about the same height, and in all respects corresponded with the Negrilloes of ethnologists.

The photographs taken in Calcutta were sent to Baron Alexander von Humboldt, by whom the individual was declared to belong to the type above mentioned.

* *Calcutta Monthly Register, or, Indian Repository*, November, 1790, pp. 15—17.

Of the vocabulary of the Andaman language published by Colebrooke, and reproduced in this brochure, not a single syllable was intelligible to the savage brought to Calcutta.

Of the Malayan, Burmese, Chinese, and other eastern tongues, he seemed to be equally ignorant, nor did he comprehend a word of the several African dialects spoken by the Seedies in the service of the Peninsular and Oriental Company with whom he was confronted. The most simple terms were employed, such as the expressions signifying fire, water, food, eyes, nose, mouth, head and hand, hunger and thirst: but in vain. He himself applied distinctive terms to all, from which he never varied. They did not correspond with any known written or spoken language which could be brought to bear upon him.

He unfortunately sickened so rapidly and unexpectedly, as to afford no time to prepare a vocabulary of those terms which he was in the habit of using daily to designate objects presented to him, and to make known his wants.

His imitative powers were great, he rapidly learnt to dress and wash, and always behaved with propriety and decorum.

He exhibited great tenderness towards and affection for young infants, whom he caressed with as much gentleness as the most civilized being could have shown.

When his own photograph was shown to him, he laughed heartily at it, and called it *Jack*, the name by which he was himself known. He never turned a picture upside down, and always looked behind it to see the remainder of the figure.

His mode of salutation was to take the hand of the person whom he addressed, and to blow upon it, humming a sound like *ooh*, prolonged for some seconds, and uttered in a cooing tone.

With the use of tobacco he was evidently unacquainted, and the first quid given to him by a sailor he swallowed, without apparent nausea or distress of any kind. I would not permit the experiment to be repeated.

He mounted stairs with a good deal of dread, and an evident feeling of insecurity and wonder.

He had the short, quick, chuckling, joyous laugh of the Negro races, and, when not sick, was always good humoured.

He went to sleep at sunset, and arose at sunrise, with the utmost regularity, and, until he lost his health, never slept during the day.

In mending and making nets, in fastening on the iron barbs of arrows, and in the use of his native adze, he was clever and handy. He learnt to holy-stone and wash decks, and always seemed anxious to do something.

As there is undoubtedly occasional communication with the Andamans by Malays and Burmese, it was surprising that he did not understand a word of Malayan or Burmese, or appear as if he had ever seen such people before.

Of the existence of cannibalism we found not the remotest trace in any form, or in any of the many localities explored.

Since the re-occupation of Port Blair, several of the convicts have

been killed by the Andamaners; but in no single instance do the bodies or any part of them appear to have been devoured.

The late Mr. Piddington mentioned to me that, some thirty years since, he was anchored off Landfall Islands, and seeing a large fire on a sandy beach, with a number of savages around, he landed with an armed party, after dusk. The savages fled on his approach, and he found a human body on the fire, too much charred for identification, and apparently undergoing cremation. It could not have been intended for food, as it was nearly reduced to a cinder, and quite unfitted for a cannibal banquet.

If they ever resort to human flesh, which I very much doubt, it can only be under the pressure of extreme hunger.

The only commercial purpose for which the islands would seem to have been frequented, heretofore, was for the *beche de mer*, or Holothuria, abundant on every reef, and for the edible nests, which we found in some of the caves visited.

In most of the canoes captured, we found a considerable quantity of dammer, in some cases made into torches.

With the exception of their bows and arrows, canoes, nets, paddles, a twisted cord which they wear round the waist, nails beaten into thin knife blades, and an adze, we found no manufactured article of any sort.

Their arrows were barbed with iron with much ingenuity, and were truly formidable weapons; carrying straight, and with considerable force to a distance of forty yards. Beyond this, they were innocuous, and in no single instance did we find them to be poisoned.

In the excavation of their canoes they now use an adze, and do not scoop them out with fire, as appears formerly to have been the case.

In their villages, which usually enclose an open central space, was invariably one hut, built and roofed in with much more care and attention than the remainder. It was generally richer in pigs' and turtle skulls, was square in form, and was most probably the abode of the head man of the party. In all the instances in which we came in contact with them, there was evidently a local chief whom the rest obeyed, and from whom they obtained their orders to fight or run away. At Craggy Island, the commander brandished a formidable looking spear, and was followed by a henchman, who carried his bows and arrows.

They are evidently a bold, hardy, crafty race, extremely active, possessing many of the qualities of the African type, and susceptible, under the influence of civilization, of becoming an intelligent and an industrious population.

It was my intention to have embodied in this preface a condensed account of such shipwrecks on the Andamans as have occurred of late years, and of which I believed that authentic particulars were procurable.

In this I have been entirely disappointed. No information of any kind is procurable even of the singular wreck of the *Briton* and

Runnymede, with portions of H.M. 50th and 80th Regiments on board. It occurred a few years since, and many of the survivors are probably now alive. It was, doubtless, officially reported to the government at the time, yet not a trace of such record can be found. A diligent scrutiny of the newspapers of the time might possibly have exhumed some particulars; but for this I have not the necessary leisure. The place of the wreck on one of the islands of the archipelago, is indicated on the chart prepared by Lieut. J. A. Heathcote, who accompanied the expedition.

Since the re-occupation of Port Blair as a convict settlement, Ross Island, Chatham Island, and a portion of Viper Island have been cleared and occupied. Great sickness, as might have been expected, has occurred among the convicts and all who lived on the newly cleared grounds. The diseases are apparently identical in character, intensity, and mortality, with those which followed the early occupation of Arracan. In the Terai of Bengal and Behar, newly cleared lands are not deemed habitable for a couple of years after they have been prepared for cultivation. The inhabitants of such places invariably sleep on muchaus raised high above the ground.

It is somewhat singular that in the year 1858, the sickness and mortality among the Bengal and Behar convicts at Akyab, have been nearly as great, and of identically the same type as at Port Blair. Fevers, diarrhœas, and low forms of ulcer, degenerating into gangrenous sores, committed as great havoc in the old settlement as they have done in the new.

In some of the sickly years in Arracan, the mortality among sepoys, well paid, well fed, and suffering from none of the depressing agencies which render rebels and mutineers an easy prey to malaria, amounted to seventy-five per cent.

Natives of India bear transplantation badly in all circumstances, and, as prisoners, have lost heart and hope, and succumb without a struggle.

In our expedition, the means taken to prevent sickness were to dissolve a grain of quinine in every man's coffee before he started in the morning; to see that each individual had a fit covering for the head; and to prevent any one sleeping on the shore between sunset and sunrise.

The land at Port Blair has been found singularly fertile. Water is tolerably abundant, and I have little doubt that, in a few years, the settlement will be as healthy as Singapore and Penang, and more healthy than Arracan, or our own Sunderbunds.

The savages do not seem to have fraternized with the sepoys, nor have they hitherto become more amicable than we found them.

The few runaways whom they have spared and treated with kindness, give a singular account of their manners and habits, but their descriptions do not appear to me to be sufficiently trustworthy to be accepted without corroboration. In one instance, they burnt the clothes of the deserter, and shaved his head with a piece of bottle glass. While the men were absent fishing, he was carefully guarded

by the women, to prevent his escape. On his return, he represented his captors to be a good humoured race, who had treated him kindly.

To guard against surprise, the exploring parties were always protected by an advanced and flank guard, and the charge of the rear guard to keep open our communication and to prevent our being cut off, was invariably entrusted to a careful officer. The movements of the savages were so stealthy and cautious, and the jungle so dense, that the earliest intimation of their presence was usually an arrow fired at an incautious or exposed member of the party. By never relaxing our precautions, we brought the whole of our party back in safety, and accomplished our perilous task with as little damage to our implacable opponents as it was possible to inflict to punish their aggressions upon us.

Of the courage and good conduct of our Naval Guard, and of the European crew of the *Pluto*, it is impossible to speak in too high terms. They had not been thoroughly trained to act together, and were, therefore, occasionally wanting in discipline. But we experienced no difficulty in preventing unnecessary bloodshed, and in stopping firing the moment aggression had ceased.

Our expedition was not marred by a single act of wanton cruelty.

The notes of Drs. Playfair and Von Liebig on Barren Island are extremely interesting, as throwing light upon the actual state of one of the most singular volcanoes in existence.

This will be found to differ considerably from the pre-existing published accounts, as contained in the writings of the highest authorities on the subject.

SAIGON,—Cochin China.

The city of Saigon is situated on the river of that name,* and is the most important commercial place of the Annamite empire, besides being the capital of the province of Tciampa. It is about fifty miles from the mouth of the river, in lat. $10^{\circ} 47' N.$, and long. $106^{\circ} 40' E.$ from Greenwich. The population is estimated at about 180,000 inhabitants, among whom are found a good many Chinese. It consists of two distinct towns, about three miles apart, with some scattered houses between them.

Binghai, on which is the citadel and the governor's palace, stands on the western bank of the river, while Saigon proper, the trading town, is on a narrow branch of it, but still navigable for boats of some tonnage. The two towns are about the same size. The streets, which are regular, run at right angles, are sometimes of a considerable width on the banks of the river and the numerous creeks which sup-

* The charts call it the Donghai River, and place Saigon in lat. $10^{\circ} 50' N.$

ply the town with water,—the houses are regularly built, but are very close to each other, and are constructed principally of bamboo and earth, and plastered with mud. They are thatched with rice-straw or palm leaf, although here and there some are tiled, but are seldom more than one story high. The best houses are those standing in the middle of a court-yard which opens into a street. Some of the streets of Saigon are paved with flat stones, and piers constructed of stone as well as brick extend along the river for nearly a mile. The citadel of Binhai was constructed by a French engineer, but is not quite finished. It is a quadrangular fortress, with ramparts and bastions, and demilunes, a regular glacis, an esplanade, and a ditch. When Mr. Crawford was there the guns had not arrived, although there were a few French pieces in the arsenal.

The interior of the citadel is well arranged. It has caissons, dwellings for the officers, and a house for the governor. The dockyard is situated at the head of a bay formed by a bend of the river, of tolerable depth, to the N.W. of the town. It is one of the most complete establishments of the kind in the country, and where a large number of junks and vessels of war are built. A number of large handsome buildings, (rice magazines,) the viceroy's palace, constructed of brick, form the other principal public buildings.

Saigon communicates with the River Camboja by a canal twenty-three miles long, eighty feet across, and twelve feet deep. The foreign trade which it keeps up, carried on principally with China and Siam, is less than that of Bangkok. The principal articles offered for sale in the shops, consist of Chinese porcelain, silk stuffs, paper, tea, &c. There are glass and very wide tissues, but it has little of European manufacture. The markets are well stocked with poultry, oxen, pigs, and other animals less adapted to the European taste, such as *dogs* and *alligators*. Fruits are abundant there, as well as fish, which are excellent. According to Mr. Crawford, Saigon is far preferable to Bangkok as a place of residence, and its environs consist of rice fields and areca palms. The land about Saigon is stated to be very fertile, and will make it hereafter the granary of Singapore at all times, and even of China in times of dearth. It is also stated that the natives about Saigon are superior to those of any other French colony; and in point of salubrity of climate, as well as in other respects, it is very superior to Touranne.

In adopting Saigon, to which place the whole establishment of Touranne will be removed on the 10th of May, the Emperor Napoleon is laying the foundation of a large naval establishment and a durable colony. The ground as yet occupied is limited, lying along a navigable river; but the natives are more tractable than those about Touranne, and are already entering into companionship with the colonists, and there is little doubt that in the course of time the Cochin Chinese, who are the same mercantile people as the Chinese, will become the friends of those who are contributing to their interests. The merchants of Singapore and Hong Kong are anxiously looking forward to the removal of the blockade.

The charts of this part of the world are in a deplorable condition,—indeed, for the little we do know of it we are indebted to French enterprise. One of the first results which we anticipate from this removal of the French establishment to Saigon will be a good chart of the navigable approaches to it, that will include in fact the whole of the unknown delta of that river, such as we are accustomed to from the well known friends of hydrographical science.—ED.

THE ICY ATLANTIC.

(Concluded from page 242.)

There is abundant matter for comment in the foregoing letter, but before we allude to it let us see some of the effects of not attending to the precautions adopted by Captain Hosken. Did ever the reader hear of the *Harvest Home*, of Newcastle, and what befel her on her voyage to Miramichi? or of the *Lady of the Lake*, of Aberdeen, on her voyage to Quebec, from Belfast, with passengers? Here is the account of those voyages:—

While on board of the brig *Lima*, on her voyage from Newfoundland, we heard the report of a gun on the morning of the 13th May, when in lat. $46^{\circ} 40'$, long. $46^{\circ} 55'$, and observed, through the fog, at some distance, a boat making to us from the edge of the ice. This was at first imagined to be the crew of one of the sealing craft whose arrival was anxiously looked for in St. John's. We immediately hove back our main-yard and lay to, when we discovered, on a nearer approach, the long-boat of the *Harvest Home*, which sailed from London about the 3rd of April last, under the command of Captain W. Hall, of Newcastle, with a crew of fifteen men; this boat, containing thirteen of them and one man from the *Lady of the Lake*, was then taken on board, and they communicated the following particulars:—

“On the 9th May, when going with foresail hauled up and topsails close-reefed, the *Harvest Home* was struck by a large piece of ice on the larboard bow, which broke both breast-hooks, stove in the cut-water and sides, and started the treenails and planks as far as the mid-strips. A mesh-net was speedily made of the best tow-line to protect her from further injury, and both pumps were kept going till Friday morning, when, about 4h. a.m., they found fourteen feet in the hold and the water still gaining on them. Being unable to stand to the pumps any longer, the captain (who had not left the deck for twenty-four hours, and had been on the bowsprit when she struck) ordered coffee for the crew, who were perfectly exhausted.

About 5h. a.m. they all thought it better to abandon her, with the exception of the mate, who seemed much attached to the captain. On asking for the long-boat, the captain declared that he saw no place for them to go to, but if they had make up their minds he would offer no

obstacle to their leaving. He allowed them some water and provisions, and then committed them to the care of Almighty God. They then pulled to windward, through the opening ice. After an absence of several hours, perceiving a pretty clear channel, they returned to the vessel, to ask the master and mate to join them; but both peremptorily refused. After an absence of a few hours, they once more returned, and repeated their request: the mate's reply was, "Not till she had turned the turtle." Some effort was made by the master to get the boys back, but they preferred staying by the long-boat. The master went aloft to look out for vessels. The mate had put on his best clothes, and got the jolly-boat all ready in the slings, with charts, quadrant, provisions, &c., on board.

As the men found all attempts fruitless to induce them to leave, and dreading the approach of night, they pulled in quest of a place of safety; which they at length found under the lee of an iceberg. As the cold was intense, the boys suffered much from cramp during the night. At daylight they observed a vessel a long way to leeward, for which they rowed. On getting about two-thirds of the distance, picked up an oar, which they perceived to be one belonging to the jolly-boat, but could not say whether it had been left in her when alongside, or been dropped from the ship in launching the long-boat. Found, on getting near, that she was their own vessel, from which they had drifted very far during the night. Her guard-boards forward were deep in the water, and she rolled heavily in the sea. Her ensign was perceived hoisted in the main rigging, union down.

As the skiff was no longer visible, they presumed that the captain and mate had left during the preceding evening. Edward Black and John Smith were sent on board for an additional supply of provisions, having only two bags of bread and a small allowance of rum and water. On their entering the cabin they saw the remains of food, which had been cooked during their absence. A cask of porter which was lashed under the steerage ladder had the head driven in, and a considerable portion of the contents seemed to have been drawn off. There was also some appearance of cooking having taken place in the caboose. One of the small kegs from the long-boat was then handed on board and filled with porter. This, with some fishing-tackle, was all that was taken from her by Black and his companion.

While they were on board, however, a boat, containing upwards of thirty persons, came under the opposite quarter. They appeared for the most part to be emigrants, three of whom were females. They showed great eagerness to get on board, and considered themselves rescued from a watery grave; till, on looking down the main hatch, they observed the water above the beams, ranging fore and aft over the ballast. They then made a rush for the boats, which lay off to avoid being swamped. The captain of the *Lady of the Lake* and, it is supposed, about ten of the passengers were in their long-boat, but quite unprovided with oars, water, or provisions. A few clung by the wreck, but a greater number slid over the chains and were drowned.

The crew of the *Harvest Home*, being anxious to recover their two companions, dropped under the stern, when Black and Smith swung down by a rope; several of the others attempted in vain to follow: one, George Jordan, jumped from the taffrail into the bottom of the boat, and nearly upset her. Observed five or six dead bodies, which were drowned in attempting to get into the *Lady of the Lake's* long-boat. Jordan, a poor lad who was shipped as a servant from Ireland, is supposed to be the only survivor from the vessel."

The foregoing refers to the hapless condition of the *Harvest Home*; now for that of the *Lady of the Lake*:—

"He states that the *Lady of the Lake* sailed from Belfast, with about 200 passengers, for Quebec; that they had boisterous weather all the passage; that on the morning of the 11th May, at 7h. a.m., they struck against a pan of ice. The shock was not at first much felt, and no danger was apprehended. On going below for provisions in half an hour afterwards, one of the men perceived water casks, &c., floating about the hold. A general cry was then made that the ship was sinking; some screamed in a state of delirium, others threw themselves on deck in the usual attitudes of devotion. The pump was double manned, but had no power to keep the water under. The mate and four men entered the jolly-boat, taking some canvas, with the avowed intention of stopping the leak; instead of doing so, they lay off to watch the fate of the ship. They had no provisions or water with them, indeed nothing but a bottle of rum. The captain made several attempts to recal them, but the mate only replied by waving his hand.

About five and twenty passengers, with the master and two of the crew, then got into the long-boat. Many were drowned in attempting to follow. With this number, however, she pushed off, without oars, provisions, or water, rowing the boat with the bottom boards. On getting about a mile from the *Lady of the Lake*, perceived her go down, and Jordan thinks that about 160 persons then perished. As night was approaching, the boat took shelter behind a block of ice; and on Sunday morning they perceived a brig, for which they pulled, and found it to be the *Harvest Home*."

These particulars differed in no essential point when stated by the man *seriatim* on board of the *Lima*. From all that can be learned, the greatest uncertainty still exists with regard to the hull of the *Harvest Home*, and the few emigrants who clung by her. Many of the crew think she must have burst in pieces shortly after they left her. The fate of the master and mate in her jolly-boat, and of the master of the *Lady of the Lake*, with the few emigrants and the mate of the same vessel, with his four companions, is shrouded in equal obscurity. The weather was very boisterous while the *Lima* was among the ice, and our own situation one of too great peril to permit the smallest chance of discovering any of these parties.

When in lat. 46° 20', long. 45° 40', spoke the *Buoyant*, of Newcastle, bound for Newfoundland; the master of which vessel kindly

received from us five of the men. The remainder were safely landed in Liverpool.

J. M'G., Passenger per *Lima*.

Liverpool, June, 1833.

Comment on the foregoing would seem superfluous. The case, one would suppose, too, is sufficiently dreadful to insure the utmost precautions being taken to prevent a repetition of it. But, alas, although it is said to be "never too late learn," that learning, to any good purpose, is either indefinitely deferred or it is insufficient to secure those precautions which would prevent them. But here is another case of wholesale suffering, which occurred in the spring of 1849, or thereabouts.

The unfortunate vessel (the *Hannah*) was a brig between 150 and 200 tons burthen, belonging to Maryport, and manned by a crew, it is said, of twelve seamen, under the command of Mr. Shaw, the master. On the 3rd of April she sailed from Newry for Quebec with nearly 200 emigrants on board, having previously been examined by her Majesty's emigration agent at that port. The emigrants chiefly consisted of agricultural labourers and their wives and children.

The passage up to the 27th, considering the season of the year, was as favourable as could be expected. The vessel then encountered heavy winds and a quantity of floating ice. The master, as well as possible, bore off, in order to clear it; but it floated round in huge masses, and on the morning of the 29th the unfortunate ship struck on a reef of ice of such magnitude as to carry away part of her bottom. It was about four o'clock when she took the ice.

The sounding of the pumps at once convinced the crew that the vessel was foundering, as there were several feet of water in her hold, and it was rapidly increasing. As the only chance of keeping the ship afloat, a cry was raised to keep to the pumps until assistance could be obtained from some passing vessel, as also, it is presumed, to allow the boats being prepared for the rescue of the emigrants. What steps were taken to secure their preservation, no mention is made in the report received; a charge, however, is laid against the master and the first and second officers of their having been guilty of one of the most revolting acts of inhumanity that can be conceived. They had got the life-boat out, and the moment they found the vessel would inevitably go down, they jumped into it and abandoned the wreck with the living mass on board.

Screams for help now rent the air, and it was with difficulty that the remainder of the crew could induce the frantic creatures to comprehend the only chance left of saving their lives. Fortunately the ice was firm under the ship's bows, and, the seamen convincing them as to its security, many got on it. Its solidity being then apparent, a desperate struggle took place among the emigrants to leave the wreck. Men, women, and children, with nothing on but their night attire, were to be seen scrambling over the mass of ice. Many of the poor

creatures slipped between the huge masses, and were either crushed to death or met with a watery grave.

The last to leave the wreck were some of the crew, who contrived to save a small portion of spirits and a few blankets. Soon after they had got clear, the ship's stern rose as it were above water, and she went down head foremost, just forty minutes after the collision with the ice. The sufferings of the wretched creatures, exposed as they were amid towering masses of ice, with a raging freezing gale of wind from the S.S.E., were most harrowing. The seamen who were amongst them humanely gave up what covering they had to the females, who had been shockingly wounded and bruised in their course over the ice. Thus were they exposed the whole of that day till five o'clock in the afternoon, when a vessel hove in sight, and bore down to the edge of the field of ice. It proved to be the barque *Nicarque* (also bound for Quebec), Captain Marshal.

The statement made by that gentleman relative to the steps taken by him and his crew for the recovery of the survivors, is to the following effect:—On the 29th, about half past six, the wind blowing a strong gale from S.S.E., and a thick fall of sleet, the ship laying to the windward of a large field of ice, Cape Ray being S.E.b.E. about twenty-six miles distant, discovered something on the ice, which subsequently turned out to be a flag of distress. Made all sail and, gaining the edge of the ice, found, to his astonishment, a mass of living people upon it. He got the ship's ice-fenders down, and prepared to take to the ice.

By seven o'clock got so close in that in the course of two hours he and his crew succeeded in getting hold of about fifty of the poor creatures and placing them on board his vessel. The remainder stood crouched together in another part of the ice some distance off, inaccessible from the position of the ship. Captain Marshal had all sails cleared up, and got a rope fastened to a piece of ice, and with the long-boat pushed off with his men to the spot. After considerable difficulty he succeeded in getting to the edge, where they remained huddled together. The whole of them were saved.

No pen, Captain Marshal observes, can describe the pitiable situation of the poor creatures. They were all but naked, cut and bruised, and frost-bitten. There were parents who had lost their children, children with loss of parents; many perfectly insensible. The number that got on board the *Nicarque* was 129, passengers and seamen. The greater part of these were frost-bitten. As far as Captain Marshal could ascertain from the survivors, those who perished by being crushed between the ice and frozen to death were from fifty to sixty. As soon as he had succeeded in getting all on board, the ship was got under way and proceeded in the direction of Cape Ray. Every comfort that his means and the ship's capacity afforded were placed at the sufferers' disposal.

The next day, meeting with the barque *Broom*, of Glasgow, twenty-seven of the poor creatures were transferred on board of that vessel;

and in the course of the following day forty-nine of the survivors, for the sake of comfort, were placed on board three other vessels. The *Nicarque* reached Quebec, where the remainder of the sufferers were landed.

The fate of the master and the others who took to the life-boat and abandoned the emigrants is not known.

It is related by Columbus when he discovered island after island after his landfall, that each island seemed to be larger and more beautiful than its preceding one; and here it seems that each tale is more dreadful and more harrowing to the feelings than that which precedes it. The case of the sufferers by the *Hannah* seems even more distressing than any of the former, and yet the lesson of precaution is not yet learnt. But we have another in the case of the *John Rutledge*, which seems even more dreadful still,—a prolonged, lingering scene of suffering, despair, and protracted death.

On the 20th of February the packet-ship *John Rutledge*, of New York, while on her voyage from Liverpool, struck upon an iceberg and sank, with the mate, carpenter, and thirty to thirty-five passengers on board. The only information with regard to this disaster is derived from the sole survivor, Thomas W. Nye, of New Bedford, from whose account the subjoined narrative has been taken.

The *John Rutledge* left Liverpool on the 16th January, with 120 passengers, and a crew of officers and men numbering, we are told, sixteen persons. During the passage she encountered severe weather. One of her crew was washed off the bowsprit, and a male passenger was carried through the bulwarks by a heavy sea and drowned.

On the 20th of February the *John Rutledge* was struck by an iceberg, and was abandoned the same evening. Before leaving his vessel, Captain Kelly, finding that she leaked badly, manned the pumps with passengers and seamen; and, as the leak continued to gain upon her, had about 100 bags of salt and a number of crates of crockery broken out of the forehold and thrown overboard. Getting clear of the ice soon after, it was discovered that a plank was started from the forefoot, and an attempt was made to stuff the leak with blankets and rags. It appears that this was not very successful, as the captain subsequently decided to abandon the vessel. There were five large boats on board, in which 134 persons were to be saved.

When last seen the ship was down to her mizen chains in the water; and from the character of her cargo—salt, iron, and crockery—she probably went down in a short time afterwards. Of the thirteen persons in the last of the five boats, there were four women, one little girl, five male passengers, Mr. Nye, a Scotch sailor, and the boatswain, an Irishman. For the subsistence of these people there were only one gallon of water and six or eight pounds of bread. The mate had placed a compass in the boat, but his wife, in leaping from the ship, had broken it. Cast thus helplessly upon the open sea, among the fogs and mists of the Banks of Newfoundland, and surrounded by drift and berg ice, their prospect could hardly have been more gloomy.

Soon after the boat broke adrift night came on—how it passed may

be imagined. Little was said by any one, and probably all of them soon came to a sad sense of their dreadful situation, for as soon as Mrs. Atkinson entered the boat she seized the vessel containing the water, and, being a powerful woman, fought off all who attempted to obtain a drink from it. Nye got only two or three mouthfuls; the rest was drunk by herself and the boatswain. What disposition was made of the bread does not appear. The probability is that there was no organization whatever among the little party, but every one looked out for himself. Having no compass nor sign by which to steer, they did not exert themselves other than to keep the boat before the sea. The sailors were warmly clothed, as was also Mrs. Atkinson; but the passengers for the most part were scantily attired, and suffered keenly from the cold.

Day after day only dawned to raise their spirits anew with hopes of succour, which the long and dreary nights turned to the bitterness of despair. Thus time passed until the third day, when one of the little band, a man whose clothes were too thin to shield him from the bleak weather, sank under the combined effects of cold and hunger, and his body was committed to the deep. Then a woman died in the arms of her husband and little daughter, and her corpse was also silently dropped into the sea. The fourth day came, and with it the same angry sea, the same leaden sky—no ray of hope anywhere visible. The cold was so intense that it almost froze the marrow, and not a drop of water could be obtained, while only a small quantity of food remained.

Human nature could not bear up much longer against this exposure and privation, when, just as they were about to give up all hope, the wind lulled, and lo! a brig hove in sight. "She was not very far off," and they pulled for her with might and main. Signals were also made. For some time they seemed to gain upon her, but she did not see them, and, the wind freshening, she was soon out of sight. With her went all hope. A burning thirst soon fell upon all of them, and, heedless of young Nye's earnest appeals, they fell to drinking salt water. This only increased their thirst, and they drank eagerly and repeatedly of the fatal fluid.

What followed is the old story of delirium and death. One by one they grew mad and madder; besought each other to kill them; then they dreamed of sitting at sumptuous feasts, and spoke of the rare dainties which mocked their grasp, of the delicious beverages which they in vain essayed to quaff. At length, worn out with the intensity of their physical and mental sufferings, they grew more subdued, their haggard features became rigid, their wild eyes assumed a glassy look, and their shrunken forms seemed gradually to subside—the next lurch of the boat tumbled them off the seats dead!

Such were the sights which young Nye witnessed daily. As they died he threw their bodies into the sea, as long as his strength lasted. He says that, although his thirst was of the most agonizing character, he not only warned his fellow-sufferers against drinking salt water, but showed them how he obtained relief by simply rinsing his mouth

occasionally. They were hopeless and desperate, and would not listen to him. The boatswain grew delirious and died within twelve hours after drinking it. In his delirium he was most violent. He attempted to throw the oars overboard, and did succeed in throwing over the bucket with which they baled out the boat. Nye did his best to quiet him and stop him from drinking more sea-water; but he struck him a severe blow upon the chin. Mrs. Atkinson was also very violent; and being of a strong constitution, it was a long time before she expired. His recollection of events which occurred about this time is very indistinct.

On the sixth day there were only himself, a small woman wrapped up in two blankets, and the little girl alive in the boat. Before sunset the child died, and on the day following the woman breathed her last. He had strength enough to throw the body of the child overboard; but that of the woman, together with the bodies of three others, were so coiled up under the thwarts that he was unable to extricate them.

Feeling a strong sense of drowsiness creeping over him, he fastened a red and white shirt to an oar, and, hoisting it to attract any passing vessel, he coiled himself up in the stern of the boat and dozed away the hours. Occasionally he would rouse himself and bale out the boat, and then lie down again. He did not sleep, but the time passed in a kind of waking vision. Occasionally he felt light-headed, and began to dream of being at home in New Bedford with his family. Fearing that he too might be delirious, he fought against these influences, and kept himself awake by various means. At first the sight of his ghastly companions caused him much distress, and his mind became oppressed with gloomy forebodings. He resolved to shake these feelings off and hope for help even to the last, thinking it better to go to the next world with all his senses about him than to die a raving maniac. Thus resolved, he bore up bravely and to the end.

On the 28th of February a ship hove in sight of the lonely boy. He says that he saw her before those on board discovered him, and he was sure from the first that they would pick him up. That vessel was the packet-ship *Germania*, Captain Wood, from Havre, bound to New York. When Captain Wood descried the solitary boat he ordered one of his own quarter-boats to be lowered, and sent an officer to see what it contained. As they approached him poor Nye groaned, "For Jesus Christ's sake take me out of this boat!" They did take him out, with womanly tenderness, and, with the boat and its fearful load in tow, rowed back to the ship. The young sailor was quickly transferred to the comfortable cabin of the *Germania*, and his late companions were thrown into the sea. It is a wooden life-boat, about twenty-five feet long. After being thoroughly cleaned it was hoisted on board and brought into port.

Of the other boats of the *John Rutledge* no tidings have been received. Nye thinks that those were as badly off as he was, if not worse, and entertains but little hope that any of them would be picked up. Only the captain's boat was furnished with a compass, and it is probable that all of them were poorly provided with food and water-

The survivor believes that with plenty of these the majority of the people in his boat could have endured the cold until they were picked up.

These are harrowing tales but they are no less true, and such facts stand on record as so many solemn warnings to the mariner;—we say the mariner, and mean him who has charge of the vessel and all on board, and whose duty it is to provide against their repetition with those precautions which, under a merciful Providence, are sufficient.

Shall we continue these tales of sorrow, suffering, and death? It would be no difficulty, for they have been too often repeated. But our tale is perhaps sufficiently lengthened already, and when we read of "masses of ice in the Atlantic exceeding any of the kind that have for many years been met with,—immense fields of ice, some hundreds of miles in extent, towering up in all manner of forms to a great elevation," (above 300 feet,) then may we fear that on those masses are some of our unhappy fellow mortals, perhaps suffering distress which no language can reveal until a protracted death becomes a merciful termination to their existence.

One naturally inquires what is the cause of all this suffering and death? Ice is well known to roam about a portion of the Atlantic, obedient to the winds and currents, as regularly as the seasons return; and although, as in most of these accounts, we generally read that ships were struck by icebergs, as if they sailed along faster than ships do, the fact is that ships strike them by running blindly against them from want of a careful precaution. For so little look-out is there kept in these times that if there are no icebergs to run against they will run against each other. There never was a period in the history of navigation that more abounded with collisions between ships than the present. The want of sufficient watchfulness *at all times, both night and day*, or, as seamen say, *a good look-out*, may be considered the first in the list of neglected precautions.

The next is that of not slackening the vessel's speed in fog or in the night, when it is not possible to see so far, with the greatest care, as by day. When this is the case, what guarantee is there for safety? A ship running at the rate of several miles an hour in fog is risking wilful destruction! All may be imagined security and quiet routine, and in a few minutes more that ship has become a helpless wreck, plunged into a mountain of ice, which is keeping her shattered form on the surface while her unhappy passengers and crew are falling the helpless victims of a want of care on the part of the captain.

It is a question with naval officers whether lying by or preserving a moderate speed is the best for navigating under these circumstances. In former days ships always lay by at night, a custom which was followed in the last war, and still is in H.M. ships, by reducing sail and making, as seamen say, a snug ship, and we never hear of such ships running into icebergs. A reduced rate of sailing, but yet such as to keep the ship under command, in the darkness of night or when overtaken by fog, is another which may be placed in the list of neglected precautions.

“ Wherever there is fog beware,
For danger sure is lurking there ! ”

When sailing in fog no careful commander ever neglects the usual fog signals made by ships to give notice of their approach, and he observes the foregoing precaution of reduced speed.

But there is another precaution which we fear is too often neglected, for in all the accounts of these distressing accidents nothing is said of temperature. It is well that ice will give notice of its approach by reducing the temperature of the atmosphere as well as that of the sea. We might advance page after page of testimony to this fact. But let the reader be contented with what Captain Hosken has said above,—
“ *The temperature of the water when within two miles of the first iceberg seen fell suddenly from 50° to 36°, air 40° to 36°.* ”

Here, we repeat, is ample warning to the careful navigator. Let the careless one ponder it well, and when he neglects it let him remember that from doing so he may have to answer for the loss of all on board.

It is a matter of some surprise, as it is certain that emigrant ships have to pass ice on their way to America, that an attention to the thermometer has not been insisted on by authority, and especially so since meteorological observations at sea have been more attended to of late than formerly. But whether to leeward or to windward of ice, the vicinity of it will always be indicated by this infallible monitor. Let him clearly understand that from a multitude of observations it has been established beyond all doubt that a navigator may discover his approach to these formidable dangers when he is at such a distance from them as to be able easily to avoid them, by attentively examining the temperature of the sea.

Here, then, we have whispered words of warning to the unwary wanderer on the “icy sea.” We have shown him the sad consequences which the neglect of those precautions that belong to the duties of those in whose charge he may be are sure to bring to pass. We have shown him that although it is artfully stated that icebergs strike against ships, that in reality ships run against them; the result of which, as we have seen, is severe and perhaps protracted suffering, generally ending in death! Will he profit by the lesson?

Earnestly do we hope he may by insisting, in all times and in all weathers, while he and those who are dearest to him in this life are embarked on their perilous voyage, that the same precautions, the same vigilance in watching and looking out for *approaching* danger be kept in the ship as is done in those of the state. The duty is easy and it should not be neglected. Then, and then only, will our ships cross the ocean in safety; and then, and then only, shall we no longer hear of the loss of life that annually occurs to spread desolation and woe among surviving friends and relatives, and to perpetuate a character for neglect of duty, and thereby the disgrace of British Seamen.

The following incidents which have recently occurred—*mere ca-*

sualties in maritime affairs—should be recorded as accidental illustrations of other risks besides those of ice alluded to in the foregoing:—

On the 20th of April the ship *Trafalgar*, 717 tons, laden with sugar and cigars from Manila, sprang a leak in lat. 30° N., long. 42° W. It appears that in moderate weather she was gaining heavily on the pumps, and on examination it was found that the auger worm had completely honeycombed her bottom. It was utterly impossible to repair the damage. In spite of every effort the leak increased—making four foot water in an hour, when all hope of saving the ship from sinking was lost. Two vessels happily hove within hail. The captain and crew, twenty-five in number, were picked up,—seventeen by a ship bound for Amsterdam, and eight by a barque bound for London. The latter were landed at Dover on Sunday, May 13th, during divine service, and were received at the Sailors' Home. The crew had not left the deck of the *Trafalgar* above five minutes before she gave a sudden fling and went down. The *Trafalgar* belonged to the firm of Dunbar.

Nearly a hundred wrecked crews of different nations have occupied the Dover Sailors' Home, where, with the assistance of the Ship-wrecked Mariners' Society, they have received every attention which their destitute circumstances required. The men were forwarded to London with a free pass, liberally granted upon all such occasions by the directors of the South-Eastern Railway Company.

The steamer *La Plata*, arrived at Southampton from the West Indies, saw a ship of apparently 700 tons, and coal laden, on fire on the night of the 19th March, in 21° N., 12° W. *La Plata* kept near her until daylight on the 20th, when the ship had burnt to the water's edge. No boats were seen, and as several vessels had passed to the southward on the previous evening it was supposed the crew had been saved.

But from accidents such as these we trust our emigrants will be free.

NOTES OF A VOYAGE TO THE PACIFIC IN H.M.S. "HAVANA,"—
Captain T. Harvey.

The usual preparations in H.M. ships being all completed for the service before her, and, among other additions to our navigation department, having received a copy of *Maury's Sailing Directions and Charts*, together with our chronometers, barometers, thermometers, hygrometers, and meteorological forms of journals, H.M.S. *Havana* sailed from Plymouth on the 13th of October, 1855, bent on contributing all she could for the benefit of science and her country. Touching at Madeira on the 23rd, we left it on the 25th. On No-

ember 2nd an incident occurred while exercising at quarters which was duly noted: our barometer was so shaken by the firing as to fall .66ths, and therefore we registered it with that error always afterwards. We crossed the equator on November 13th in 32° W., passing West of Fernando Noronha on the 15th, and anchored in Rio de Janeiro on the 24th.

In this passage Maury's charts were most useful, and by his advice we were induced to persevere in our southing, even when far West, and found that Captain Le Bris, of H.I.M.S. *Bayonnaise*, arrived the day before us, had had a much longer passage of fifty-seven days from Cherbourg by attempting to make easting. H.M.S. *Siren*, arriving four days after us, also made an excellent passage of thirty-seven days from Plymouth, also following Maury's directions, both crossing the equator in 30° W.

We found nothing more than is very well known at Rio de Janeiro, which we left at 9h. a.m., December 4th, 1855, for Valparaiso. We passed inside the Falklands to make the most of our winds; in doing which we had comparatively smooth water between them and the coast, and until passing the Straits of Le Maire had remarkably fine weather. On the last day of 1855 we found ourselves to the southward of 59° , just past the meridian of the cape, and arrived at Valparaiso at 8h. a.m. on the 21st January, 1856.

The French corvette *Bayonnaise* also arrived the same morning, having left Rio de Janeiro the day after us. She had made her passage to the eastward of the Falklands, beating us by one day,—Was it by going East of the Falkland Islands that gave her advantage in time as well as in wear and tear of ship, &c.? We think not.

At Valparaiso we found a Swedish clipper barque, the *Elconora*, commanded by the gentleman who had designed her, and who had built a yacht to compete with the celebrated *America*; but we never heard whether the match had come off.

Valparaiso, as much English as it is Spanish, we found as busy as ever. During our stay the weather was as fine as it usually is. But our work was before us, and we sailed on the 10th February for Juan Fernandez Island, that spot on the ocean fixed on by Defoe for the adventures of Robinson Crusoe, and which, after all, was no other than Ascension, conveniently situated from the Moorish coast, from which it appears that this hero of romance escaped, destined to win many a young heart for the sea.

We anchored in Cumberland Bay on the morning of the 15th, having run round the eastern end and found that the rock laid down in the Spanish plan supplied by Admiralty (chart No. 1383) could not be seen. Came to in twenty-six fathoms, sandy bottom; the winds light and baffling under the high land, making it somewhat difficult to get into a good berth.

In standing into this bay a ship should not open the fort flag-staff to the South of the patch of green bushes. The flag-staff on with the centre of this green patch and Salinas Point just shut in by the N.W.

point of the bay is the best anchorage, in about twenty-five fathoms. Our berth was with Salinas Head in line with the N.W. point, and the fort flag-staff bearing S. 42° W.

Abundance of fish is to be taken by hook and line: very fine rock cod, crawfish easily caught of very superior quality.

A German was superintending the island for a Chilian company, who it appears rent it from the government. Several families, amounting in all—men, women, and children—to fifty souls, are residing under his care, cultivating potatoes and other vegetables, stacking wood, and attending to cattle, which are fine and fast increasing. Good water is brought down to the wharf, which, since the Chilian government establishment for convicts has been broken up, is rapidly falling to pieces. During the last three years some twenty-five whaling ships have annually called for supplies, principally Americans. We procured beef of excellent quality, pigs, poultry, vegetables, and fruit at a moderate cost. The water is good and easily obtained. Peaches growing wild in surprising quantities, the trees breaking down with their loads of fruit.

Talcahuana, in Conception Bay, was our next place of visit. The trade of this place is fast increasing. The surrounding country having been cleared for growing corn, it is exported in large quantities to Australia and the Brazils. The average number of American whale ships which refit here annually has increased to seventy-five. There is a water tank here which holds thirty tons, and supplies ships at one dollar per ton. Beef, &c., at Valparaiso prices. Coals put on board ships in Ana Bay at six dollars per ton.

From hence we returned to Valparaiso, and sailed on the 11th of March from Coquimbo for the islets of St. Ambrose and St. Felix. The wind was light from the northward; and on the following day it increased to a gale (7 to 8) from North and N.N.W., with a heavy sea. This gale (of thirty-six hours) we afterwards found did great damage at Valparaiso. On the morning of the 17th we made Ambrose, closing it towards evening. There was too much surf on St. Felix to attempt a landing; but a boat succeeded easily in a small cove on the North side of St. Ambrose.

St. Ambrose, the easternmost island, is about four miles in circumference, and 1,500 feet high. A remarkable rock, resembling the Bass, lies off the East end of this island, with small rugged rocks to the eastward of it again; there is a pinnacle also off the West end.

St. Felix is eleven miles West from St. Ambrose, and consists of two islands connected by a reef, presenting from the southward the appearance of a double-headed shot. The West and S.W. sides of the northern island are steep cliffs, sloping down to beaches on the N.E. side; there is a place for landing just to the eastward of the N.W. bluff. The southern island is inaccessible, and about 600 feet high. About a mile and a half W.b.N. from the North point of St. Felix is a remarkable islet, which has been named Peterborough Cathedral; it lies in lat. 26° 16' 12" S., and long. 80° 11' 43" W.

From thence we touched at Caldera, Cobija, Iquique, Arica, Islay, Pisco, and the Chincas, where we observed twenty-nine ships at anchor.

Cobija.—Pack mules are the only means of transport from the interior, which prevents any extensive export of ore or wool. From the mountain top, a height of 3,300 (?) feet, there is a desert of forty-five leagues in extent without water or refreshment of any kind, unless left by the muleteers on their way to the port. It is crossed in two days. To Potosi, distant 540 miles, it takes fourteen days; but the Indians, on foot, by relays of men, carry the mail in six days. Indians so employed are exempt from the contribution that all others have to pay to the Bolivian government. These men chew the leaf of a plant called *choco*, on which they are said to exist a fortnight without food or drink. They are said to live to a great age. The leaf in appearance resembles the tea plant, is very bitter and pungent, is occasionally used medicinally as a decoction—but the first water is too strong, invariably causing inflammation of the stomach.

The Indians work in the mines at two rials a day (which is also their pay when serving in the army) and find themselves! The domestic servants in Cobija are Chinese, who have spread along the coast from Callao.

We rolled heavily, though in a good inshore berth. The landing requires care, and on a dark night is dangerous; even good swimmers would stand but a poor chance from the long strong kelp and swell. I heard that five men belonging to the French merchant brig *Obligado* were drowned here. The water used is distilled.

Iquique.—About fifty English ships load annually with nitrate of soda; average 20,000 tons. Silver and copper ore and bars also shipped, though in small quantities. The smelting establishments are at Yabri Caya, thirty leagues E.N.E. from the port, belonging to Messrs. G. Smith and Co. The ore from which the copper is taken is supposed to be the refuse from some workings by the Indians in search of silver some 400 years ago. It yields from 60 to 70 per cent. of copper. Some two millions of dollars are invested in the saltpetre (nitrate of soda) trade in this province, two thirds of which are English. The Americans have about eight ships annually, the free towns of Hamburgh, Bremen, &c., Danish, and Swedes have a considerable and increasing trade. The present demand is for 120,000 tons of saltpetre, though not more than 30,000 tons are to be procured, owing to the scarcity of labour, caused by sickness. The Chinese here are imported direct. They sign a contract to serve under those who engage them a specified time,—three, five, or seven years. The terms are drawn up in Spanish and Chinese,—so much wages, food, and clothing.

There are some copper mines on the plains a mile and a half off; the ore containing 60 to 70 per cent. A Mr. Williamson, an Englishman, has the working of them.

Everything is enormously expensive. Washing: half a dollar a shirt; sheets, tablecloths, &c., one dollar each. Water distilled from

the sea. Ice, imported American, threepence per pound. When loading in the United States, beef, mutton, fowls, vegetables, and other good things of the temperate zone are stowed with the ice, and on discharging in the Peruvian ports the purchaser takes his chance of the same as it is dug out with his portion of the ice.

There is a low fever resembling yellow fever now (April, 1856) raging, principally confined to the lower classes. The captain of the *Eleonora* (Swedish) died of it.

A short account of the Chinchas and their management, from a visit paid to them in 1853, may not be uninteresting. These three rocky islets, with a surface under 4,000 acres, lie about 120 miles North of Callao, the seaport of Lima, and fourteen from Pisco, on the mainland; the greater part being covered with guano, lying in strata, like a quarry, from thirty to a hundred feet deep, though many parts of the rocks are bare. The quantity of the guano is variously estimated; but it may be taken at twenty-four millions of tons, which, at £4 16s., the nett price up to 1856, would be worth over 115,000,000; or at £4, which may be considered its fair value, 96,000,000, or four times as much as the total sales under the Incumbered Estates Court in Ireland. In no part of the world are there so many valuable acres, each here being worth about £30,000. The guano is shipped by canvas shoots into the vessels or boats, the loss being estimated at 10 to 15 per cent., from *marqueras* or wicker hoppers, to which it is conveyed on rails.

A wharf has lately been erected on the North island, which will lessen the loss. When the ships go under the shoots the take in is 400 to 500 tons a day, though a vessel of 1,000 tons may be often ninety to a hundred days loading, owing to having to wait for her turn. A detention of at least a month is caused by calling at Callao for orders, and returning to it after loading, the voyage taking from eight to sixteen days to the islands. This might be saved by going direct to the Chinchas, as well as clearing from there, as provisions can be procured at Pisco, and abundance of water at Peracca, only sixteen miles distant. No doubt the Lima and Callao people will do their utmost to keep things as they are; but why should four or six weeks' time be lost to the shipping, causing so much expence to their owners in victuals and wages, when it could be avoided, which is equal to 25 per cent. of the homeward voyage. The shipping in this trade generally bring out cargoes and passengers to Australia and California, and coals to these countries as well as to Panama, Acapulco, Callao, and other ports, for the various steam companies, when freights are low in China and India, vessels sometimes come seeking.

There is a depreciated silver currency in use, worth only 3s. 4d. to the dollar, for which the shipowner suffers in the disbursement, being charged to him at 4s. 2d. Besides the deposits of guano here, there are said to be eight millions of tons on the Lobos Islands, with large quantities on the headlands and promontories of the coast, extending about 1,100 miles.

In 1853, Don Domingo Elias had the shipping contract about 40

per cent. over the tenders put in by Mr. Lloyd, though secured by the first British merchants in Lima. When we consider that on shipments of 400,000 tons this would amount to over £100,000 a year, and that the loss by the shoots would be at least 10 per cent. or 40,000 tons, worth over £190,000, we must form an odd judgment of the way the Peruvians manage matters. Had Messrs. Peto and Co., Dargan, or any of our eminent contractors, the shipment, they could supply one million tons a year more easily than under the present system. In fact, coals are mined and raised 600 to 1,000 feet in Northumberland at less than half the cost of the guano which can be railed down to the ships not half a mile distant.

From the government returns, in the Lima papers, the total shipments from the Chinchas up to the 1st of June, 1858, were 2,608,659 tons. The losses at sea equal to $1\frac{1}{2}$ per cent., which is a moderate insurance from Peru to Europe, being only one tenth of their estimate of the loss in shipping by shoots, which would amount to the enormous total of 416,000 tons, or worth, at the average sales to 1856, nearly two millions sterling!

During a visit of nearly three months to the islands, only two small vessels, with less than 100 tons, were loaded for the country, though it cost them nothing; this shows that what is easily procured is considered of little value, and that lime, common as it is in Ireland, and little valued, would be preferred in Peru to that which stands us so a high a figure. *Query*,—Do we lay sufficient value on our lime, gypsum, salt, and other native mineral manures which can be so easily and cheaply procured?

(*To be continued.*)

THE CITY OF JEDDO.—*By the Rev. H. Wood.*

Mr. Editor,—I have not the time to give your readers an elaborate description of the capital of Japan, which just now creates so much interest and inquiry, as well as the charming islands of which it is, both geographically and politically, considered the centre. A few notes, however, may gratify your readers, incomplete and hasty as they may be.

The great bay or gulf of Jeddo is entered by a strait about six miles wide, the land on each side of which is hilly and broken, and never rising into what can properly be called mountains. In approaching the strait, vessels run near the island Oosima, in the centre of which a mountain rises about 2,400 feet high, from whose top a crater sends up a great volume of smoke, while at the same time it escapes through various small apertures near the base. No flames having issued for many years. The bay opens in its full extent upon passing the strait,—a magnificent sheet of water, like a little inland sea, being almost square, and each side, as it is said, from twenty-five

to thirty miles long. Nothing can be more picturesque in a clear day than this bay, with the square sails of more than a thousand junks and boats spread to the gentle breeze, and the towns and villages close down to the shores, the cultivated fields and the groves lying back, and the great mountain cone of Fusi-ama, which rises into the clouds, and above the clouds, some thirty miles from the bay and about the same from Jeddo. A great mountain chain extends from one end of the island to the other, running North and South, some of whose peaks are seen occasionally covered with snow, while Fusi-ama, the "incomparable mountain," rises in solitary dignity, as if disjointed from the rest, and ashamed in its autocratic pride of being touched by inferiors. Some give 12,000 feet for its height, and others 16,000. The summit is always covered with snow, and for a great part of the year the deep ravines are filled with it, which were furrowed out in olden times by the torrents of descending lava. The summit is a vast crater, once overflowing with burning matter, and sending it down into the plains; but since the year 1707, the volcano has been inactive. The mountain seems to be utterly naked, no solitary trees dotting its sides, and no dark forests overhanging its precipices and cliffs, and even no grass giving life and beauty to its valleys. It is a *sacred* mountain to the Japanese, almost as much so as Sinai and Horeb to the Jews, far up whose sides they have built temples, to which the devotees resort in great numbers to fulfill their vows, and pilgrims to expiate their sins by acts of penance, the rich often going as beggars, clothed in rags, subsisting all the way there, and while there, and on their return, on the charities they receive. Almost all the articles of porcelain and lacquer, and their books and pictures, are ornamented with different views of Fusi-ama. Such sunsets I never saw as several times I did behind this mountain, when the skies for a vast extent seemed converted into gold, like the thick and rich work on the finest Miako articles, while the sun itself always seemed to linger and refuse to go down in the pride of showing his glory. It seemed to me that the Japanese must have borrowed some of their fine ideas of art from what they so often see in sunset behind Fusi-ama.

- Jeddo, or rather Yeddo, as the natives always pronounce it, is situated on the western coast of the bay, and nearly halfway between the northern and southern shore. Large vessels are obliged to anchor five or six miles from the city, on account of the shallowness of the water, and nothing is seen indicating one of the greatest cities in the world till, in approaching it, the five massive forts loom up a mile or two from the shore, assuring one that there must be a city, instead of a mere forest, as it seems, lying back to be defended.

On reaching the shore, a wall of hewn stones is seen built up eight or ten feet high above the water, and extending as far as the eye can reach, and as far as any of our party extended their walks. A street level with the top of this sea wall runs along its whole length, which is lined on each side with houses, the front part of the lower story being always used as a store or as a shop for mechanical purposes. There are no jetties or wharves or custom-houses so far as our walks

and observations extended; and when the tide is low, it requires in some places considerable effort to climb the ladders, or, clinging to the neck of some stalwart Japanese boatman, whose shoulders we have mounted, seize and mount a plank running out, supported by props at one end, and resting upon the sea wall at the other. Such in the introduction into this great city.

The five forts are nearly in a line, and are said to be well constructed by those competent to decide, and though mounted with cannon they are not of large calibre. These military works, as well as another large fort in the process of construction at Kanagawa, show that the Japanese are fully aware of the duties imposed on them by their new position since they have entered into fraternity with other nations. It is a sad commentary, however, on human nature, that the moment a *heathen* nation opens itself to commerce and intercourse with *Christian* nations, it is compelled, by the instinct of self-preservation, to put itself in a position to resist and repel them.

The new-comer feels a deep disappointment when he first plants his feet in Jeddo, and standing erect, and intently gazing in all directions in search of wonders, sees no Paris there, no London, no Rome, nor a single structure or monument worthy of a moment's observation; instead of this, he sees streets which are interminable, and generally wide and clean, but unpaved, with the most ordinary houses, seldom above two low stories, and always unpainted, while a part of every one is usually filled with small wares,—though nothing is seen like trade and manufacturing except on the smallest scale. He becomes disgusted, and indignant even, that he should have so deceived himself, or been deceived by others, and would at once return to his ship if it was convenient, or else had let the suspicion that there was something better urge him onward. One thing strikes him,—it is the number of trees, sometimes standing alone, but more frequently in small groves and groups, some of the trees being large in size and old with age, and tall as the tallest of the forest. Indeed the whole looks like a forest, or a city in a forest, buried in it and overshadowed by it as though all the population had turned monks and nuns, and converted the whole area of the city into a monastery or convent. As he proceeds in his excursions, in whatever direction he wanders, unexpected beauty and wonders meet his eye, and compel him to stop and admire. Just opposite our usual place of landing, on the opposite side of the street, is the residence of Mr. Alcock, the English minister, reached through a gateway, and acres of ground, with fine gravelled paths, and matted with green grass, and shaded with trees that seem not to have been planted, but to have started up into life ages ago; while far back, embowered in groves, and surrounded by artificial ponds gleaming with golden fish, with artificial knolls and hillocks, and cascades, and gardens filled with plants, shrubs, and flowers, are seen at length a fine temple and spacious houses once occupied by the priests, who have been routed, and given their beautiful and comfortable quarters to a highly honourable representative of European civilization and Chris-

tianity. Yet all this is unseen and unsuspected till one enters the gateway and wanders about the grounds, when he sees enough to occupy days in observation and admiring. Such is the case throughout the city. In several parts of it there are swells and hills and sharp declivities, the peaks of the hills being always covered with large trees, thus adding to the picturesque effect, and giving the idea of a city in a forest.

Several small rivers run through the city, and one of considerable size, which is crowded with boats and junks even in the heart of the city, and across which a celebrated bridge is constructed, which our party crossed, called Nepon-bas, or the "Bridge of Japan," because from this point distances are calculated to all parts of the empire. The bridge is well built and kept, and about 300 feet long.

Some of the streets of Jeddo are half a dozen rods wide, or even more, and though not paved, are kept remarkably clean, gutters being constructed on each side with hewn stone which carry off all foul matter. They are always straight, and cross each other at right angles; some of them are almost half a dozen miles long, and the houses the whole way on each side are so closely crowded together that sufficient space does not seem to have been left for another. Gates are erected at different distances which are guarded by policemen, who close them whenever they wish to stop a crowd. I did not see a row or a fight, or an altercation, in all my walks and rides in the city, nor even one instance of drunkenness. The Japanese, however, are fond of liquor, but have the modesty and good sense to drink it in their own houses and at night.

The Imperial Castle is to be seen only in the exterior by strangers, unless they are officials who have been invited by the imperial ministers for the transaction of public business, or for the sake of courtesy and honour. Commodore Tattnall, Captain Pearson, and Mr. Harris, U.S. Minister, were invited to make a visit to the Prime Minister a few days before we left, who went, accompanied by several other officers, and were most honourably received and sumptuously entertained in the Prime Minister's palace, but saw nothing within the sacred enclosure, in palaces and other structures, worthy of admiration, unless it was the simplicity and neatness. Even the palaces are but one story high, the constant recurrence of violent earthquakes making higher structures perilous. The roofs, instead of being covered with gold, as was once fabled, were covered with tiles, like those of common mortals, while the wood work within was only neatly varnished. The walls which surround the castle are thick, and above twenty-five feet high, over which nothing can be seen from without except the tops of trees, and some few houses through the gates when they happened to be opened. The circumference of the castle enclosure is said to be five leagues, which however seems to me an exaggeration, having twice ridden around it; should it be ten miles, which would be nearer truth probably, it still gives an impressive idea of Japanese majesty. The form of the area embraced by the castle is not a square or a cir-

cle, but an oblong, somewhat in the shape of a pear; nor is it a plain, but rises from the level of the river up a gentle slope of the hill, and spreads over the level above. From this elevated ground a grand view is had of nearly the whole city, spreading out below from the citadel to the bay, and in the other direction so far that nothing seems to be seen but this division of the city and great Fusi-ama beyond. Still not a spire is to be seen, or a tower; it is a vast expansion of roofs joined one to another, and glittering in the sun like the still waters of the great bay. A moat surrounds the castle, which is said in some parts to be seventy feet deep, and one hundred wide at the top, whose sides are walled up with hewn stone of the very best masonry, but without cement. The water is of considerable depth, in which flags and lilies grow in some places luxuriantly, while ducks and storks swim and wade with a fearlessness and bearing as if conscious themselves, if not of imperial blood, at least of imperial protection.

In this quarter of the city are the palaces of the *daimios*, or great princes of the empire, whose premises are very large, and fronted by a high wall, on the other side of which nothing is to be seen from the street except the roofs of the houses, unless when the gates are left open and the recesses disclosed. These palaces are built with roofs in the Chinese style, and all after the same model, though of different dimensions.

From the shore of the bay on the East to the boundary of the city on the West, is said to be thirteen miles; while from North to South the limits are not determined, there being no city walls or monuments to determine the limits, and the population being as dense for ten miles in each direction as in the heart of the city. Mr. Harris says there is nothing extravagant in saying the city covers an area twenty miles or even twenty-four miles long by twelve or thirteen wide. The amount of population is not known to foreigners; but the Japanese interpreters assure me it is known to the government, as the census is taken every year, and not only of the capital, but of every city, every town, and every village, the returns of which are deposited only in the archives of the governors. It has usually been computed at three millions, and Mr. Harris, after three years' residence in Simoda and Jeddo, says at any rate it cannot be less than that of London. As giving some idea of the extent of the city and the immensity of the population, I would state that one day, having walked two or three miles, I took a spirited horse at twelve o'clock, and accompanied by two Japanese policemen, rode at the top of our horses' speed, sometimes breaking into a gallop, to visit a celebrated temple far in the outskirts of the city. Reaching it at last, we dismounted, and through infinite crowds pressed our way into the gorgeous temple, which I found it judicious soon to leave, as admonished by a shower of small stones which fell around me and on me. Returning at the same rate of speed, it was beginning to grow dark when we reached the point where we took our horses, and yet we did not remain out of our saddles above thirty minutes, while the city spread out still further than my eye could reach, and the streets were finer, the stores better filled,

the business much more active, and the crowds more dense, than in the very heart of the city. Humanity indeed seemed to be *consolidated*, and thousands of heads to grow out of one body.

H. W.

Siebold's Japanese and Aino Vocabularies.

(Concluded from page 232.)

<i>English.</i>	<i>Japanese.</i>	<i>Aino on Jezo.</i>	<i>Aino on Karfto.</i>
Male	wotoko	okkai	okkai
Man	hito	sisjam, aino	guru
Man of consequence	tats'toki fito	nisipa	
Man, common	hei nin	jajasiamo	
Man, poor	matsusiki fito	helon gur	schirun guru
Mast	tobasira	kajani	kaiani
Meat	nik	kam	kam
Merchant	akindo	ihoksiam	egokschamo
Milk	tsitsinosiru	tôbe	tô
Misfortune	ing'wan	jaikohonnojeje	
Mist	kiri	ûrari	urariaz, urai urari
Month	tsuki	kunne tsupp	tombi, tschukf
More	mato	sijui	schui
Morning	asa	nisjatz	nischatzu
Morningdawn	akatsuki	too beker	schiri-bekere
Mother	baha	habo	chabu
Motion, vital power	rugoki, inotsi	moi moi, sikkisa	moi moi
Mountain	jama	kimita, kimro	kinda
Mouth	kutei	baru, tsjaro	paru
Nail	tsume	am, ami,	
Narrow	semai	tsibakaram	
Navel	hoso	hankapui	changubui
Neck	kubi	rekuts	regut
Net	ami	jaa	ia
Night	jo	antsikara	anzkari
Last night	konban	onumau	
No	ija	kotsjan, koban	
Nose	hand	ethû, ito	idu
Not	nu	sjomo	schiommo
Not yet	imada	naa	
Now	ima	tane	tani
Of course (yes)	narubodo	nokon, oowun	
Often	tahi tahi	sju sjui	
Oil	abura	sjumu	
On, in	ni	ta	
Or	mata	ta, sjui	schui
Ore	kane	kani	gani
Out, of	jori	orowa	
To pain	itamu	itasjasja	
Parents	woja	serimaka atajho	
Partner	tsure	utare	

<i>English.</i>	<i>Japanese.</i>	<i>Aino on Jezo.</i>	<i>Aino on Krafto.</i>
Penis	mara	tsii, tsije	
People, old	tosii jori	heikai	chigoi
" young	wakai	hekate, uben, beure	
Poor	matusiki	sirun	schirun
Prince	tonosama	tonokamoi	
Promontory	saki	siri ithu	schiri ido
Purple	murusaki	ikarari	
Quite	nokorasu	nenai	
Quiver	jabako	ikajup	igaiupf, ikjup
Rain	ame	apto	apftu
Rainbow	nizi	rawots	rajots'
Red	akai	fure	furi
Rest	jasumi	sini	
Rich	tomu	nisiba	nischpa
Rivulet	sawa	nai	
Rock	iwa	watara	
Roof	jane	akup, harukato	puda
Root	ne	kuberikep, sinsits	schyndshiz
Rope	tsuna	thubi, tosi	
To row	funewokogu	tsipu	zipowa
Rudder	ro	osjui	
To run	hasiru	hojubu	chojubu
Sail	fo	kaja	kaia
Salt	siho	sipo	schippo
Sand	suna	ota	oda
Sea	umi	atui	adui
To see	miru	nukar	nogaro
Seldom	mare	kemian	
Serpent	hebi	tokko (kamoi)	toko kamoi
Servant	kattaju	kojantono	
Shadow	fikage	tsjupke	tschukuriu
Shallow	asai	ohak'	
Shed	kasa	kakka, kasja	chaka
Ship	fuue	tsip'	zibi
Shore	fama	kosju	rauda
Short	mizikasi	takine	
Sight	miruzi	nukaru	nugaru
Since	joriwa	orowano	
To sing	utau	jûgari	iukgari
Sister, eldest	ane	sija, guturesibo	schiaa
" youngest	imoto	thuresi	turisch
Skin	hadaje	nuwom' kumukasike	
To sleep	nemuru	mokoro	mojuru
Sledge	sori	sikeni	
Smell	niwoi	fûra	furaan
Smoke	kemuri	sibuja	schibuia
Snow	juki	ubas, ubaschi	obas, obase
Soldier	busi	tono	
Son	wotokonoko	okkaihebo	poo
Sour	susi	nukai	schiuukoi
To speak	itaku	itakuwa	idawuwa
Spear, pike	jari	fumi, paro	kuu

<i>English.</i>	<i>Japanese.</i>	<i>Aino on Jezo.</i>	<i>Aino on Krafto.</i>
Spring	haru	baikaru	paigara
To stand	tatsu	rosike	rosehki
Star	hosi	keta, notsju, nodshu	keda, nodsi
To steal	nusumu	ikka	ikka
Stinking	kusai	fura ujen	fura uwen
Stone	isi	s'juma	schioma
Stream	kaha	bets	bez
Strength	tsikara	okira, tsumikoru	usiru
Such	sajô	keannari	
Suffering	kurusimi	ihomasii	
Summer	natsu	sjaku	schakpa
Sun	fi	bekere tsupp, to- notschu	tschukf kamoï
Sweet	amai	rura rurakor'	
Tail	wo	isi	
Taste	aziwai	kêra, kêwoan	
These	'kono	tan, tanbe, ane	ani
Therefore	sorenitsuite	ne waanberisju	
Thief	nusu hito	inuga guru	ikka guru
Thin	usuri	kabar'	
Thirst	nodonokabaki	igursjui	igurusch
This	kore	tapu	
Those	sono	pu	
Though	ihetomo	jakka	
Thunder	kami nari	kamui fumi	kanna kamoï fumi
To-day	konnits	tanto	
To-morrow	asta	nisjatta	nischatta
Tongue	sita	be barunbe barunbi	au
Too	hanahataxi	sitoma	
Tooth	ha	imaki jumaki	nimaki
Train oil	kusinano abura	funbei	funbikii
Turtle	kame	itsinke	
Uncle	ozi	keusiuts	atscha
Vermin	musi	kikiri	kigiri
Voice	koje	hauje	chan
To walk	ajumu	apukasi	apkas
War	ikusa	tomi	
Warm	atataka	popko	scheschikf
Water	midsu	wakka, be, hakka	waka, wachka
We	watak's domo	tejô kai utare	toogai udare
Weakness	jowasa		schiari
To weep	naku	tsitsi	tsitsiwa, zijesiwa
Well then	iza iza	sita sita	
Where	toko	ine kontanta	nida
Which	itsure	ikijaan	
Who	sore	neni	nini, nen
Why	itsure	nekonta	nigonda
Wickedness	aku sin	ujen gur	uwen
Widow	onakogoke jamome	hoksiak	
Widower	otokogoke jamowo	matsusiak, stobija	

<i>English.</i>	<i>Japanese.</i>	<i>Aino on Jezo.</i>	<i>Aino on Krafto.</i>
Wife	tsuma	matsi	maz, mati
Wind	kaze	reira	rera, dirra
Window	mado	bujara, bujari	puiari
Wing	hakae	rafu	
Winter	fuju	mata	madapa
With	tomoni	its sianneno, ani	
Without	nasi	isjambu	ischamu
Wood	ki, ita	tsikuni, ita, ta	ziguni ida
World	se kai	bekere sjam	begiri schiam
Ye	omai gata	inki utare	itschogai udari
Yes	hei	jise, jese	
Yesterday	sakusits'	numani	numani
You (familiar)	karera	inki angur	anu udari
You	omai, anato	iani, i, itejôkai	jani itschogai

Numerals.

<i>Engl.</i>	<i>Japanese.</i>	<i>Aino on Jezo.</i>	<i>Aino on Krafto.</i>
1	fitots'	sinepp, sine, schinep L.	schnepf
2	f'tats'	thupp thu	tupf tup
3	mits'	repp, reepu L.	repf
4	jots'	inepp, inepu L.	inepf
5	itsuts'	asikinepp, aschikinepu L.	aschikinipf
6	muts'	iwanbe	ju wambi
7	nanats'	aruwanbe	aruwambi
8	jats'	thupe sjanbe	tubi schambi
9	kokonots'	sineb sjan	schnebi schambi
10	tô (towo)	wambe	wambi
20	hatats (nisju)	hotz, chozu L.	schehoz, choz
50	gosju	wambe i rehots	wambi irichoz
100	momo	asikne hots	aschi nichoz
1000	tsi	asikine sine wane hots <i>i. e.</i> 5, 10, 20	aschi kini schine wane choz
1st	itsiban	teppakke	
2nd	niban	nosike	
3rd	sanban	reth tanta, reptanta	
Once	itsi do	sine sjui	schiu
Twice	ni do	thusjui	schini

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

The Japanese were in the ascendant. The manners and customs of this interesting people, their sincerity and simplicity of character, their cheerful disposition, active and cleanly habits, implicit obedience to their laws, and honesty of purpose, compared with their crafty and stolid Chinese neighbours, elicited the general admiration of the Club.

The discussion arose from a paper being read giving some account of the progress of the Japanese Ambassadors in their visit to the United States. It appeared by it that they sailed from Kanagawa on the 13th of February, in the U.S. steamship *Powhatan*, and on the 5th of March arrived at Honolulu, where they paid a non-official visit to King Tamehameha. Leaving Honolulu after a day or two, they arrived next at San Francisco on the 29th of that month, where they were located at Mare Island, and it was expected would continue their voyage for Panama in the early part of April.

The account states that the officers of the ship could not have had less trouble with the same number of any other nation. They have been carefully observant of everything on board from the day of their starting. Their draughtsmen have taken copies of the machinery, and notes have been made of everything that has transpired on board by a censor, or secretary, who has also had a copy made, which, with the notes of what transpires up to their departure thence, will be forwarded to the Emperor by the next vessel leaving for Japan. A journal was also left at Honolulu for the same destination. A number of them have made considerable progress in English. There are two or three interpreters with the embassy, but it appears none of them can compare with Captain Mangero, of the *Kandinmarro*, who may, perhaps, accompany the Ambassadors to Washington. The appearance of these visitors differs in few if any particulars from that of the Admiral and his crew. The dress of the Ambassadors may be a little richer, but in other respects they are identical. Those who have seen the people of the *Kandinmarro* have a perfect idea of the newer comers. Their food on board has been mostly rice; for the cooking of which they have had a place of their own, and the culinary operations have been performed by native cooks. They stood the passage very well, few of them having suffered much with sea-sickness. The weather has been unusually rough, affording not only an opportunity of testing the Japanese, but the ship herself.

It appears that a reception was held at San Francisco by the Ambassadors,—the principal officers, civil and military, being presented to them; and the impression made by the Japanese has gained them the good opinion of all. The impression made by them at Honolulu was no less favourable. Here not only the Ambassadors, but also each of the other Japanese, as they entered the throne room, bowed three times very low, according to their own custom on such occasions. His Majesty addressed them in substance as follows:—

“I feel much pleased to welcome you to my kingdom, and it affords me great pleasure that circumstances have favoured me, through the kind permission of the United States Commissioner and the gentlemen in whose charge you at present are, to receive you as Ambassadors of the great Emperor of Japan, while on your way to the friendly government of the United States of America, a nation to which my people are so much indebted. I shall feel much gratified if your visit to these islands is agreeable to you, and hope that when you return to

Japan you will express to your sovereign the friendly meeting which I have had the honour of having with you, and the high esteem I entertain for his Majesty and his people."

His Excellency Sinme, First Ambassador, replied, his words being translated into Dutch by Namura, and then into English by Mr. Banning:—

"I am greatly obliged for the friendly reception with which your Majesty has honoured us; and I beg to express my thanks for the trouble you have been pleased to take on our behalf, and shall not forget the kindness with which we have been received in this city, not only by your Majesty, but by the inhabitants of your capital."

At the conclusion of the addresses, the Censor, Vice-Governor, and others of the embassy, were presented, and after them a number of the officers of the embassy. Each of them recorded his name in the autograph-book of the palace, which already contains those of many dignitaries of foreign countries; few, however, of them will be examined with more curiosity than these.

There are several of the embassy who can speak broken English, but probably the one most conversant with our language is Namura, who is also familiar with Dutch. The chief Ambassador is among the highest in rank of the two hundred princes or nobles in Japan. These vary somewhat in rank, according to the size and importance of the province over which they preside, or which may be theirs by hereditary right. Some provinces can muster 60,000 soldiers; others again not 6,000. The rank of the four principal dignitaries we find as follows:—

1. *Ambassador*—Sinme-Bujen-no-kami (Sinme, Lord or Prince of the province of Bujen). Sinme is the hereditary name of this prince, who ranks a little higher, or is more powerful, in Japan than the following:

2. *Ambassador*—Muragake-Agawe-no-kami (Muragake, Lord or Prince of the province of Agawe).

3. *Censor*—Ogure, Lord or Prince of the province of Bungo.

These three are hereditary princes or rulers of provinces, and about equal in rank. The proper title of each in England would be "His Royal Highness," and in the United States, "His Excellency," being the highest titles under the sovereign or ruler.

The office of the Censor has been misinterpreted. He acts as Secretary to the Embassy, it being his duty to record everything for the information of the Emperor. He leaves a copy of his journal to be forwarded to the Emperor of Japan by the first vessel which may sail for Japan. The same will probably be done by him at San Francisco and other points of the journey.

The fourth dignitary (*Morita Okataro*) appears to be not so high in rank. He is sent out to act as treasurer, and on account of his sound judgment and prudence it is his province to advise and counsel. He is the manager of the embassy, and nothing can be done without his approval. He appears to be clothed by the Emperor with very

high powers. All these four officers are from the nobility—the advisers and councillors of the Emperor.

There are in Japan, as in most other nations, two political parties,—one of which may be called the *progressive* party, the other the *conservative*. This political division extends to the nobility and to the councils of the Emperor. The progressive party contends for a liberal policy towards foreigners, the opening of the principal ports to foreign trade, and, in short, the abolition, at least in a measure, of the ancient restrictive laws and customs. The conservative party, on the other hand, contend for a rigorous adherence to the old tabus and customs. The progressive party is constantly increasing in number and becoming more powerful, and is destined to create an entire change in the internal policy of that empire, unless foreign governments, by indiscreet acts of their officials, should check its progress by entering into open hostilities with the nation. It has been reported that the late Emperor of Japan committed suicide on account of these political contests and proposed innovations on the old regime. This is incorrect: he died a natural death.

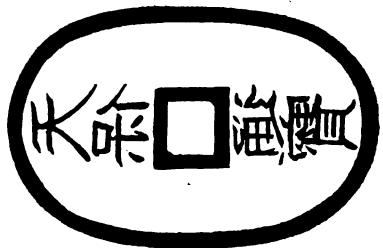
The origin of this Embassy is attributable to the diplomatic skill of Commissioner Harris, who having impressed on the Japanese the importance of becoming more acquainted with foreign nations, persuaded the authorities to stipulate in the last treaty that an Embassy should be sent to the United States within a limited period. Although the Japanese government subsequently endeavoured to annul this obligation, Commissioner Harris would not consent to it, maintaining that it was for the mutual advantage of both nations that it should be fulfilled. Finding him immovable, the new Emperor yielded, and this Embassy is sent out, and we doubt not will prove a great and lasting benefit to Japan as well as all foreign nations.

The Japanese answer all questions without reserve, and have given much information. Their currency consists of copper, silver, and gold coins. There are three *copper* coins:

1. *Za-ne*, or one-cash, a round coin, about the size of an American nickel cent.

2. *Quan-ai*, or four-cash, a round coin, about the size of the old American cent.

3. *Tempo*, or 100-cash, equal to two cents. The annexed is a facsimile of this, their largest copper coin. In the centre of the coin there is a hole, the size of the square represented. It is about as thick and heavy as an English penny. This is the best made of all the Japanese coins, and to those who have not seen them, will give a correct idea of their money.



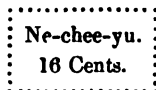
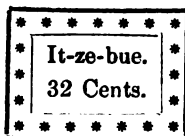
There are three *silver* coins:

1. The *It-ze-bue* (or *E-che-boo*, as the Japanese pronounce it), value thirty-two or thirty-three cents. Its weight with American silver is only thirty-two cents.

2. The *Ne-che-yu* or Half *E-che-boo*, value sixteen cents, eight being reckoned equal to a cobang.

3. The *E-che-woo*, or Quarter *E-che-boo*, value eight cents, sixteen being equal to a cobang.

These three are thus sketched:—



The *gold* coins are these:—

1. The *O-bang*. This is large, of an oval shape, six inches in length, three and three quarter inches wide, and thick. The value is about 95 dollars, and is probably the largest gold coin in the world.

2. The *Co-bang* (or small bang) is of the same oval shape, but much smaller. It is a little larger than the 100 cash copper piece shown above. Its value in Japan, prior to the interference of foreigners with their coins, was 128 cents, at about which rate large quantities of them were bought up and exported. It was found that they contained gold to the value of 4.42 dollars. As soon as the drain on the gold coins commenced, the Japanese government called in the cobangs, and fixed their value at 12 itzebues, at which rate they now pass in Japan. There are four sizes of cobangs, varying in value from 3.15 to 4.42 dollars each.

Some few counterfeit coins are found in Japan, some representing gold, being made of brass and other alloys. There is also a spurious cobang, of the same size and stamp as the genuine coin, but easily distinguished from it.

The Japanese take Mexican dollars in exchange for products or for current coins, three itzebues for one dollar. When large quantities of silver are weighed, the rate is 311 itzebues for 100 Mexican dollars. After the return of this Embassy from its foreign tour, American and Mexican gold and silver coin will no doubt be allowed to circulate in Japan as they do in other Asiatic countries.

Persons going to Japan for the purposes of trade should carry clean Mexican dollars, otherwise they will have difficulty in purchasing a cargo. At the time the *Powhatan* left Kanagawa, the Japanese were exchanging only 10,000 itzebues a day, as their facilities for coining are limited to that amount. Each foreign resident could therefore only get from ten to fifteen dollars changed each day. Owing to the great demand for current silver, the government has determined to stamp Mexican dollars with the Japanese stamp, so as to enable them to pass for their full value with the Japanese merchants. In making purchases with Mexican dollars, the foreign residents would frequently

lose from ten to fifteen per cent., owing to the fact that Japanese traders would not allow the full value of the coin. A quantity of American half dollars only exchanged 277 itzebues for 100 dollars, a loss of nearly twenty per cent.

The conversation on the Japanese terminated in a hearty wish that Japan would send her ambassadors to visit old England, and that they would be brought here in a vessel of war as appropriate for their reception as the American *Powhatan*, and meet with as hearty and befitting demonstrations of welcome as they would have at Washington.

I see, observed the Chairman, that it was questioned in the *Nautical Magazine* of July last year, how many *Devil's bolts* would be found in the contract-built gunboats, a question which has been in some measure answered in Parliament lately. It has been said that such things are commonly known by the above name in merchants' yards; but he must say that although he has really seen such things, he never met with anything about them in print before he saw it in that work. And as on many accounts the recent discussion upon it is highly interesting, he would propose that extracts from reported speeches be preserved among their records. Speaking of those gunboats the Earl of Hardwicke is stated to have said,—

“It was not merely a question of unseasoned timber, but of the fastenings. Their lordships had no doubt heard that in some cases there was no through fastening, but that there were deceptive bolt-heads, but the bolts did not go through, and therefore there was no fastening. Nothing could be more profligate than to build vessels in such a manner. This would have the worst effect of all upon seamen, who would not care so much about being a few months in a vessel which was built of unseasoned timber; but what must be their feelings when they found they were on board a vessel which had not proper fastenings.”

In reply to this the Duke of Somerset is reported to have said, in reference to the whole question of the construction of these gunboats built by contractors that,—

“They were working day and night, it was during the winter, in many cases snow was upon the ground, and thus under this pressure opportunities were offered to dishonest workmen to commit the fraud which has been referred to by cutting the bolts. What made that offence more flagrant is that the copper was supplied in long lengths by the Admiralty to be cut up for bolts as it was required by the builders. So far as we have gone, we have found only two or three vessels in which this fraud has been committed, and I am therefore disposed to attribute it not to the contractors but to some of the workmen who may have been introduced into the yards under the pressure of the period. That question of the bolts was brought under the notice of the Admiralty only about two months ago, since which time I have instituted inquiries with a view to taking such legal proceedings as may raise the whole question, and if possible bring to light the guilty parties.”

Sir Charles Napier throws some further light on the subject in saying,—

“Probably the contractor himself knew nothing of the short bolts, which might have been put in whilst he was sitting in his office, but still, contractors who carried on business so carelessly should be published and exposed. It might be hard to publish their names, but it would be much harder to drown a hundred and fifty men, who after going to sea in full confidence in the strength of their vessel found her go to pieces in the first gale of wind. The builder of the *Caroline*, which had one hundred short bolts, was Mr. Green. This story of the gunboats was a very serious thing, for he very much feared that many of the larger vessels of recent construction were as bad, and it was of importance that it should be known whether the sail of the line we had were efficient or not.”

More light still, however, was thrown on the subject by Lord Palmerston, who stated that he

“Hoped, as this was a question of time, and of very short time, and not a question of granting or refusing the information asked for, that his honourable and gallant friend would not press his motion. His noble friend (Lord C. Paget) stated that it was the opinion of the law officers of the crown that the case of those persons whom it was now their intention to prosecute would be prejudiced if the returns asked for indicated that they were guilty of fraud or negligence in the construction of these vessels. Whether they were so guilty or not would be the subject of investigation by the prosecution now intended to be made. If his hon. and gallant friend would only wait for ten days or a fortnight, in order to see whether a prosecution could be instituted or not, the information he now sought for would, in case a prosecution were instituted, be more ample and complete than any which could be given in the return he asked for; and if it was found that a prosecution could not be instituted,—that no legal grounds for a prosecution existed,—then, indeed, his hon. and gallant friend would have good ground for requiring all the information that could properly be given, and more ample information could then be given, because there were sixteen boats which were not yet examined, but which were about being examined. To grant the return now might prejudice the case of some contractors, and might appear to exempt others who might be equally blameable with those who were guilty.”

The question, however, regarding the larger vessels first is, were they built by contract,—and, indeed, any contract-built vessel must always be looked on with suspicion. It would be better, as observed by the Marquis of Townshend, “to go back to the old fastenings by treenails than to risk having such copper bolts as these.” But, continued the Chairman, these *Devil's bolts*, as they are truly named, are by no means new, and might even date with shipbuilding itself. Indeed he was old enough to remember (and some of his friends about him perhaps likewise) that a certain tolerable sized ship of war, built

by contract within the last century, had so many Devil's bolts in her that it was considered dangerous to send her to sea. And to sea she never went, but did all her duty in Portsmouth Harbour until she was broken up. That ship was the old *Gladiator*, which lay snug enough in Haslar Pool and figured long in the annals of her Majesty's navy as the scene of many a court martial.

Whatever might be said or done as to bringing to justice the perpetrators of such wicked acts, and admitting it might be successful, that would not stop it on any other occasion. The short bolt, or sham bolt, or Devil's bolt, or whatever it might be called, made short work for the workmen. The supervision of every bolt that is driven is utterly impossible either by the contractor himself or any other person, and the only safe way of avoiding them, in his opinion, is to have nothing to do with contractors at all, or at all events with those builders who were proved to have used them. Let all government vessels be built by government men, who *can* be depended on, and avoid the merchant's ship yard as untrustworthy, as the real source of an insidious evil, which virtually aims a deathblow at England's maritime power, her best safeguard in danger, the efficiency of her navy. One of the reasons of the numerous losses in our mercantile marine, no doubt was the free use of Devil's bolts. But the whole merchant ship, from her launching to her loss and all that she carried, was an affair of merchants, and all loss excepting alas that of the lives of our confiding sailors, was covered by insurance. The merchant went on flourishing notwithstanding the foundering, the collisions, the fires, and the multitude of wrecks annually. It is a huge evil, but one that must be endured, for the very State thrives upon it. They are the ships of traders who after all are no losers. But ships of war—those vessels on the efficiency of which as ships for war under any circumstances the very safety of the State depends to keep the enemy's foot from British soil,—they must be free from such foul blemish, they must be above suspicion of such foul play, for they are the safeguards of our island, and only while they are so will England be able to defy her enemies.

Now that we are upon a subject so intimately connected with navigation, observed Albert, and with the sensible remarks of our noble Chairman every honest man and lover of his country must concur, I wish to know what Mr. Maury alludes to as the "Admiralty" route from Australia. In a letter which has recently appeared in print he says,—

"When we commenced systematically to investigate the winds and currents of the sea, the route to Australia then followed was what was known as the Admiralty route."

Who ever heard of an Admiralty laying down a route to be followed from or to Australia. They gave their ships Horsburgh's Directions for their guidance, and left them to find the best route they could in those days.

Oh, returned the Chairman, such *façon de parler* suits a purpose.

We of the old country are an old fashioned people, and the Admiralty is *concluded* to be the source of navigation by those who are not acquainted with it, and the Admiralty charts, because all English charts are constructed from them, have to bear the blame of all the imperfections of the rest, whether those imperfections arise from the Admiralty charts or are the fault of their constructors. There is no doubt, added Albert, that Maury has done much good by his investigations, although his generalization is somewhat premature; and had such matters been attended to as they should have been by ourselves long ago, there were workmen here who saw what was wanted and had set to work before Maury had. But they met with no encouragement while Maury did and did much good by it. And another great benefit that was derived from Maury's example was our being shamed into following it ourselves. It was said in former days that a certain superintendent of packets used to send his vessels to sea to look for a fair wind. The difference now is that they are told where to avoid a foul one, and it requires no wizard to see which is right. So thought Maury, but all of us old folks could not think so too, and to Maury there is no doubt we are under great obligations for not only seeing such things in their proper light, but for obliging us to take them up.

There is another subject not unworthy of observation while on these matters that deserves remark. There is an office superintending the lights and buoys of the Irish coast, called the Ballast Office, at Dublin, one that stands in the same character as the Trinity House of London, without a steamvessel belonging to it to enable the Commissioners to pay periodical visits to their light establishments, and to inspect their buoys and beacons. Nor does it appear by what has passed in Parliament that they are likely to be allowed one in the present state of affairs! This was a sad condition of things, a state of suffering which ought not to be. The lights and beacons of the sister country ought to be looked on as of the same importance as those of England. The Scotch Commissioners had theirs, and the English also, and the same reasons for having one applied to the Irish Board. If a proper periodical visitation of this kind were carried out on that coast, the absent buoy at Lough Swilly, and no doubt many others of the coast, would have been replaced, and the Marquis of Sligo's yacht would not have been lost in consequence of its absence. He was of opinion that where the means of performing an important duty with a due attention to the comforts of those who had to perform it, such as was consistent with the inconvenience and privations to which they must be exposed by it, where such means, he would observe, were withheld, the authorities must not expect that duty to be performed. He considered that the apathy found in landsmen on these subjects must arise from a want of knowledge of their importance, and while this lasts more of such losses and perhaps far worse might be expected. He considered it but cold encouragement to the exercise of zeal on the part of the Commissioners, who would of course, landsmen like, confine their operations to the land, and thus they would always have a one sided report.

The Chairman quite agreed in the truth of these observations,—the duty of inspection could not be performed, and neglect might follow at whatever cost in the shape of wreck. But it had also been stated that there was much mismanagement in regard to their vessel, for it appears one had been withdrawn.

That might be, remarked Albert, but still the power of mismanagement should have been withdrawn, and not the vessel by means of which the Commissioners are to fulfil their duties. This must be done before the Irish system of lights and buoys can be considered efficient.

While on the subject of the Ballast Office and Trinity House, continued Albert, there is a letter from the latter referring to the Bishop Lighthouse, recently erected at Scilly, relating an important fact, which he hoped would be preserved among their papers. It would be remembered that reports had got abroad that it had suffered from the effects of the gales of February last, when the Secretary to the Trinity House placed the matter in a clear light by the following letter:—

Trinity House, London, February 22nd, 1860.

Sir,—Exaggerated accounts of the damage sustained by the lighthouse on the Bishop Rock during the gale of the 30th ult. having appeared in some of the newspapers, I have been directed by the Elder Brethren of this Corporation to request that you will allow me, through the medium of your columns, to state, for the information of those who may take an interest in the matter, that Mr. Nicholas Douglass, the engineer who personally superintended the construction of this magnificent tower, and to whose excellent arrangements its completion without a single casualty is mainly attributable, has been dispatched to the rock, and has reported that the damage occasioned by the storm alluded to is comparatively unimportant, being limited to the destruction of the fog bell, and the fracture of the flagstaff and of a slightly constructed ladder, used in cleaning the exterior of the lantern, which were attached to the gallery railings. Some of the upper zones of the dioptric lighting apparatus were also found to be cracked, but not so as to interfere with their efficient action. These immaterial cracks in the apparatus have been erroneously described in the newspapers as fractures of the plate glass of the lantern, which is in reality seven-eighths of an inch in thickness, and which is uninjured.

The excessive violence of the sea on this occasion was described as having been without precedent, and may be estimated from the extraordinary fact that the bell, which weighed three hundredweight, and was suspended from a beam outside and just below the floor of the lantern gallery, at the summit of the tower, and at upwards of one hundred feet above the ordinary level of high water, was torn away by the force of the waves, the shank by which it was suspended being left attached to the beam.

It is most satisfactory to be enabled to add that it appears from the reports made to Mr. Douglass by the lightkeepers that their confidence in the stability of the building is in no degree diminished, the vibra-

tion, notwithstanding the unprecedented violence of the sea on this occasion, having been so trifling as to have been scarcely perceptible, and not the slightest leakage having occurred in any of the compartments of the tower.

I am, &c.,

P. H. BERTHON, *Secretary.*

To the Editor of the Shipping Gazette.

This is an interesting and important communication, and, being official, may be relied on.

Another, which he considered no less so, was one from Captain Orlebar on the loss of the *Indian*, on which he had already reported to the Club. But the letter of Captain Orlebar so completely confirmed all he had said that he hoped this would also be preserved among their papers:—

*Charlotte Town, Prince Edward Island,
February 23rd, 1860.*

Sir,—The statement that the loss of this vessel (*Indian*) on the coast of Nova Scotia was owing to the inaccuracy of the government (?) charts they had on board, which statement has gone the round of the provincial papers, and has been apparently confirmed by the decision of the Court of Assessors at Liverpool, who have exonerated the captain upon these grounds, makes it necessary for me to offer a few remarks to correct what is so certainly untrue.

The fact is, the chart in use by the *Indian* was by Norie, a private publisher, without any claim to government authority. And a naval surveyor of high standing, who has been employed to draw up a report on the *Indian's* loss, states that, having laid down the courses and distances, as furnished by her logbook, upon the chart, he found they placed her exactly on the rocks where she was wrecked, and therefore attributes her loss to errors in the variation of compass.

The chart of the S.E. coast of Nova Scotia, completed from the survey under Captain Bayfield and myself, in which are shown all the outlying dangers and soundings for a distance of eight to ten miles off shore, are the only charts issued by the Admiralty. These, together with the *Nova Scotia Coast Pilot*, by Admiral Bayfield (1856), will give every information required in approaching this dangerous coast. We can scarcely suppose it possible that these steamships, so admirably found and appointed in all their equipments, could have neglected having these on board, and if so, a reference to the chart would have shown that the lead alone can be no safe guide as to the proximity of danger, and if this was insufficient, the following extract from *Bayfield's Nova Scotia Coast Pilot*, chap. v, p. 1, would have both confirmed it, and also shown what degree of dependence was to be placed on the charts in use previous to our survey:—

“In the present very imperfect state of our knowledge of the banks which lie off this coast, of the depth and nature of the soundings on them, and between them and the shore, no further directions can be safely given to vessels approaching the land during a dark night or in

a thick fog, than not to go nearer than the depth of forty fathoms, at the same time bearing in mind that there is that depth at a less distance than three miles from some of the most formidable of the dangers between Canso and Halifax."

I cannot lose this opportunity of impressing upon all those interested in shipping the positive duty to themselves and their passengers that their ships should be provided with the only trustworthy charts published,—viz., those issued by the Admiralty.

I am, &c.,

JOHN ORLEBAR, *Admiralty Surveyor.*

To the Editor of the Quebec Gazette.

Captain Orlebar alludes to the Court of Assessors at Liverpool. The value of the opinion upon which the *Indian* was exonerated from all blame is no doubt by this time as fully appreciated by Captain Orlebar as it is by the Club.

Rodmond considered that it ought to be known that ships putting into Blacksod Bay in distress or otherwise were liable to be plundered by the Mayo peasantry, unless they could keep them off. It is stated that the *Arethusa*, from the Gulf of Mexico, laden with woods and dyestuffs, lost on the coast of Wexford, a large part of her cargo was found in the barns and houses of the peasantry; and that recently a Dutch vessel, the *Noach Lotinga*, having put into Blacksod Bay, the country people boarded her in about twenty boats and commenced their system of plunder; but fortunately she was rescued by a government vessel, though not before they had carried off a quantity of corn with which she was laden. It was to be hoped these plunderers would be brought to justice somewhere, but vessels should, nevertheless, beware of Blacksod Bay, and he submitted that their papers should contain a record of the fact.

The Chairman also considered it their duty to record a resolution of the Aldermen of New York in reference to the intended visit of the Prince of Wales to America,—one of those pleasing marks of attention which, in the words of the Address to the Mayor on the subject, it was gracefully observed, "that considering the intimate relations which exist between our country and England, and by how many ties we are bound to that great people over which the Prince of Wales will hereafter reign, and not forgetting that international courtesies tend to promote good understanding between nations and lessen the chances of war, we beg leave to suggest that he should be invited to visit this city and receive its hospitalities." This was as it should be, and the requisition he found was signed by Cyrus Field, William C. Bryant, Henry Grinnell, James Brown, and many of the most influential merchants of New York. The Board of Aldermen took up the subject, and resolved that his honour the Mayor be requested to invite his Royal Highness to visit this city and partake of its hospitalities,—an invitation which, if accepted, as he thought it would be, could not do otherwise than realize the sentiments which led to it, and give general satisfaction both here and in the United States.

The Club generally concurred when the leviathan steamer was allowed to start for New York on the 9th of June from her retreat in Southampton Water, and commence her career of ocean navigation which had been so long and anxiously anticipated. She had gone through her series of disasters, which it was hoped had terminated with the loss of her late captain, Harrison. There was but one opinion of her present commander, Captain Vine Hall, throughout the Club; but strong doubts of her realising her projected speed of twenty knots an hour, unless he could manage to leave some of the weeds behind which she must have been collecting all the winter at her anchorage. It was even doubted, let her be ever so clean, that she would ever reach a *sea rate* of twenty miles an hour, as had been promised,—half of which the P. and O. Co's vessels have scarcely done.

Alluding to the advantages of steam navigation, the Chairman stated he had received a letter which he considered should be placed among their minutes, as it might thus be the means of remedying certain inconveniences which it set forth, and which he was sure only needed being pointed out to secure their remedy by the respectable company to which the vessel belongs:—

*P. and O. steam-ship Cadiz.
nearing Penang, March 31st, 1860.*

I wrote to you last from Aden, and told you what a splendid ship I was in. Well, I am now just as uncomfortable as I was comfortable in the *Colombo*. I changed at Galle into the blessed little tub the *Cadiz*, about one-fifth the size of the other, and full to overflowing with cargo, luggage, and passengers, to say nothing of its swarming with rats and cockroaches. I have no cabin yet, and shall not have till we get rid of our Singapore passengers, in about three days. I sleep on deck or on the saloon table, and wash, &c., in one of the officer's cabins. I wish I had the P. and O. agent or director here who is responsible for this most abominable management. I tried to sleep in the officer's cabin the first night, but it will be the last attempt. The stinks of opium, garlic, dried fish, &c., and constant incursions of rats, who ran steeplechases all over me, and scratched my unoffending legs in a most annoying way, are unendurable. To add to other inconveniences our luggage, owing to the hold being perfectly full of cargo, is stowed in the saloon. The heat is very great, generally 88° to 90° all day, and 84° to 86° at night.

There is no doubt that the heat of the climate had much to do with producing such a state of things as was here mentioned, but the greater the producing cause the greater should be the care to prevent it, and he was quite sure that measures would be speedily adopted to put an end to it.

There was a subject, observed Albert, that he was sure would be interesting to the Club, and that was the present state of Sebastopol. An American officer, Colonel Gowen, had been engaged in raising the sunken ships, and had succeeded in raising all, with the exception of eighteen of the larger ships. Moreover, he has also 700 very heavy

guns yet to raise, and is waiting for heavier cable before he commences operations. Meanwhile his men are actively engaged in completing a patent slip for his purposes. He employs between 200 and 300 hands, consisting of American engineers, Russians, and a few English and Irish labourers, the raising of the ships and the making of the patent slip being about the only work going on. A few of the residents, who received a portion of the 1,000,000 roubles paid to the people of Sebastopol, who lost considerable property during the campaign, have commenced to build a few houses, but beyond that nothing has been done in the way of restoration. The hospital, once such a magnificent building, is now completely gutted, and the dwellings are miserable wooden huts or houses, the primary element of which is wood, with a little of the soft stone before alluded to.

The Russians are exceedingly jealous of all persons, particularly the English, who visit Sebastopol; and no sooner does a vessel arrive in port than a customs officer boards her, examines every bundle, and seizes every printed book. So unscrupulous are these officials, that Colonel Gowen—though one would imagine that, working amongst them, some latitude would be extended to him—has had three boxes, containing wearing apparel, &c., for himself and wife, seized, and, without any ceremony whatever, the contents, with the exception of a few trinkets, sold. He was able to buy the trinkets and what few things remained, but he had to pay an extraordinary high price for them.

The captains of English vessels are fined on every trifling pretence; one was fined fifty roubles because a dead mule was lying alongside the morning after his arrival in the port, and which the officials alleged he had shot. Captain Smith himself barely escaped being mulcted in the same penalty, in consequence of claiming an anchor which he had placed in the ground to moor to, and which had been removed by a Russian. Newspapers, of course, are strictly prohibited, and the only means of communicating with friends there is to send first to some one at Odessa; by him it must be forwarded to Colonel Gowen, and by him transmitted to the party for whom it is intended. We believe that the search for bullets and guns is nearly at an end, the iron and lead harvest being almost reaped.

And as meteorological phenomena were always interesting, he thought the following letter of Captain Cooke, of H.M.S. *Simoom*, should be preserved in their minutes. It was dated on the 22nd of February, 1860, and gave an interesting account of a shower of ice which fell upon the ship. He says:—

“On the 14th of January, when two days out from the Cape of Good Hope, about 300 miles S.S.E. of it, in lat. $38^{\circ} 53' S.$, long. $20^{\circ} 45' E.$, we encountered a heavy squall, with rain, at 10h. a.m. lasting one hour, the wind shifting suddenly from East to North (true). During the squall there were three vivid flashes of lightning, one of which was very close to the ship, and at the same time a shower of ice fell, which lasted about three minutes. It was not hail, but irregular

shaped pieces of solid ice, of different dimensions, up to the size of half a brick. The squall was so heavy that the topsails were obliged to be let go. There appears to have been no previous indication of this squall, for the barometer at 6h. p.m. on the two previous days had been at 30.00, the thermometer 70°. At 8h. a.m. on the 14th the barometer marked 29.82, the thermometer 70°. At 10h. a.m., the time of the squall, 29.86, the thermometer 70°; and at 1h. p.m., when the weather had cleared, wind North (true), 29.76, thermometer 69°; after which it fell slowly and steadily during the remainder of the day and following night. As to the size of the pieces of ice which fell, two, which were weighed after having melted considerably, were 3½ and 5 ounces respectively; while I had one piece given me, a good quarter of an hour after the squall, which would only just go into an ordinary tumbler; and one or two persons depose to having seen pieces the size of a brick. On examining the ship's sails afterwards, they were found to be perforated in numerous places with small holes. A very thick glass cover to one of the compasses was broken. Although several persons were struck, and some knocked down on the deck, fortunately no one was seriously injured."

Rodmond would take the present opportunity of observing that the present time would be remarkable in history for revolutions, not only in reference to those of a political kind, but also in the important subject of gunnery; not only in the small revolver, but also in all species of ordnance used on shore or afloat from the least up to the very largest. They had all heard of the famous Armstrong gun, which had completely established its character for general service, although it had yet to stand the test of time. He was not one of those, (like his friends of the Club) who anticipated the invasion of this country, and although like them he looked on the establishment of a large volunteer rifle force in all parts of the country as a most wholesome measure, the value of which was at once expressed in their motto,—“For defence not offence,”—he considered first that it was not likely they should ever see them in operation for the former purpose, and if he did he should rather depend on the navy than on any land forces whatever. But he would not touch further on this question, which he had done only to propose that an outline of a lecture by Commander R. E. Scott, of the navy, be preserved in their minutes, and also a notice of the recent improvement in the revolver be added to it. The proposal met with general assent, and concluded the business of the Club.

Referring to the coast defences, Captain Scott proposed that as there was a Coast Guard station wherever a landing could be effected on the shores of the United Kingdom, at least one heavy rifled gun (of 8-inch bore) should be there mounted, and the shot piled ready beside it with one or more magazines in each portion of coast commanded by a commander; that this should be the point round which the Coast and Rifle Volunteers should always muster, in case of alarm, the chief boatmen or the Coast Guardsmen too old for service afloat being captains of the

guns; that the coast path and a good road should, as far as possible, be maintained by the Commissioners of Woods and Forests fit for the transmission of guns and ammunition, and that a telegraph should be laid to the more important posts; that the pilots, watermen, and all sea-faring people should be induced to enter the Coast Defence, which they would at once do under proper arrangements; that during the summer time the whole of the above should be occasionally mustered round their several guns and exercised by the commander in judging distances, firing on the water, and preparations to stop a landing; they should also be practised in throwing up earth works, under the direction of a lieutenant of engineers, who, with two sappers, were to be attached to a district, comprising, say, five divisions; most of these earth works should be left permanently. In case of lengthened works, the men to be paid, and thus almost without cost a system of coast defence would be carried out that would render a landing on the coast impracticable.

Having got thus far with coast defence, Captain Scott proposes to use such guns and shot only as will stand exposure without injury, and that require no nicety of management. He, therefore, suggests that the common cast iron gun shall be rifled on a plan which will not appreciably weaken it, and will admit of all the present ammunition being used. He stated that by his method of rifling, these conditions would be ensured, and that, while shells filled with molten iron could be fired from his gun, the common round ball would have greater accuracy and range than before, and this with a considerably reduced charge.

Mr. Jefferies, the well known inventor of marine glue, had obtained from the cast iron gun a greater range,—viz. 7,500 yards nearly, at 25° elevation—than had yet been attained by any one except very recently by Mr. Whitworth; and Mr. B. Britten had been firing for three years from various sizes of cast iron ordnance, and had not yet burst a single gun. These both fired compound shot, which fitted the bore by expansion of the lead fixed on the rear, and thus the rifle grooves were filled, windage cut off, and rotation given to the shot.

When the mode of expanding and thus causing the shot to fit the bore (which is necessary to obtain great accuracy) was set aside for Sir W. Armstrong's plan of fitting by compression,—which, even in lead, causes such a strain that only the toughest and most elastic iron could stand the shock,—the cast iron gun burst; and though, in the endeavour to strengthen them, the guns were hooped, none of the four or five guns thus treated stood the compression system long.

Setting aside the hooped guns, which are actually weakened by this expensive process, cast iron guns have always stood when the rifling plan has not been a jamming one; and, although they are unfit for either Sir W. Armstrong's or Mr. Whitworth's method of rifling, all the really serviceable ordnance can be converted and made quite as serviceable rifles as any of the very costly guns now brought forward.

The fact is, that an expensive material alone is required for the system of making a ball fit by compression; and as only three years since cast iron was considered to be in every way fit for rifled ord-

nance, our knowledge of metals cannot be so much advanced as to condemn the present immense stock of guns and the use of cast iron, without first trying whether the guns can be rifled on a safe and cheap plan, and the unserviceable recast—as they can be at a trifling cost—on a better system as *breech and muzzle loaders* on Serjeant ——'s plan.

The *Times* pointed out the advantages of Mr. Whitworth's breech-loader in being very simple and not cutting off anything from the length of the gun, and his shot and shell are of cast iron, the cheapness and facility of which in manufacture bear no comparison to that of the lead coated shot and shell. The serious objections to the Armstrong gun are, independently of expense, the necessity for keeping the numerous grooves most carefully cleaned to ensure accuracy and to prevent leading,—the being unable to fire shells filled with molten iron, and the guns being useless with any but its own elaborately constructed lead coated shot.

A further objection to the Armstrong gun is its delicate deflecting sight, which increases the time of pointing, and is only necessary in consequence of the shape of the shot. This, like the gun itself, is a beautiful and expensive piece of mechanism, and so delicate that it is doubtful whether it can be kept in order on parade or practising grounds.

It is very true that many of the present cast iron guns are badly bored: but these can be easily improved and the error avoided in future by boring the gun with the admirable machine now in the Royal Arsenal; and when thus treated there is no reason why equal or greater accuracy may not be obtained from the cast iron guns when rifled than from any lead coated shot, which necessarily, from gravity inclining more towards the lower parts of the bore, can never be perfectly centred. This fault, which must increase in proportion to the increased size of the lead coated shot, is the reason why Mr. Whitworth's planed shot attained greater accuracy.

This planing can be done for 1d. per shot in a machine, which expense will not probably exceed that now caused by filing off all the excrescences of round shot, making them exactly to pass through certain fixed gauges.

With respect to the deflection, shot can be cast with the centre of gravity so placed as to avoid this; the shot having at the same time the very best form for strength and velocity: for directly a shot deflects it commences wobbling. The larger the shot the greater is this tendency, and hence the reason why very long elongated shot have attained such little superiority over the shorter shot.

A series of experiments have been made at Chatham, undertaken for the purpose of testing an improvement effected in revolving and repeating firearms, by means of which the inventor, Serjeant G. Sturrock, attached to the staff of the Royal Engineer establishment at Chatham, has succeeded in doubling the number of shots fired from a revolver, making it in fact a revolver of 14 or 16 consecutive shots,

without any necessity for reloading. In order to avoid the delay, and often hazardous inconvenience, of reloading, it has hitherto been the custom for each repeating pistol or rifle to be provided with a second cylinder, and on the charges of the first cylinder being fired, a partial dismounting of the weapon has to be performed to allow of the second loaded cylinder being substituted. In the present invention this inconvenience is obviated by the rifle or revolving pistol being made double barrelled, and placing two series of chambers, or one for each barrel, in the cylinder. Either of the series of chambers is discharged in the ordinary manner, the bullets passing through the appropriate barrel. By a simple change of the hammer, which is effected in an instant, the other series of chambers may then be fired in like manner, the bullets passing through the other barrel. The chief peculiarity of this invention is that it can be applied to every system of repeating firearms now in use by officers and others engaged in foreign service; and, although double the number of shots may be fired, not the slightest change or modification of the working machinery of the lock or trigger is necessary. The new weapon, although double barrelled, has but one cylinder, one trigger, and one lock and hammer.

Secretary's Mems.

A project for a line of steamers from Valparaiso to England by the straits of Magellan, touching at intermediate ports on the Atlantic coast of South America, has been made by Mr. Griffin to the government; a subsidy of 200,000 dollars was demanded.

Captain Paynter, of the *Racoon*, has been honoured by the King of Sardinia with the Cross of Commander of the Order of St. Maurice and Lazarus, for having been the first to salute the national flag in the port of Leghorn on his Majesty's arrival there.

The Sailor's Home at Liverpool was totally destroyed by fire early on Sunday morning, 29th of April. A policeman and one steward were killed. The building cost £30,000, but was insured for £13,000 only. It was opened in 1851. There were 107 persons sleeping in the building when the fire broke out. It is supposed the calamity originated in one of the dormitories.

Intimation has been given of the opening of the port of Saigon, in Cochin China, to trade, under the protection of the French authorities. A harbour due of two dollars per ton is charged on all vessels, which exempts from duty on imports or exports, with exception of opium, which is charged at 20 per cent. *ad valorem*. The blockade of the rest of the coast is still rigorously maintained.

By the last advices, Mr. Cole, acting deputy collector of the customs at Kurrachee, reports officially that "vessels drawing 19 feet 6 inches have in the past year entered the harbour of Kurrachee in perfect safety; and as many as twenty-five vessels ranging from 500 to 1,000 tons have been inside at one and the same time, all swinging to their

anchors, and not a single accident has happened in entering or leaving the harbour.

The Japanese embassy arrived at Washington on the 14th May, and were received with a grand military and civic display, seeming greatly delighted. Their interview with the President took place on the 17th, and was magnificent.

A commission has been appointed to report on the possibility of constructing a port at the island of Reunion, which affords no protection to shipping, except in a bay which is dangerous in bad weather. It is proposed to expend 1,500,000 francs on the construction of a port.

A resolution has been passed by the Mersey Dock Board, to the effect that any pilot convicted of holding an interest directly or indirectly in steam tugs shall forfeit his license as a pilot of the port of Liverpool.

At Japan the two murdered Dutch captains had been buried with much pomp, some of the high Japanese officials being present. The murder was perpetrated in private revenge for the execution of three Japanese on the ground of complaints made by some Dutchmen resident at Yokohama.

The *Great Britain*, as appears from the Australian advices, arrived at Melbourne in the very short space of fifty-five days, one of the quickest passages on record.

Nautical Notices.

DIRECTIONS FOR MACDONNEL BAY, near Cape Northumberland, South Australia.

[Mr. B. Douglas, the active Master of the Trinity House at Adelaide, in South Australia, of whose professional assiduity we have already had occasion to speak in gratifying terms, has discovered a convenient anchorage for moderate sized vessels to the East of Cape Northumberland, sheltered from the southward and westward by reefs extending from that cape. The following is the substance of his advice to those vessels of moderate size that may be led to make use of it.—ED.]

Port Adelaide, 9th February, 1860.

There is an anchorage, under ordinary circumstances, for vessels not drawing above twelve feet in the bay to the eastward of Cape Northumberland; sheltered from the ocean swell by extensive reefs stretching from that headland in a south-easterly direction.

The whole of this anchorage being more or less rocky, with patches of sand, vessels using it should have a heavy anchor and chain, of larger proportion than usually assigned to their tonnage; and, although objectionable, with ordinary precaution vessels, in moderate weather may ride there safely by following these directions:—

From the westward give Cape Northumberland a berth of three miles and do not bring the cape to bear West of N.W.b.N. until Mount Schanck bears N.b.W., then shape a course N.W. for the anchorage, and watch the breakers on the reefs. The water will shoal rapidly from 10 fathoms to 6 on that course, and to 3 fathoms, rocky, as the beach is approached; in which depth the soundings will be very regular, as the patches appear to be composed of limestone flats covered with seaweed. The hull of a schooner, wrecked some years ago, may now be observed; by keeping it bearing between N.W. $\frac{1}{2}$ N. and N.W. $\frac{1}{2}$ W., the breakers will be avoided. The best anchorage is in 3 fathoms, with the lighthouse bearing W. $\frac{1}{4}$ S., and the wreck N.b.W. $\frac{3}{4}$ W., at about three-quarters of a mile from the beach. In bringing up, give the vessel a long scope of chain, not less than sixty fathoms on the heavy anchor.

The government schooner *Yatala* in the above position rode out a strong S.E. breeze (directly into the anchorage) without inconvenience; and, subsequently, when the swell outside was very heavy, had no strain on her cable.

In working out, reverse the above directions, keeping the wreck within the limits of N.W. $\frac{1}{2}$ N. and N.W. $\frac{1}{2}$ W., making short boards.

In fine weather the reefs to the S.S.E. of the anchorage may perhaps be crossed.

The *Yatala* passed over the patches West of them with very uneven soundings, from 8 to 4 fathoms (rock); but as the sea rises without warning on these dangers, the safe channel should be used in preference to crossing them.

The best landing-place is about half a mile West of the wreck, near the end of a clump of shea-oak trees. The beach is of sand, and said to be smooth, but keep clear of the broken water on the patches on both hands in your way to the landing-place.

Strangers on first using this anchorage should obtain the services of the head-keeper of the Macdonnell Lighthouse, who, in fine weather, will come off if a signal be made for a pilot, and he will communicate by Marryat's Code, from a signal-staff near the lighthouse, should he be unable to get off. In bad weather, when he considers that it would be imprudent to enter the bay, a blue flag will be hoisted on this staff. On the approach of bad weather, when he considers it advisable for vessels to proceed to sea from the anchorage, a blue and white flag will be hoisted. The gales usually commence at N.W., but a vessel has plenty of time to obtain an offing before the wind shifts to S.W., where they moderate, and the anchorage may again be taken. It may also be safe in S.W. gales; but as no vessel is supposed to have ridden out a gale from that quarter, every precaution

should be observed until more of the capabilities of this roadstead are known.

The distance to Mount Gambier is about twenty miles on a good bush road.

Wood and water may be obtained near the landing-place,—the former at a reasonable distance from the beach, the latter by digging in the sandy soil, to the depth of seven or eight feet, 200 or 300 yards from high water mark.

The following marks will be found useful when compass-bearings cannot be depended on:—On approaching the anchorage from seaward, keep Point Douglas, (a headland to the W.N.W. of Cape Northumberland) well open of the cape, and Mount Gambier more than the length of Mount Schanck open to the eastward of Mount Schanck before standing in. Then steer for Mount Schanck until the wreck is observed on the beach, when compass bearings may be used, as by that time the heaviest swell will, probably, be passed.

The tides are somewhat irregular; rise and fall at springs about 5 feet. The flood sets to the eastward; it is high water at full and change at 3h.

The variation, by reliable observations, was ascertained to be 6° 19' E.

A plan of the bay can be obtained at the Trinity House, Port Adelaide.

B. DOUGLAS, *Master of the Trinity House.*

INDEPENDENCE ISLAND.—This island is in lat. 4° 1' S., long. 154° 50' W. It is about seven miles and a half long, and five miles wide, and has an immense deposit of good guano. There are several small ponds of brackish water and a marsh, and it is possible fresh water may be found by digging. At the extreme East end are the remains of a coral stone building, probably erected by some wrecked seamen. The island has good anchorage on the West and S.W. sides, in from 10 to 30 fathoms.

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

Channel Islands, various authorities, to 1859, (5s.)

Ireland, West coast, Sligo and Ballysadare Bays, Captain G. A. Bedford, R.N., (5s.)

France, North coast, sheet 9, *Pilote Francais*, (5s.)

United States Lights, corrected to June, 1860, by Commander Dunsterville, R.N., (1s. 6d.)

Admiralty, May 22nd, 1860.

TABLE LXXV.

For reducing English Fathoms to French Metres, and French Metres to English Fathoms.

1 English Fathom = 1·82876096 French Metre.

1 French Metre .. = 0·54081653 English Fathom.

Fathoms or Metres.	Metres and		Fathoms or Metres.	Metres and		Fathoms or Metres	Metres and	
	Dec. Parts.	Dec. Parts.		Dec. Parts.	Dec. Parts.		Dec. Parts.	Dec. Parts.
1	1·829	0·547	40	73·151	21·873	79	144·473	43·198
2	3·658	1·094	41	74·979	22·419	80	146·301	43·745
3	5·486	1·640	42	76·808	22·966	81	148·130	44·292
4	7·315	2·187	43	78·637	23·513	82	149·959	44·839
5	9·144	2·734	44	80·466	24·060	83	151·788	45·386
6	10·973	3·281	45	82·295	24·607	84	153·616	45·933
7	12·801	3·828	46	84·123	25·161	85	155·445	46·479
8	14·630	4·375	47	85·952	25·700	86	157·274	47·026
9	16·459	4·921	48	87·781	26·247	87	159·103	47·573
10	18·288	5·468	49	89·610	26·794	88	160·931	48·120
11	20·116	6·015	50	91·438	27·341	89	162·760	48·667
12	21·945	6·562	51	93·267	27·888	90	164·589	49·213
13	23·774	7·109	52	95·096	28·434	91	166·418	49·750
14	25·603	7·655	53	96·925	28·981	92	168·247	50·307
15	27·431	8·202	54	98·753	29·528	93	170·075	50·854
16	29·260	8·749	55	100·582	30·075	94	171·904	51·401
17	31·089	9·296	56	102·411	30·622	95	173·733	51·948
18	33·918	9·843	57	104·240	31·169	96	175·562	52·494
19	31·746	10·390	58	106·068	31·715	97	177·390	53·041
20	36·575	10·936	59	107·897	32·262	98	179·219	53·588
21	38·404	11·483	60	109·726	32·809	99	181·048	54·135
22	40·263	12·030	61	111·555	33·356	100	182·877	54·681
23	42·062	12·577	62	113·384	33·903	150	274·515	82·022
24	43·890	13·124	63	115·212	34·449	200	365·753	109·353
25	45·719	13·670	64	117·041	34·996	250	457·192	136·704
26	47·548	14·217	65	118·870	35·543	300	548·630	164·045
27	49·377	14·764	66	120·699	36·090	350	640·068	191·386
28	51·205	15·311	67	122·527	36·637	400	731·507	218·727
29	53·034	15·858	68	124·356	37·184	450	822·945	246·067
30	54·863	16·404	69	126·185	37·730	500	914·383	273·408
31	56·692	16·951	70	128·014	38·277	550	1005·822	300·749
32	58·521	17·498	71	129·842	38·824	600	1097·260	328·090
33	60·349	18·045	72	131·671	39·371	650	1188·699	355·431
34	62·178	18·592	73	133·500	39·918	700	1280·137	382·772
35	64·007	19·139	74	135·329	40·464	750	1371·575	410·112
36	65·836	19·685	75	137·157	41·011	800	1463·014	437·453
37	67·664	20·232	76	138·986	41·558	850	1554·452	464·794
38	69·493	20·779	77	140·815	42·105	900	1645·890	492·135
39	71·322	21·326	78	142·644	42·652	1000	1828·767	546·817

THE
NAUTICAL MAGAZINE

AND

Nabal Chronicle

JULY, 1860.

THE ATLANTIC CABLE.

When the electric wire took to the sea and with its requisite clothing for insulation and protection assumed the form of a cable, experience soon began to unfold the difficulties it had to contend with in the performance of its duty. First, in shallow water, there was the surf of the shore, the exposure from the rise and fall of the tide, the abrasion of stones on shoals,—all of which have been successfully dealt with, although there are those who know full well the damaging effects of vessels' anchors. Again, in deep water, although it might be free from these minor difficulties, there were others of a far more serious kind, not yet indeed overcome. The great depth of the ocean, at the bottom of which it has to find its permanent bed, has proved a difficulty, in conjunction with the uneven surface of that bottom and the great extent which it has to cross, that has not yet been conquered,—one compared with which all the rest together seem as nothing.

It is impossible to look back at the costly attempt to lay down the Atlantic Cable without feelings of sincere regret at its unfortunate condition—feelings, indeed, in which any one must participate, without being otherwise concerned, who duly appreciates the enormous importance of the power which it promised. Such were the sentiments with regard to it expressed by this journal (as its pages will amply testify), and on its failure being verified the opinion it also expressed was that an Atlantic Cable would yet be laid. Such an

object is evidently too important to be easily abandoned; and, costly as the first was, those who befriended it need only be shown that another, improved by all the experience that has been since gained (not only in its construction but also in the mode of laying it down), can be safely placed in the bed of the ocean,—those friends, we say, would adopt a second. Indeed, there is a rumour abroad of another already, according to reported deputations, that has also been the subject of evening discussion at one of our public societies: why so, we cannot tell.

It has not been hitherto the course of this journal to express approval of any enterprise involving the outlay of capital with the mere view of encouraging its execution. If an opinion has been ventured it has been founded on views supported, if not by experience, at least by common sense. Such opinion may ultimately, no doubt, prove erroneous, but if so it has the advantage of arising from honest motives, and for its purpose the desire of seeing the projected measure successfully carried out. Why should there be only one cable across the Atlantic?—there will be work enough to be done by as many as are likely to be laid down. Looking, then, from our neutral and independent position on every attempt to establish a communication across the Atlantic by the electric wire in no other than a friendly spirit, sincerely desiring success may crown the work in spite of every difficulty, and believing that this will on some future day be done, we must not be considered partial if we expect it rather from that quarter where certain difficulties which appear to us fatal obstacles are avoided, than from that where they are deliberately encountered. This may partake of partiality, but it is for a principle,—it is avowedly for the *modus operandi* in carrying out the attainment of what all allow would be a grand achievement.

Let us here take a brief view of what would naturally be the course of electric communication with America were the space, between us to be traversed, occupied by dry land. Admitting the desirableness of intermediate stations, the great circle would indicate the nearest distance, and that goes direct to the S.E. part of Newfoundland. There would perhaps then be no real obstacle. However, since, instead of dry land, we have the ocean to deal with, while the same route would be preserved, the resources of the seaman are at once in request. Now it has been seen that from some cause not yet made fully clear, the attempt to deal thus with the ocean has failed. Not all the care taken in the United States ship *Niagara* or in the British ship *Agamemnon* was sufficient effectually to finish the work. Experience is a valuable commodity in the attainment of all human knowledge; and, whether the principal fault lay with the electrician or with the sailor, the first attempt at laying the Atlantic Electric Cable was deficient in that commodity, and therefore failed.

There were undoubtedly several very adverse influences to be overcome. In the electric portion of the subject the continuity was repeatedly proved to be perfect, and although one party might be of opinion that Professor Morse's experiment was not convincing, and

another might consider heavy discharges of electricity desirable, and another that a small continuous one would be effectual when those would only tend to destroy the wire,—the fact yet remains that the wire, from some unknown cause, is incapable of doing its work. Again, in the nautical part, the first fact we have is that the lay of each half of the covering wires was in the opposite direction to the other. Then we have the coiling and uncoiling into and from the ship; then the severe strain which the cable had frequently to undergo; and then the necessary joinings which had to be performed in it at sea in many parts, and in one or two cases probably with a haste which would not conduce to success.

Another source of failure to which a cable is subject that has to cross the ocean is our utter ignorance of the bed on which it is to lie. Here we are, in fact, completely in the dark, and are perhaps blindly encountering evils which in open daylight on the surface of a country would have been entirely avoided. It is quite true that a line of soundings along the intended track of the cable was taken by Commander Dayman, in the *Cyclops*. This line shows clearly that to the West of Ireland the surface of the Atlantic bed is most irregular,—full, indeed, of submarine mountains. Although in one case the distance between two casts of the lead is about five miles, even in this distance a change of depth occurs of 1200 fathoms—400 yards more than a geographic mile. Owing to the comparatively small scale on which this is laid down it appears on the chart (by a profile in the margin) as forming a submarine precipice, although, from want of further information, no one can say whether it is so or not. But the whole number of deep soundings recorded by Commander Dayman on the proposed line of the Atlantic Telegraph from the West coast of Ireland to the approaches to Trinity Bay, Newfoundland, amounts only to sixty-nine, and these, taking the extent of that line in round numbers as 1500 miles, gives but one sounding for every twenty-two miles. Perhaps where the depth does not vary much, as in midway, this might be sufficient, but a mere single line of soundings from either shore until that distance is reached shows that much more is wanted to enable us to choose a less rugged or unequal surface on which to deposit the cable.

Of the approaches to the British Islands from the deep blue water of the Atlantic Ocean we yet know but very little. With the exception of the Rockal Bank, to the N.W. of Ireland, and a few deep soundings on this side of it, our knowledge extends little beyond the hundred fathom line. This has no doubt been ample for navigation. But when we are required to choose the most favourable direction in which a telegraph cable should approach them anywhere from sea, our scanty information will not supply the answer. We know little or nothing of the sides of that submarine foundation on which these islands stand,—where it may be precipitous, abounding in rocky, sharp ridges, whether these are broken or continuous, and where they may be separated by sandy slopes or moderately inclined ground. And yet how necessary is the knowledge of this to enable us to say

where an electric cable would be best laid to avoid the former. A better bed than that adopted for the poor Atlantic Cable might be found by a close examination of these approaches anywhere from the westward, and we do not know a more encouraging present, or one more in keeping with the progress of the day, than such a present would be to the advocates of telegraphic communication with America. But it should be done on a large scale, every square mile or two showing a sounding, and this as far out as the depth of 2,000 fathoms.

Of the difficulties which the electric cable has to encounter there is yet one of a formidable nature which it is our special purpose here to point out. Submarine volcanic action is no trifling enemy to attack a cable with its yielding coat of gutta percha; and there are volcanic districts at sea as well as on shore that are very well known to seamen. In our limited intercourse with those engaged in electric cables we have lost no opportunity of warning them against this danger. We have pointed them out personally to those concerned in the Red Sea Cable as far more formidable than the sharp pointed rocks which were once conjured up as the insuperable difficulty to the cable there. But we have heard of the work of this cable between Suez and Aden being interrupted for some time,—Is this the effect of submarine convulsion or what? But we are now dealing with the Atlantic.

When Maury concluded his very interesting little book on the physical geography of the sea with the following paragraph, it is clear that he had no apprehensions of volcanic action interfering with the quiet repose of the cable in the part of the ocean to which he alludes. Concerning the physics of the sea, he says,—“They satisfy me that no sea is so deep or so stormy but that an electric cord may be safely planted in the still waters of the bottom; that the currents and storms which agitate the surface do not reach far down into the depths below; that under the pressure of the deep sea there is no decay: even those mites of little animals that inhabited it when alive, those microscopic shells which Brooke’s rod brought up from the bottom for us are, there is ground to conjecture, preserved for ages down there. Hence it may be inferred that submarine cables will last life times at the bottom of the deep sea; that henceforward wrappings of iron wire about submarine cables for the deep sea may be dispensed with; that, except for shoal water, no future cable need be larger than the gutta percha cord which incases and isolates the conducting wire of the Atlantic Telegraph; and that submarine lines of telegraph, though their prime cost may be a little but not much more than that of overland lines, will henceforth prove the cheaper in the end; for being once down they will require no repairs in the deep sea. Only as they come from the depths of the ocean to the land will they be liable to injury.”

These may be words of comfort to some,—to those perhaps who can believe that even the internal fires of this globe of ours are always quiet below the sea, and that the crust of earth in which they are encased is strong enough everywhere to resist their turbulence. But that they are not so there is abundant evidence. It is well known

that the Atlantic islands are all volcanic. But we are now travelling into the domain of the geologists, and will consult their opinions on the subject, although Captain Toynbee has shown us that we need not search the bottom of the sea to find shells as minute and perhaps more so than those brought up by Lieutenant Brookes. Nor need not travel from our own pages for a general view of this important branch of the subject. A few years ago the extraordinary effects experienced at sea and reported every now and then attracted the attention of the French Institute, and from their report (*Comptes Rendus*) we added two more to a number of others which had already appeared in these pages. The seat of volcanic action was then a little South of the equator, and they gave rise to the following communication, which was attributed at the time to that well known geologist Mr. Charles Darwin, who had accompanied the present Admiral Fitzroy in his interesting scientific voyage round the world. He says, in our volume for 1842:—

“From the repeated indications of disturbances which have been observed near the equator by navigators, it seems probable that the pent up gas of a submarine volcano has for a long time been struggling to escape, and from which action the bed of the ocean may be gradually rising towards the surface.

“If there be any truth in this conjecture, although the precise effect cannot be predicted, yet we may anticipate that one of two great results will follow. If an opening be made the gas may be dissipated, and the progress of the ascending current arrested; in which event the indications of volcanic action may be suspended for an indefinite period in the immediate vicinity. But should the materials of which the bed is composed be sufficiently tenacious to retain their compactness, a shoal or an islet may be brought to light, to the manifest astonishment of those seamen who, forgetting that such phenomena are common in the ocean, and are to be expected in this part, where volcanic islands are situated, dream only of shoals.

“The destruction of the city and towns of Haiti may, not improbably, with the operations which have been going on about the equator; for it is not unreasonable to believe that there exists under the crust of the earth some means of connection between the agents of these terrible convulsions, even at remote distances. It would not be an incurious matter of speculation to trace the connection of some of the seats of volcanic action, active and dormant; for instance, we may commence with Iceland, and reasonably connect its fires with those of the Azores, although 1500 miles apart. From the latter towards the coast of Portugal and the Madeiras tubes may run; and still more southerly to the Canaries, Cape Verds, the equator, and perhaps onwards towards Ascension, St. Helena, Tristan d’Acunha, round to St. Paul of the Southern Ocean.

“The play of the igneous materials at the equator probably lies between the 19° and 29° of longitude, the St. Paul of the northern hemisphere being a specimen of its upward exertions.

“Some of the volcanic islands may be mere shells, in which case they will ultimately fall in. In others the hollow may have been filled up, and a depression left in the bed at a short distance. The process may be easily imagined. All persons must have remarked in bituminous coal, when ignited, a vivid burst of flame occasionally thrown out in jets, accompanied with clouds of smoke and a vehement and rushing sound from an orifice at first not larger than a pin's head, but which very soon begins to throw out and inflate (somewhat in the manner in which bottles are blown by the glassmen) a black protuberant substance, the softened carbon probably, which rapidly enlarges, preserving an oblong rounded shape, until the gas has entirely evaporated, or is consumed by the flames, when the substance becomes in some degree indurated.

“It is remarkable that in a similar way the shoals and islets hove up by submarine fire are formed, and that they are for the most part at first either hollow or extremely porous, as the appearance of the scorix and pumice suggests. If this be the fact such may account for their bases giving way and the entire fabric falling in and ultimately disappearing. Upon a large scale, and when the subterranean furnace acts with great vigour, yet, from the stubborn nature of the incumbent materials, it is unable to bore an orifice for the escape of the expansive fluids, the whole crust of the superficies of the immediate space of action may be forced upwards, and so produce an island of some extent, which from its thickness and stability retains its new position. In time, however, what the pressure beneath was unable singly to perform may be effected by the assistance of the atmosphere. The heat of the sun, evaporation, and moisture alternating would render the materials more yielding; and thus by the conjoint agency, internal and external, a chimney or vent is formed, and a volcano is established. There are no doubt various modifications of this process, which, when inquired into and explained at length, would readily account for the different forms in which we find volcanic lands.

“It is not improbable that the efforts of the expansive fluids near the equator may have been in play ever since the crater of Ascension ceased to emit fire, or St. Paul Island made its appearance above the surface, as it is reasonable to believe that when a hitherto existing vent becomes closed, another will inevitably be opened in some or other direction in the lines of communication; and if the bed of the ocean there assumes the same character as the general shape of the earth's central crust, we should expect to find the depth of water less along the entire aqueous portion of the line than to the northward or the southward.

“The effects on the earth's surface of the expansive fluids are generally confined to a peculiar sort of motion, which is repeated at intervals and often spread over a vast extent of land and sea. In these instances we may suppose the cause to be deep seated, but the reverse when those terrible results which accompany the shocks are manifested in the destruction of towns and villages. These physical disturbances

appear not to be confined to any particular portion of the earth; they have been experienced in almost every country of more or less intensity."

The advocates of ocean telegraph cables will find little in the foregoing to strengthen their confidence in the permanence of that foundation on which they propose to rest their hopes—that treacherous crust of the earth which may here or there be unable to resist the more or less energetic action proceeding from the combination of those elements of fire which are beneath it; and they would assuredly choose that region which history shows to be less liable to it than any other.

There are two remarkable features in the development of volcanic agency to which we may here refer. The one is the wonderful distance to which it extends, and the other the supposed immediate presence of the same danger, although experienced at nearly the same time at places many hundreds of miles apart. Instances of these facts will appear in the sequel, but first let us briefly quote a few other observations on the immediate effects of volcanic action at sea, from the reports of those by whom they are experienced. Of the violent effects on the ship there is but one opinion—as if she was being dragged over a rugged road; some, however, are more in excess than others.

The account of the commander of an English vessel named the *Crown*, relating the effect produced by one of these submarine convulsions fifty-seven miles South of the equator, in long. $23\frac{1}{2}^{\circ}$ West, states,—“At 10h. 45m. p.m. I was much alarmed in perceiving the vessel to touch the ground, and grating with the keel as if passing over a coral reef.” This alarm was increased as it occurred at night, and although the lead was thrown over no bottom was found with 120 fathoms. This occurred in February, 1835, and appears in our volume of that year (p. 577, October). But in the same volume, and in the following number, the late Mr. Purdy, whose labours in hydrography are well known and appreciated in the nautical world, communicated a paper to this journal relating a series of these effects on ships at different periods extending back to 1747, and all experienced between the equator and 3° S. latitude, and the longitudes of $23\frac{1}{2}^{\circ}$ and $17\frac{1}{2}^{\circ}$ W. The account of Captain Taylor, of the *Aquila*, says,—“A loud rumbling noise was heard, and a sensation felt exactly like that of a vessel sliding over a rock; the rudder was so much agitated that the man who was steering could scarcely hold the wheel.” The late Admiral Krusenstern, in May, 1806, also observed a cloud of smoke about the height of the ship’s mast; it disappeared suddenly, then rose again and vanished. And in about lat. 7° N. and 22° W. a hissing noise and bubbling up of the waves made Lieutenant Evans, of the navy, believe that he was passing over a submarine volcano.

There are yet two more cases South of the equator that we find in our volume for 1838, preserved from M. Daussy’s paper in the *Comptes Rendus*, occurring within the limits above stated. One of these says,—“We felt an earthquake which made the vessel shake as if she were scraping along a bank, and to such a degree that I was certain she

was aground." The other says,—“The captain and officers thought the ship had struck on a coral rock;” and it appears that a collection of “volcanic ashes, black, and of the consistence of coal,” were presented to the Asiatic Society, that had been picked up from the sea, which had been in “violent agitation.” One of H.M. ships, however, on her way to Australia could find on it no ground with 190 fathoms of line, although the same work of volcanic action had been found going on in nearly the same place a year before. This occurred in 1838, and seems to have been followed by a short interval of quietness without attracting attention until October, 1842. But in 1852 it was again displayed and an account of it reached Lloyds’, which we preserved in our volume for 1853. This is worth quoting here as being even more formidable than any previous account on record relating to the particular region in question. It says, at page 279,—

“On Saturday information was received at Lloyds’, under the date Liverpool, February 4th, of an extraordinary marine convulsion experienced by the *Maris* on her passage from thence to Caldera. On the morning of the 13th of October, the ship being twelve miles from the equator, in long. 19° W., a rumbling noise appeared to issue from the ocean, which gradually increased in sound until the uproar became deafening. The sea rose in mountainous waves, the wind blowing from all quarters; the control over the ship was lost, and she pitched and rose frightfully, all on board expecting each moment to be their last. This continued fifteen minutes. The water then gradually subsided, when several vessels in sight at the commencement of the convulsions were found to have disappeared. Shortly afterwards a quantity of wreck, part of a screw steamer, was passed, so that some vessels and lives were lost.”

One more account of this same district may be added here from the same volume; it corresponds much with the rest, but adds a particular regarding the line which the others do not give:—

23, *Berkeley Street, Liverpool, 17th June, 1853.*

Sir,—Having commanded a large ship bound to the East Indies, with very favourable winds, we crossed the line in fourteen days, and then till 6° or 7° to the southward of the line had light winds. On the 17th July, in lat. $3^{\circ} 30'$ S., long. $24^{\circ} 30'$ W., a sudden trembling of the ship was felt. I was on the lower deck at the time. The mate, who was on deck, called loudly to me the ship is striking on rocks, for such it appeared to be. I immediately ran on deck and ordered the helm down. Although there was a nice light breeze the ship would not answer her helm. I looked over the side: the water around us appeared to be agitated as if boiling, and a short distance from us was a vapour ascending as if from a furnace. All hands witnessed this extraordinary sight. We got the long lead line along and payed to 110 fathoms, but no bottom was found. The lead and line were very warm when hauled in. I have heard of its having been seen before, and about the position it is placed on the charts. I can verify to the

truth of this statement. The mate died on the coast, or he would have confirmed this report of

Yours obediently,

J. H. C. SHORT.

To the Editor of the Nautical Magazine.

P.S.—I unfortunately lost all my journals when wrecked last November on the coast of Ireland. They consisted of daily journals kept for seven years.—J. S.

And yet before we leave these parts we must quote from our number for May last (p. 278) a recent account of another of these instances, which seems to have been remarkable for its severity, and nearer to the St. Paul Rocks than the foregoing:—

“The ship *Florence Nightingale* sailed from Liverpool January 1st, 1859. On the 25th, St. Paul Rock, lying in lat. $0^{\circ} 55' N.$, long. $29^{\circ} 28' W.$, bearing N.W.b.N., distant about ten miles, we experienced a severe shock of an earth (or sea) quake. It commenced with a rumbling noise like distant thunder, and lasted about forty seconds. I am perfectly familiar with earthquakes, having experienced many on the western coast of America, but I never felt one so severe as this. Glasses and plates jingled so much that I wonder they held together. Several articles were shaken from off the after hatch, and the ship felt as if grinding heavily on a reef of rocks. The cry of “The ship’s ashore!” burst simultaneously from the lips of all on board, and the watch below came tumbling up in great haste. I was very much startled, and ran to the ship’s side to look for bottom; but soon recovering myself, I allayed the fears of the men by explaining that it was only an earthquake. The first of the morning the sky was clear; the clouds thickened towards noon, and at the time of the earthquake it was densely overcast, sultry, and oppressive. The sea had been short and irregular, but was succeeded by a heavy swell from N.E., which lasted several days.”

This last observation of the swell coming from the N.E. is a curious confirmation of the opinion expressed by geologists that the line of volcanic action is S.W. from Iceland.

Lieutenant Maury, of the National Observatory at Washington, in noticing the existence of a submarine volcano, as observed by Captain Ballaird, of ship *Rambler*, from Calcutta, on the 30th October, in lat. $16^{\circ} 30' N.$, long. $54^{\circ} 30' W.$, and Captain Potter, of the barque *Millwood*, last from Rio, half an hour later on the same day, when in lat. $23^{\circ} 30' N.$, long. 58° , as noticed in the *Inquirer* immediately after the arrival of those vessels at Boston and Salem respectively, makes the following remarks:—

“These vessels were about 520 miles apart. Supposing them to be in the direct line in which the earthquake was travelling, its rate will appear to be about one mile in about five seconds, which is only a little slower than sound (at the rate of one mile in 4.6 seconds) travels through the air.

“It is worthy of note that these two vessels were over and in the

direction of an elevation, the existence of which my investigations of ocean currents and temperatures have induced me to suspect in the bottom of the Atlantic. This supposed submarine mountain range extends in the direction of Cape St. Roque from the Capes of Delaware and Chesapeake.

“Lieutenant Walsh, in his recent cruize in the *Taney*, was directed to run a line of sounding across it for the purpose of establishing its existence or non-existence; which he, however, was prevented from doing in consequence of his schooner proving unseaworthy, and of his having to put back before reaching that part of his cruising ground. The object of this communication is to request other mariners who may have experienced the same, or any other earthquake at sea, to communicate the particulars thereof.

“I have also received an interesting letter from Captain Waters, of the ship *Vespasian*, describing a remarkable ‘tide rip’ seen by him October 16th, 1850, lat. $8^{\circ} 30'$ N., long. 36° W. The day was beautifully clear, with the wind southwardly and light. He was sitting in his cabin and heard a loud roaring noise, ‘not unlike that of a large waterfall.’ He hastened on deck and could see nothing; but mounting up on the house, he saw with his eye-glass at the ‘distance of three miles the surface of the water raised some three or four feet above that nearer,’ and approaching at the rate of three or four miles an hour.

“When close to the vessel it had a fine appearance, the waves were raised at least four feet above the level of that nearer, and falling over somewhat like the water over a dam, and breaking against the vessel’s side with such force as to heave water upon our decks. We were in the strength of it from ten to fifteen minutes, as it passed on to the N.E. I could distinctly mark its course for twenty minutes after it had passed. The surface after it had passed resembled that on “Fishing Rip” in a rough sea, and as the surrounding water was smooth it struck me as a beautiful sight. We saw at a distance two others during the day, but not so large as this. I have before seen “tide rips,” so called, but none ever to compare to this either in size or beauty.’

“In the various abstract logs returned to this office by mariners who use the ‘wind and current charts,’ frequent mention is made of ‘tide rips’ in this region. But this evidently could not have been a ‘tide rip’ caused by a current, for the rip experienced no current, and had it been a ‘tide rip’—as the agitation of the water by currents at sea is called—then it would have lasted longer.

“The position of this vessel was northward and eastward of the supposed range of submarine mountains. This ‘tide rip’ came from the southward and westward, the direction in which they were, and passed off to the N.E.—that is, perpendicular to the line of their axis.

“Might not this extraordinary ‘tide rip’ have been caused by the throes of a submarine volcano? I ask the question for the purpose of calling the attention of mariners more particularly to the ‘tide rips’ so often seen in the equatorial regions.”

The foregoing extracts from the pages of this work will bear out the observations preceding them of the severity of submarine volcanic action on ships by which it is experienced, and also its supposed immediate presence although extending over many miles of space. Of the wonderful extent to which this attains Sir Charles Lyell informs us in his very interesting account of the earthquake at Lisbon on 1st November, 1755, on the authority of Humboldt, that "a portion of the earth's surface four times greater than the extent of Europe was simultaneously shaken. The shock was felt in the Alps, and on the coast of Sweden, in small inland lakes, on the shores of the Baltic, in Thuringia, and in the flat country of Northern Germany. The thermal springs of Töplitz dried up, and again returned, inundating everything with water discoloured by ochre. In the islands of Antigua, Barbados, and Martinique, in the West Indies, where the tide rises little more than two feet, it suddenly rose above twenty feet, the water being discoloured and of an inky blackness."

Let us now leave these unquiet southern regions and approach nearer to the scene of those unsuccessful attempts to establish the electric cable in Maury's "still waters of the bottom" of that ocean where it "will last life times," freed from those cumbersome "iron wrappings" which contribute so largely towards expense and to render it unmanageable. We need say nothing of the Azores. Their volcanic character is so notorious, they have given so many oft repeated warnings, in the shape of short lived islands, the jets of volcanic fire, as well as in the fearful destruction of towns and changes in the surface of the land, that the advocates of ocean telegraphy evince no desire to approach them with a cable, preferring to adopt a very respectful distance from such company. But, alas, how far must they be left? for we are told that the volcanic fires of Iceland may be reasonably connected with those of the Azores. That the sea to the extent of many miles to the N.E. of the group has been the scene of oft reported vigias we know very well, and even to the N.W. of them there is something of the kind. To the northward of them, between the latitudes of 49° and 50°, and the longitudes of 29° and 30°, it is stated in our volume for 1842 (p. 226) that "about the year 1752 a rock was reported to have been seen about 440 miles North of the Azores, although the latitude and longitude given does not agree with that distance. In that year it is said to have been looked for by Lord Rodney (then a commodore) and Sir Charles Saunders, but in vain;"—and it is innocently asked by the person who communicates the information (long before the use of the galvanic wire in ocean cables was thought of), "Considering the position, may it not have been an ephemeral display of the igneous trough,—the submarine spirit,—between Hecla and the glowing furnaces of St. Michael of the Azores? The probability of its having been black ice is not great, as we have no report of the bergs drifting in that parallel so far to the East." This question of a naval officer now no more remains still unanswered, for we have no deep soundings thereabouts; which, if sufficiently close, would soon bring to light the existence of a submarine moun-

tain, although it may be, after all, but a *vigia* with no foundation, like many more.

And yet of one of these excrescences under the ocean's surface we have direct proof in the first volume of this work (1832; p. 393) in a position tolerably near to a deep sounding of Commander Dayman's, and this it may be useful to quote here, with a confirmation of it from the same officer and our reasoning on the subject from our last year's volume. It is about midway between the Azores and Newfoundland, and has besides another shoal cast of thirty-five fathoms about a hundred miles North of it, as if to increase the opinion we entertain of there being a submarine range of high ground there, and, although far distant from the bed of the Atlantic Cable, yet betraying those signs of volcanic action abovementioned. Of this we said in our last year's volume:—

“In the first volume of this journal we inserted a report of Lieut. Sainthill, R.N., to the late Hydrographer, Sir Francis Beaufort, on a cast of a hundred fathoms which he found between the Azores and Newfoundland, that has remained in the chart ever since. The deep soundings made for the Atlantic Cable by Commander Dayman would seem to throw doubt on the existence of this bank, for we find this officer saying in his report printed by the Admiralty, in allusion to the space which he had examined between Newfoundland and the Azores,—

“In this space and near the Newfoundland Bank is a narrow belt of water of unknown depth, in which was obtained one cast of 3,000 fathoms without bottom. This sounding having been made very near the spot in which 100 fathoms are marked on the chart, on the authority of Lieut. Sainthill, R.N., would appear to disprove the existence of this *vigia*, as well as of one or two others noted in *Purdy's Directory for the Atlantic Ocean* as having been reported near the same position.’

“The distance of the 3,000 cast without bottom does not appear, but from the positions we have inferred it to be about thirty-two miles. and this may be more or less, owing to error in reckoning. However this may be, the following extract of a letter on the subject has been sent to us in reference to the above observation:—

“I delayed acknowledging the receipt of the pamphlet in hopes of finding my log-book with the particulars of our soundings in the *Beaufort*, in 1832. But I have been unsuccessful, and can only tell you that I am perfectly convinced we touched bottom; which Captain Dayman would call *an excellent up and down cast*. And as my chief mate, W. Whiteley, when he saw the lead was on the ground, jumped over into the main chains and hauled up the slack, the 100 fathom mark was just awash, and the line so nearly perpendicular that we considered that the true depth.

“The arming of the lead showed *sharp rocky bottom of fine bluish ashes*. The water was very much discoloured, which induced me to try for soundings; and my opinion is that we were over a submarine volcano in a state of eruption. My chronometer may have been half

a degree wrong, and if Captain Dayman happened to have an error the other way, there would be plenty of room for the mountain and the valley: as, for instance, from the peak of Tenerife to the deep sea is a smaller distance.

“ ‘ In twenty-six years, also, the levelling power of oceanic currents would reduce the height of my mountain very considerably; but of course not to destroy the lofty lump which I expect will be found somewhere thereabouts *when the Atlantic is thoroughly examined.*’

“ Now, the nearest distance of the peak of Tenerife from the sea is not nine miles, by Admiral Vidal’s survey; which peak rises in that short distance to 12,180 feet above its level. It therefore appears to us that Lieut. Sainthill’s observation is fully justified. If an actual rise of more than 12,000 feet can take place in nine miles, how easy does a change of more than 3,000 feet appear to be in thirty, setting aside error in position, alluded to by him. Without, therefore, questioning in the slightest degree the authenticity of Captain Dayman’s soundings—in which we have as much confidence as himself,—we are inclined to agree with Lieut. Sainthill that his ‘*bluish ashes*’ are not to be set aside, and that somewhere near the position he has given his mountain will be found ‘*when the Atlantic Ocean is thoroughly examined.*’ ”

This, as we have observed, is far removed from the interesting ground occupied by the cable, but is well entitled to an examination as highly interesting both to the geologist and seaman, not only on account of bringing out the actual character of the bottom of the ocean, but also of defining that of the eastern edge of the great bank of Newfoundland, near which it is, and showing whether that is shelving or precipitous, and whether a series of submarine mountains are gradually being lifted to the surface of the sea by those fires beneath it which are occasionally at work.

Before we leave this still southern ground we must record another display, the last we believe that has shown itself, off the Azores as belonging to the subject, from our volume for 1858, p. 102.

*British Vice-Consulate, Terceira,
December 21st, 1857.*

Sir,—I have the honour to enclose the copy of a document obtained at my request from Mr. William Cook, master of the British schooner *Estremadura*, of Glasgow. It appears that he did not think of trying the temperature of the water, which is to be regretted, as it might have tended to prove that the effects observed were those of submarine action. No shock of earthquake was felt at this island at the time. It serves, however, to show that mariners never can be too cautious when approaching these islands, as from one day to another there is no knowing what formation may take place either above water or awash; for instance, the Island Sabrina in 1811, and the danger seen by three vessels proceeding to St. Michael’s in 1849, about forty miles to the W.N.W. of that island, which gave rise to Mr. Consul Hunt

inducing the masters of the vessels *Æolus* and *Prospero* to go in search of it, but without success.

I have, &c.,

JOHN READ, *H.B.M. Consul.*

To the Secretary of the Admiralty.

DEPOSITION.

I, the undersigned, master of the British schooner *Estremadura*, of Glasgow, whilst on a passage from Troen to the island of Fayal, with a cargo of coals, do hereby declare that in lat. $39^{\circ} 57' N.$, long. $25^{\circ} 50' W.$, at 7h. p.m. on the 25th of November last, I observed abaft the beam what I considered to be a squall, but which eventually turned out to be a kind of mist or warm steam. It being my watch on deck, I asked the helmsman if he found any difference in the air, to which he replied, it was quite warm. I called the mate up, and he as well as those on deck felt the same. This lasted for half an hour; there had been no fog or mist before. The wind at the time was N.E. by compass, and continued so throughout without any alteration in force. We had a following sea previous to falling in with this mist, but the sea then changed to a kind of boil or topping sea, as if surged up from beneath, but afterwards returned to the former state when we were clear of the mist. When this phenomenon occurred the Amplimont Rock, as laid down in the chart, would bear N.b.E. by compass, distant 140 miles. I calculate the vessel to have been going at the time from 7 to $7\frac{1}{2}$ knots, with a following sea. Sighted Terceira on the 26th, and anchored in Fayal Roads on the 27th, of November.

WILLIAM COOK

JOHN READ, *Consul.*

We will now direct our attention further North, towards the interesting ground occupied by the cable, for we find that even North of that, since our attention has been engaged on this subject, the services of Captain Sir Leopold M'Clintock have been put in requisition to explore the depths of the ocean where it is often locked up by ice, and where huge masses of this material sport about at the pleasure of winds and waves, playing a game of hide and seek when released from the coast they waste away their small span of existence until they are no more seen. The proposal, as it has been somewhere stated, is to lay a cable to Iceland, we presume in connection with these islands: thence to Greenland and Labrador or Newfoundland.

For our own part, we have long looked on the chart as an unfinished and therefore unsatisfactory document. What mean those large spaces left blank on it by parallels and meridians crossing each other with mathematical precision, useful in their way, but as if nothing else had any right there, unless it be an impertinent group of islands contesting their right with winds and waves to hold their place on the surface: and well it is for the navigator that they can do so. An All-wise Creator has left them to assist him in the important duties of his

calling. But have we added a helping hand in the way of deep sounding? We have been as niggardly in this respect as we certainly have been in others, and the question *cui bono?* has either remained unanswered or the subject never entertained as unnecessary. Instead of those large blank spaces remaining in their primeval state on the charts, we hold that these as well as the plans of harbours should have their soundings, and our reason why is this. They might bring to the notice of the mariner a submarine ridge here and there so near the surface that it would give him a fresh departure by feeling it with his lead. He knows full well the value of that. Such ridges would enable him to trace a mountain beneath him to its summit, and would enable him to establish the position of a *vigia*, which might then stand as a friendly beacon for him in mid ocean, or would be swept away from the chart by the lead as some *vigias* have been (like the Devil's Rock) by the searching duty of the lead. We should have the ocean's depth in its stead. Let the geologist answer for himself as to the use of such a chart,—then, indeed, he too might trace with that keen perception which his science teaches, the course of submarine volcanic action, *cum multis aliis*, and the philosopher would exult with both on finding, as he foretold, that the bottom of the sea has its mountains and valleys, with a peak here and there at the surface, its precipitous ridges, and its extensive plains sheltered by waving forests for the habitation of its denizens, after the same fashion as dry land, albeit those inhabitants may be swallowed up beneath the waters by the submarine volcano as those on dry land are by subterranean fire.

It is for such reasons that we advocate the free use of the deep sea lead, and rejoice that we shall receive a certain instalment to our slender stock of information from the sounding line of Sir L. M'Clintock; not that we believe the subject of ocean telegraph will be much advanced by it in his northern investigations. But how can we look at the blank space between us and Iceland, across also to the shores of Greenland and Labrador, without desiring to scrutinize the depths of the intervening seas, whether the banks from whence those lands arise are as precipitous as the lands themselves,—in fact, the character of the ocean's bed there as well as elsewhere.

Geologists tell us that it would interest them to trace the bed of submarine volcanic action from the Azores to Iceland. In a N.E. direction from the Azores *vigias* have been abundantly reported, in positions extending from these islands over half the distance to our own shores, and that Iceland itself is a very ancient bed of volcanic action. The useful contributions of Messrs Mallet, forming a volume of the Transactions of the British Association, state, that in 1165, and again in 1219, volcanic fires were at work there, and in the latter year extended out to sea. But Sir Charles Lyell speaks of this hot-bed of volcanic action in the following unmistakeable terms.*

“With the exception of Etna and Vesuvius (he says) the most com-

* Entitled “*Earthquake Catalogue*,” kindly placed in our hands by Admiral Fitz-Roy, in charge of the Marine Department of the Board of Trade.

plete chronological records are those of Iceland, for their history reaches as far back as the ninth century of our era; and from the beginning of the twelfth century there is clear evidence that during the whole period there has never been an interval of forty, and very rarely one of twenty years, without either an eruption or a great earthquake. So intense is the energy of the volcanic action in this region, that some eruptions of Hecla have lasted six years without ceasing. Earthquakes have often shaken the whole island at once, causing great changes in the interior, such as the sinking down of hills, the rending of mountains, the desertion by rivers of their channels, and the appearance of new lakes. New islands have often been thrown up near the coast, some of which still exist; while others have disappeared, either by subsidence or the action of the waves.

“In the interval between eruptions, innumerable hot springs afford vent to subterranean heat, and solfataras discharge copious streams of inflammable matter. The volcanoes in different parts of this island are observed, like those of the Phlegrosan fields, to be in activity by turns, one vent often serving for a time as a safety-valve to the rest. Many cones are often thrown up in one eruption, and in this case they take a linear direction, running generally from North-East to South-West, from the North-eastern part of the island, where the volcano Krabla lies, to the promontory Reikianes.

“The convulsions of the year 1783 appear to have been more tremendous than any recorded in the modern annals of Iceland; and the original Danish narrative of the catastrophe, drawn up in great detail, has since been substantiated by several English travellers, particularly in regard to the prodigious extent of country laid waste, and the volume of lava produced. About a month previous to the eruption on the main land, a submarine volcano burst forth in the sea, in lat. $65^{\circ} 25' N.$, long. $23^{\circ} 44' W.$, at a distance of thirty miles in a South-West direction from Cape Reikianes, and ejected so much pumice that the ocean was covered with that substance to the distance of 150 miles, and ships were impeded in their course. A new island was thrown up, consisting of high cliffs, within which fire, smoke, and pumice were emitted from two or three different points. This island was claimed by his Danish Majesty, who denominated it Nyöe, or the New Island; but before a year had elapsed, the sea resumed its ancient domain, and nothing was left but a reef of rocks from five to thirty fathoms under water.”

Moreover, the island of Nyöe, which was claimed by the King of Denmark, has left a shoal, the volcano of which was again in active operation in 1830, as appears from the following account of it which we believe appears somewhere in the *Comptes Rendus*.

“On the 30th of March, 1830, a smoke was discovered rising out of the sea S.W. of Cape Reikianes, at the distance of thirty-five or forty miles. As during the end of the month the weather was calm and the sky clear, the smoke was seen rising to a prodigious height, and from Reikjavig it appeared like a large cloud. This continued for a couple of months, and some individuals pretended to have seen it emit fire,

which appears doubtful on account of the distance; but the volcano threw out vast quantities of burnt stones and brimstone, which were driven on shore. The volcano was seen again for some time during the next winter."

"M. Gemlogsen attempted to determine the position of this volcano by angular measurement taken on shore,—this operation assigns to it the same position as the submarine volcano which in 1783 made a new island appear to the S.W. in about $63^{\circ} 30' N.$, and $23^{\circ} 27' W.$ of Greenwich, and where the sunken rock called Blind Flugleskiar still exists, upon which the sea was seen breaking in 1829 from the Danish sloop of war *Najaden*, Captain Kinch, when that vessel was passing very near it." This is the last account we have met with,—but as the researches of M. Mallet only extend to 1842, others may have since occurred,—or a treacherous repose may one of these days be broken suddenly by a similar display to the foregoing.

Having been asked individually for an opinion on the subject of laying down an electric cable in the strait of Belle Isle, the reply we gave was that, "it cannot be considered safe there from one day to another, owing to the irregular and rocky character of its bottom, the general current down from the northward through the strait bringing numerous icebergs, the tides on each shore keeping the ice drifting either way. All this would tend to place a cable in perpetual danger from the ice in motion. And then should it be fixed (which it may be occasionally) the part where it lands would incur the additional risk of being torn away, frozen in, from the shore whenever the ice moves," or chooses under the influence of winds and currents to take itself off, which the rise and fall of tide would facilitate, as well as contributing constantly to the instability of any fixed position.

Now this was a mere individual opinion, founded on some experience of Canadian ice in former days, but we are quite content to let it stand as it is, having since seen no reason for altering it. Applying this to the proposed case of a cable at Iceland, where the rise and fall of the tide is about eight feet, as much again as it is in Belle Isle Strait, there will be no want of ice at certain seasons on that coast; for the appearance of it gives employment to the islanders to hunt and destroy the bears which are passengers by it from Greenland. Sir Charles Lyell tells us,—

"It is a well known fact that every four or five years a large number of icebergs, floating from Greenland, double Cape Langeness, and are stranded on the West coast of Iceland. The inhabitants are then aware that their crops of hay will fail in consequence of fogs, which are generated almost incessantly; and the dearth of food is not confined to the land, for the temperature of the water is so changed that the fish entirely desert the coast." We are also told that it often happens in the spring that vast masses of floating ice drifted from the coast of Greenland are impelled by the wind and current against the western coast of Iceland, where they do considerable mischief.

Indeed, with the acknowledged facts before us of the presence of ice on all these coasts which are to form the stations of the northern

cable, and the volcanic bed it has to cross in the sea, it would seem that the new proposal seeks to brave dangers which have been studiously avoided by its predecessor cable No. 1.

These remarks have extended to a greater length than had been anticipated, though justified perhaps they may be by the immediate importance of the subject. Should any one, with the facts they contain before him look for success however distant (that may be), rather from the position already occupied by the cable than from that proposed for the second, it might justly arise from attributing more importance to those sources of difficulty which they display than the advocates of the second would be inclined to admit, although their cable is tolerably certain of encountering them, while the former, as far as has been yet ascertained, has avoided them.

In conclusion, let us glance at the work actually done by the cable No. 1, which has already so long been lying in the bed of the Atlantic. The report of Mr. Wortley, of June last year in the *Times*, states that it has conveyed "from Valentia to Newfoundland 97 messages, containing 1,102 words, containing 6,476 letters. From Newfoundland to Valentia 269 messages, containing 2,840 words, containing 13,748 letters: total, 366 messages, 3,942 words, 20,219 letters. The telegraph was in operation only about three weeks during that time:—it conveyed not only the message of congratulation from the Queen to the President, and from the President to her Majesty, but also the conclusion of the Chinese treaty. It also conveyed to the anxious friends of the passengers in the *Europa*, the news that her passengers were saved. It conveyed two messages from the Government of this country for the purpose of countermanding the embarkation of two regiments from Canada for India, and which probably saved the country a sum of £50,000 or £60,000.

It is a common and no less true observation of every day life that what man has achieved he can achieve again;—in many cases (and this no doubt is one) he can do it better from the experience gained in his first achievement. Report says that attempts are now being made to ascertain the place of failure in this cable, which has done the work above stated. Should they prove unsuccessful and the defect in the cable irremediable, in the event of another being determined on by the promoters of that undertaking, as there can be little doubt of their adopting the same quiet bed as they have chosen on Maury's recommendation, we would counsel them to look for a better road into the ocean depths than that which they took before; to have the acclivities of that bank on which these islands stand well searched by the lead for some one of those various gradual descents from shoal into deep water that must exist in the range from the latitude of 49° to the northward, on which their cable may find its way into the deep sea, without again having to encounter the rugged mountainous district West of Ireland, terminated as it was by an almost precipitous drop of a mile in height.

Meanwhile we shall look for the results of Captain M'Clintock's explorations, whether on icy shores, or that disturbed by volcanic

eruptions, or even in the depths from which arise such exhalations as those stated in the foregoing pages, whether their effects appear above the surface or are silently absorbed by the sea in immediate contact with its glowing bed; we shall look for the results of his voyage, we say, with much interest as contributing to our knowledge of the ocean, information which will always have an interest not only for the man of science but also for the practical navigator all over the world.

LUNAR EQUINOCTIALS.

June 2nd, 1860.

Sir,—Had I less experience of your devotion to the interests of mariners, or less appreciation of your kind forbearance towards myself when offering my occasional “mites” towards nautical science, I might quote in justification of my troubling you, with this the *Daily Telegraph* of 31st of May. As it is, allow me to found a few observations upon one of its conspicuous headings of that day. Under the head of “The Great Storm of Monday,” it states,—“The terrific gale from the N.W. on Monday last, a most unusual occurrence at this season of the year, told with most disastrous effect upon the shipping of the coast, and the destruction of life and property has been truly appalling. As far as the present accounts furnish, no fewer than 150 wrecks and casualties occurred during its ravages. Several steamers are missing, and one on an excursion trip foundered with eighty people on board. * * * The gale almost equalled the hurricane which swept the coast in the latter part of last October.”

I request the favour of being allowed to give the result of my continued registrations upon the subject of Lunar Equinoctials up to 1st of June last: having in your January and March numbers already given abstracts to February 29th. Whether my conjecture be correct that the moon never crosses the equator without the probability of wind, cold, change, &c., may still further be tested by the following facts.

1860, February 23rd.—A strong white frost and fall of temperature. Barometer evidently disturbed.

March 7th.—From the calm and cloudy of the previous day the weather changed to a strong N.E. gale, with snow and very hard frost at night.

March 21st.—Tremendous rain and heavy gale from S.S.W. to West, set in at 2.30 p.m., lasting till past midnight. Two days afterwards we had another very heavy gale. The barometer falling nearly nine tenths of an inch in twenty-one hours.

April 5th.—From dead calm and sudden change of wind from S.W. to N.E. of the day before, a strong N.N.E. gale set in on the

5th, followed by dead calm again during the night, with fog: but two days afterwards, at 8h. a.m., the wind suddenly returned to the southward and westward.

April 17th.—For several previous days the weather had been very fine and calm. On the 17th, however, a fresh breeze suddenly sprang up, which two days afterwards increased to a very hard gale, with sleet and snow (thermometer 38°).

May 1st.—Strong N.E. wind, which subsided towards night into a calm.

May 15th.—Weather all day very variable and at times very threatening; but two days afterwards a fresh gale set in from S.W.

May 28th.—The “great storm” referred to in the *Telegraph*, moderating towards night.

The above days are those on which the moon crossed the equator, and the remarkable coincidences of wind, cold, &c., and a mysterious “two days afterwards,” are surely worth registering in your valuable records.

I have endeavoured to attract attention to the above, where perhaps attention is due; but whether there be an impression as to the expediency of discouraging whatever might convert certain routines of labour into new channels, or certain printed forms into waste paper, or whether there exist another impression, as old as Horace, but not the less odious from its antiquity, I leave to others to determine. I may as well give the words of Horace in the original, viz. :—

An quodcunque facit Mæcenas, te quoque verum est
Tanto dissimilem, et tanto certare minorem?

I am inclined to lay my gauntlet in the path of Mæcenas, and to dispute the “*tanto minorem.*” However, it was from some want of precautions, probably, that 150 vessels were lost on the 28th of May, and our coasts are to be still strewn with the bodies of ill-fated victims.

Lifeboats may be sent along the coast, and the energetic executives of the National Lifeboat Institution and the Shipwrecked Mariners’ Society may devote their untiring energy and manliness to the relief of suffering seamen; the Government expenditure may be demanded and conceded towards breakwaters, such as was needed on Monday last at Filey Bay to shelter the thirteen fine yawls, which on the rocks at Specton expended on that dreadful day the earnings of the fishermen of the district to the value of some £10,000; the thousands of spectators on Yarmouth beach may assemble to witness the destruction of ships, the crews of which so miserably perish unaided before their eyes;—but while a single important fact connected with the weather is deemed too *novel* for investigation by those who take their appointed “trick” at the helm-wheel of science, so long will the sympathies of the community be required in mitigation of the extremities of anguish with which periodical, and probably therefore avoidable, bad weather continues to afflict the home of the sailor.

I am telling the world, through your respected columns, that gales and changes may be looked for at certain periods. I have publicly offered every reasonable proof of my having drawn my opinions from a series of regularly recurring facts. The most experienced officers in her Majesty's navy admit the accuracy of my occasional prognostications (such by the bye as of late might have satisfied the attributes of the veriest stormy petrel). The encouraging approval of many of the distant readers of your esteemed *Nautical*, would of itself warrant continued observations on my part. If, however, the fear of responsibility deter our Mæcenas from acting, (and I really mean no disrespect to our already much burthened authorities,) permit me to take the initiative and say, by means of your thousand tongued publication, that which follows.

Brother sailors of every degree! whether guiding the well found barque, or coaster, or the humble open boat employed in the toil and exposure of fishing,—listen. There is some mystery about the probabilities of weather at certain seasons. *I warn you* that on the dates undermentioned there is a chance of changes which are more than likely to be accompanied by gales and strong winds. I can only say, —Have, if you can, a good port under your lee at such times, or if in the Channel get a good offing, for either on these days or during the two days following you will otherwise be specially liable to accident.

July 8th and 22nd

August 5th and 18th

September 1st, and 15th; and 28th

October 12th and 25th or 26th

November 8th or 9th and 22nd

December 6th and 19th.

Now if a navigator of the smallest repute only suspects from a single observation that broken water or hidden danger exists where not previously indicated on the charts, who so prompt to encourage and assist further research as the Hydrographic Department? Would that *all* were as ready to cherish the seedlings of truth as they appear unexpectedly among the weeds of the surface soil!

We need do all we can to keep a cheerful fire on the coast side cottage hearth, and the life's blood throbbing in the bold British sailor.

I have, &c.,

S. M. SAXBY, R.N

To the Editor of the Nautical Magazine.

P.S. I am writing while another fierce storm rages. From its sudden outbreak from the S.S.E. to South, this morning, followed by the lull, and clearness to windward for a short space, and then the renewal of the gale from W.S.W., with return of heavy gloom overhead and all around, I beg to suggest that this is a cyclone. Our gallant Channel fleet too in the worst anchorage with the very worst wind, at the very time of springs, braving the elements in the Downs! Every English heart who knows of it is praying for their safety.

NOTES OF A VOYAGE TO THE PACIFIC IN H.M.S. "HAVANA,"—
Captain T. Harvey.

(Continued from page 307.)

After passing Huasco the coast presents some remarkable features, in the shape of points and peaks, by which a ship may determine her position on the chart, in tolerably clear weather; and in running from port to port the best wind is found by keeping about twenty miles off shore. The current is affected by the wind, and in light airs and calms we have found none; but with the prevailing wind it runs along the coast to the northward something less than a mile an hour. Off Yndependencia Bay we were set off some ten miles to the westward by the stream between Arica and that point.

On the 14th April we anchored in Callao, having made San Lorenzo too late the evening before to allow of going through the Boqueron. Weather at Callao very sultry, so that we were glad to get away on the 21st, keeping well off from Cape Lorenzo, to avoid being bothered with variables. Unless it is necessary to anchor close in, a vessel should always choose a berth off the West end of the castle, clear of the various smells, &c., in which Callao abounds. The *Havana's* anchorage, in $6\frac{1}{2}$ fathoms, was with Callao Point bearing S. 9° W., and western turret, S. 74° E.

Leaving Callao, we stood well out from the land, current in our favour. In $7\frac{1}{2}^{\circ}$ S. and 83° W. we had as much as 36 miles N. 72° W.; and in the same afternoon we were running through patches of brick-coloured water. At noon of the 29th, in lat. $1^{\circ} 6'$ N., long $86^{\circ} 54'$ W., we ran through a strong tide rip, extending N.W. and S.E. as far as could be seen. It was most distinctly marked, the water to the southward having a greener colour. The temperature before entering it was 72° ; when 500 yards further, and inside or North of the line, it was 78° ; at 0.30 p.m. it was 80° . Up to this we had had a current to the N.W.b.W. of more than a mile an hour; but now we had less, about half a mile an hour, and in a more northerly direction. The next day the wind shifted to W.S.W., and we lost the Trade in $3^{\circ} 19'$ N. and $57^{\circ} 34'$ W., amid thunder storms and squalls with rain.

On the 1st May Cocos Island was seen from the mast-head, bearing E.N.E., and tropic birds and black fish came about the ship. After dallying with calms and westerly winds from the 1st to the 6th, we were treated with a fine easterly breeze and a current to the W.b.N. of 38 miles. We concluded it was the end of a papagayo, and for several days after we had the usual Central American weather. On the 11th we found ourselves inshore looking about for Istapa. The Guatemala Peaks would not be seen, and the shore showed us nothing but one unbroken line of beach and trees, with a heavy surf; but in the evening we had the satisfaction of making out El Agua, or Water Volcano, the East centre peak of the range.

The next morning, on standing in, we observed three vessels at anchor to the westward, and, running down to them, came to in $13\frac{1}{2}$

fathoms, considering that we had reached Istapa. The first visitors informed us of our mistake, and that we were really at San José de Guatemala. The place is utterly undeserving the name of a port, although we found three vessels at anchor there and a large French ship arrived as we left, it being the only landing place for goods for Guatemala. The anchorage affords no shelter whatever; the surf has its full force. The only way a landing can be effected is by means of a surf boat, and even this was capsized four times during our stay. The town of San José consists of some half dozen grass huts and a flagstaff, which cannot be distinguished beyond five miles from the shore. The best marks, however, are the Guatemala Peaks, which are generally visible at dawn. From our anchorage the *true* bearings were as follows:—El Agua, N. $6^{\circ} 26'$ E.; El Fuego, N. $7^{\circ} 8'$ W.; Pacaya, N. $23^{\circ} 26'$ E.; Tajumulco, N. $28^{\circ} 20'$ W. We were distant about three miles S. 27° E. from the flag-staff; lat. $13^{\circ} 53' 35''$ N., long. $90^{\circ} 44' 20''$ W.; var. $8^{\circ} 36'$ E.; about six miles West from the position of Istapa, which is almost deserted. There is an error of about five miles in latitude in the chart, the coast being to the northward.

The current generally sets to the westward, and yet a continuation of westerly winds will alter it.

Starting on May 24th we worked down to Acajutla. Between these places a ship may stand in safely by the lead, as it shoals gradually and regularly to ten and twelve fathoms three miles from the shore. In the afternoon of the 26th anchored at Acajutla, with Point Remedios and the shoal off it sheltering us from the S.E.

Here we found a substantially built wharf, at which there is generally a fair landing, although at times the surf is such as to prevent any approach. Merchant vessels discharge and receive cargo by their own boats. On the 27th the break on the shore was so trifling that our cutters landed on a wooding expedition in parts of the bay without the slightest difficulty; but on the 29th the surf was so heavy that it was extremely hazardous even at the wharf, and four hours were occupied in watching opportunities to embark supplies. Beef, stock, vegetables, and fruits may be obtained in any quantity from Sonsonate; but two days' notice must be given to secure having any considerable amount. The pier, happily, is provided with cranes, which we had to use in getting off bullocks.

We anchored in twelve fathoms, with landing-place N. 55° E.; Point Remedios and ditto, $81^{\circ} 25'$. A vessel should stand no nearer to the Remedios Bank than to twenty fathoms without a good breeze and clear weather. The volcano Isalco was burning during the whole of our stay. No lighthouse gives a better light. This volcano, bearing N.E.b.N., is a good mark for the port.

Leaving Acajutla on the 29th, we arrived at Realejo June 5th, after a tedious, squally passage. Making Realejo from the westward, after passing Point Consequina take care to avoid the Speck Reef, which extends some two miles off shore. There is also a little island off the North point of Asedores Island which, to a stranger, makes very much like Cardon. It has deceived ships, and at Realejo we heard that one vessel had been lost by it. We made it about 5h. p.m. on

the 4th of June and, mistaking it for Cardon, ran for it till we saw breakers right across our course. We hauled out S.E., running along in fourteen to sixteen fathoms, good holding ground. At Realejo we took the ground while anchoring on the bank opposite to Icacos Point, being deceived by its white beach; but we soon hove off into seven fathoms, good holding ground, with Cape Austro S. 46° W. and West point of Doña Paula Estero. The difficulties of this port disappear after the first visit.

Entering Realejo, stand in with Cardon Head bearing East or E. $\frac{1}{2}$ S., which will carry you clear of the Gorgon Rock. From the head steer S.E.b.E. for the end of Castanon Bluffs until the East point of Cardon Island bears S.b.E.; then steer E.N.E. to the anchorage. There is nothing to fear off Icacos Point and you may anchor off the houses in five or six fathoms. Going out, a boat anchored on the S.W. point of the shoal off Asseradores Island will be found very useful. The tide sets across the southern channel; both ebb and flood set through Cardon Channel.

The water at Point Icacos was not found fit for ship's use. Whether the troops (some 400 in number) in the neighbourhood brought it to the state in which we found it or not I cannot say, but from its appearance it could only be necessity that would oblige me to take it. There is good water to be obtained about five miles above, in a stream, at dead low water, which would prevent more than one turn a day generally, and the position is so unhealthy at the season we visited it that we took none. Beef, stock, and fruit plentiful and good. Vegetables scarce and difficult to find.

We left Realejo on the 10th for the Gulf of Nicoya. The next day we picked up a fine N.E. breeze, which carried us across the Gulf of Papagayo. But on the morning of the 13th, with the wind from S.S.W., we were running S.E.b.E. for Cape Blanco in thick weather, with heavy rain, when, just before noon, the weather clearing, we found ourselves most unexpectedly within two miles of the shore. The wind failing and the ship drifting inshore, down went the anchor in seventeen fathoms.

As it cleared up, numerous rocks and reefs, extending above a mile off the land were discovered, on which the sea was breaking heavily. Observations for lat. and long. were then obtained, which placed us in $10^{\circ} 3' N.$, $85^{\circ} 43' W.$, making the chart twelve miles in error on a most foul piece of coast, with reefs extending off shore for more than a mile from the different points. Happily we were now lying quietly at anchor in a bay between two of these. About 4h. p.m. a breeze sprang up off shore. We tripped and stood off, having contributed an important correction to the chart. At Cape Blanco we had angles and bearings, which confirmed our calculations. The coast line between the points named is evidently borrowed from an old Spanish chart by Malespiña, of former days. Captain Gizolme, of H.I.M.S. *Embuscade*, reports a more considerable error in the line of coast laid down South of Cape Blanco, in the vicinity of the Gulf of Dulce.

On the 17th we anchored in Herradura Bay, on the eastern shore of the Gulf of Nicoya, about one-third of a mile off shore, with a warp out astern. We found it a capital watering-place, the casks may be

rafted on shore, and require only to be rolled into a basin. A ship might easily complete water in two days. The surf at times is troublesome, but not dangerous. By the assiduity of Mr. Hull a very dangerous rock was found near the middle of this bay, not marked in the chart. Mr. Hull gives its position by these bearings: House on beach, N. 40° E.; East point of Caño Island, S. 34° W. 0.5 miles; Caño Pinnacle, S. 34° W. 0.9 miles. It is sometimes visible at low water should there be much swell, but otherwise at high water it would not be seen, for we lay here two days without observing it, and many ships have done the same. The rock is cleared by keeping to the northward of a line drawn from the house on the beach to Caño Pinnacle.

A ship running up the Gulf of Nicoya, should keep clear of Punta Susia (Dirty Point). There is a light-house, showing a fixed light, at Punta Arenas, which is very useful and plainly visible Southward of the Sail Rock. By not bringing it to the eastward of N.N.W. you will be clear of all dangers till you reach the anchorage. We came to in 6 fathoms, with the lighthouse bearing N.N.W. $\frac{1}{2}$ W., distant 6 miles. Both ebb and flood set strongly over the Punta Arenas Bank.

[The very important corrections of Captain Harvey and Mr. Hull, referred to in these remarks, have been added to the charts, sheets 3 and 4 of Central America.—ED.]

The reader is requested to make the following corrections in our last number.

Page 306, line 11, *for* about 120 miles North of Callao *read* about 104 miles South of Callao.

” ” 12, *for* fourteen *read* eleven.

” ” 30, *for* eight to sixteen *read* four to six.

” ” 33, *for* Peracca *read* Paracca; and *for* sixteen *read* thirteen.

(*To be continued.*)

HUMBOLDT BAY, California.

This bay is about 250 miles North of San Francisco, and was discovered by the celebrated Prussian *savan* who has been recently lost to the scientific world. The entrance is difficult even for vessels of small draught of water; but yet vessels of 800 or 900 tons find their way there, for the French ship *St. Genevieve*, of 900 tons, has been lying there some months, taking in plank for Australia.

From the mouth of the Elk River to that of the Klamath, nearly forty miles, the coast is fringed with breakers, rendering navigation dangerous, especially in winter. A very respectable lighthouse stands on the North point of the entrance to the bay; and, notwithstanding a steam tug is always stationed at this point and all precautions are taken, the number of wrecks which occur every year is still too great.

Miserable and poor as the aspect is that the coast presents, so is the contrast striking when, on rounding the point on which the lighthouse

stands, a magnificent panorama is displayed. Suddenly an extensive sheet of water, twenty miles long from North to South, and six or eight from East to West, expands before the visitor, and this he sees surrounded by gigantic cedar trees.

The entrance is commanded by Fort Bucksport. Some miles further on the town of Eureka is seen, and beyond it, in the upper part of the bay to the northward, is Union Town, rising as an amphitheatre from the shore.

Two large fisheries, one established by Chinese and the other by Americans, form one of the principal resources of the Bay. The Chinese fishery exports salt and dried fish, while the American fishery is devoted to a branch of this pursuit quite new even for other parts than California. The American fishery is entirely devoted to the capture of sharks, which are found in the bay in innumerable quantities at nearly all seasons of the year. The object is the liver of the fish, from which they obtain oil, and this is generally sold to the Californian traders under the name of cod liver and castor oil.*

Fort Bucksport, which commands the entrance, is nothing more than a collection of wooden hovels, which a good breeze would soon blow away. But still it is the head quarters of the army of North California! and boasts its generals, colonels, majors, and captains,—officers, indeed, in abundance, but truth obliges us to say that to the present time there are no soldiers! Some inhabitants of Eureka, apparently army contractors, have the hardihood to assert that they have occasionally seen a man dressed as a soldier, and even on guard; but there are sceptics there who say that the generals and colonels dress themselves thus, *à tour de rôle*, in order that the sceptics may not doubt the existence of the great northern army! Let others decide and judge for themselves of the truth of these two versions.

The town of Eureka is situated three miles from Bucksport, and is the seat of government for the county of Humboldt. It carries on a considerable trade in hewn timber, seven or eight steam saw mills being at work, employing daily from 200 to 300 workmen. The quantity of wood exported from this place may be estimated at from 15,000,000 to 20,000,000 feet annually.

Union Town is at the head of the bay, and ten miles North of Eureka. The commerce of this town differs entirely from that of Eureka. It is a depot where merchandise only passes through, being transported on mules to different places in Trinity and Klamath. The last Indian war has done much harm to the progress of this place, which has besides a heavy rival in Weaverville, a place through which, together with Sacramento, Colus, and Red Bluff, goods are forwarded at nearly the same price and as securely as through Union Town.

* Sir Emerson Tennant, in his interesting work on Ceylon, recently published, states that there is a shark fishery in the Gulf of Manaar, where they are taken for the sake of their oil; of which they yield such a quantity that "shark's oil" is now a recognized export. A trade also exists in drying their fins, and from the gelatine contained in them they find a ready market in China; to which the skin of the basking shark is also sent, and is said to be there converted into shagreen.—Ed.

ON THE GALES BETWEEN THE PARALLELS OF 38° AND 42° OF SOUTH LATITUDE.

The following remarks on the gyratory storms of the Southern Ocean do not claim entire novelty. In fact, the term gyratory has been taken from Professor Dové's excellent work, translated and published by order of the Board of Trade, which enters thoroughly into the subject and is well deserving the perusal of all practical men who pay any attention to the theory of winds. A copy of it was kindly sent to me by Admiral Fitz Roy when he heard that I had written a paper on these gales: it quite supports the idea that they are not parts of cyclones.

That the cyclonic theory even, is not a product of our own times is proved by a sermon published in 1681, and brought to my notice by Admiral Smyth, in which the author, W. Ramsay, Esq., B.D., speaking of the Euroclydon by which St. Paul was wrecked, says, "The word seems to import much of the American hurricane in it, which, rising in the East, whirls towards the North, and thence to the West, and, gathering round the compass, comes to its full mischief in the South," showing that American hurricanes were "household words" in those early times. How truly these changes of wind represent what would now be experienced at any place on the coast of America, when a West India hurricane passes over it, moving in a north-westerly direction, affected as it would be by the resistance of the land.

Whilst going through the second number of the *Meteorological Papers* published by the Board of Trade, Admiral Fitz Roy's remark in page 21, respecting the veering of the wind, led me to think again on a subject which has interested me very much, viz., the state of the atmosphere between the trades and the westerly winds of higher latitudes; which may be illustrated by a few facts noticed during numerous voyages to India.

We will go to the Southern Ocean for examples, because, having but little land, the natural tendencies of the atmosphere suffer fewer local obstructions, and these facts are quite the rule of that part of the sea. After getting into the parallel of 38° S., ships bound to India have generally kept upon a due East course for several days, where the following changes are experienced.

We will suppose that an Indiaman is in one of those very short calms so common in these latitudes: the barometer is falling fast and a breeze springs up from the northward, the weather gradually thickens as the wind freshens, the barometer continues falling and the wind gradually changes to N.W., whence it sometimes blows very hard, the barometer falling faster than ever and the rain increasing; at last the barometer shows an inclination to rise, the air becomes colder, the wind shifts to West in a heavy downfall of rain, and often increases in violence, the tops blowing off the seas in grand style (I know no more magnificent sight); as the barometer rises the weather becomes fine, and the sea birds, which seemed to flee before

the rain, return. It sometimes blows fresh from S.W., but as the wind draws to the South it becomes fitful, blowing in puffs, just as might be supposed of a wind which through sheer impetus had followed its curve further than its ruling cause supported it. It seldom gets to South, but dies into a calm with a high barometer.

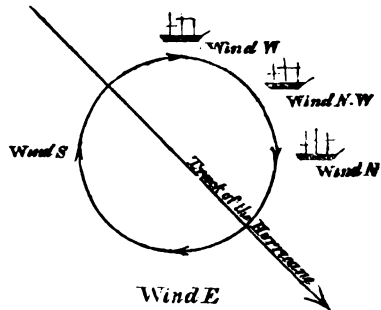
Then commences a complete repetition of the whole affair, down goes the barometer and the wind freshens up from the North. This is a faithful picture of the usual weather from Tristan d'Acunha to the islands of St. Paul and Amsterdam, and probably in the same latitude round the earth.

From these facts I was led to suppose that these ships were caught up by revolving storms travelling to the south-eastward, as shown in the annexed figure; which opinion seems to have been held by others, for Captain A. Parish (in the *Geographical Journal* for 1856, vol. xxvi. pp. 154, 155) speaks of these gales as horizontal cyclones; and not long since a paper appeared in the *Nautical Magazine*, in which the author, commanding one of H.M. ships, spoke of having

hove to to allow the centre of one of these gales to pass his ship. In fact, much time seems

to have been lost by treating them as cyclones, whereas cyclones seem to be the exceptions and gyratory storms the rule in these parts of the earth. But if these gales were parts of cyclones, strong easterly gales must be as common to the southward of the ships as the northerly, north-westerly, and westerly gales are in their position. Besides, if these were cyclonic storms moving from the N.W. to the S.E., it would be impossible that *only* their north-eastern quarters should catch the ships in 38° S. Hence the cyclonic explanation of them is untenable, and we are left with the above and the two following facts to commence a new hypothesis. First, before getting into 38° S. all ships pass through a belt of calms and variable winds; and, secondly, down in 50° S. the "brave West winds" are blowing with little intermission.

Hence we learn that ships bound to India or Australia which make a due East course in the latitude of from 38° to 42° S. are running along a zone of the earth's surface which lies between a belt of light winds and calms to the North, where the barometer is generally high, and a belt of strong West winds to the South. We also know that on the North side of this belt of calms are the S.E. Trades, constantly taking air away from it; and that above the Trades there is an upper



The sketches of the ship give her relative position in regard to the centre of the hurricane, considering the course of the one as East, and the other as S.E.

current carrying air from the N.W. to the belt of calms. This is proved by the motion of the higher clouds in a directly opposite direction to that of the Trade winds. We are also told that there is an upper current bringing air from the South pole to this belt of calms, and there seems to be good reason to believe it. We cannot expect it to be proved by the constant motion of high clouds towards the equator in these high latitudes, for the low temperature to which this air has been exposed must have divested it of the moisture requisite for cloud making; but the higher range of the barometer proves that the air in this calm belt is slightly heaped up.

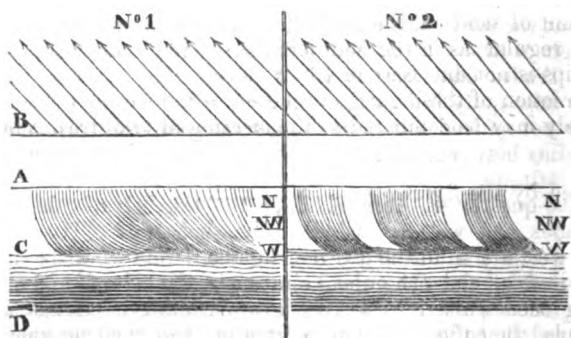
This belt of calms, then, may be called the air reservoir from which the S.E. Trades and westerly winds draw their supplies; which reservoir is kept quite full by the upper currents just mentioned. What sailor has not noticed the same higher range of the barometer in the belt of calms between the N.E. Trades and westerly winds of a higher northern latitude.

Now the question is, from which part of this belt of calms do these S.E. Trades and westerly winds draw their air? The barometer seems to give a clue to the answer, for the Trade winds begin with a high barometer, and the gales commencing at North and ending at West are accompanied by a very low barometer. Hence it seems to be proved that the Trades draw from the lower and heavier stratum of this calm belt, and that the gales draw from the higher and lighter air. This argument is supported by the easterly direction of the Trades and the quick change to the westward of the northerly gales. So soon is this northerly wind followed by a change to the westward that experience has taught sailors not to reef when the North wind becomes too fresh to carry whole sails to it as a beam wind, but to square in the yards and run free to the south-eastward, knowing as they do that in a few hours the wind will change to N.W. and enable them to haul up East again.

These systematic gales seem to explain the kind of tap (so to speak) used by the westerly winds to draw off the requisite supply of air to make up for what has risen at the poles. Let it be allowed that the air which has risen at the poles makes a corresponding deficiency in the westerly wind belt, and that this deficiency is expressed by the falling of the barometer commencing during the short calms on the northern verge of the westerly wind belt; then a descending current of air rushes in from the northward, which, coming from a higher to a lower level (*i.e.*, from describing a large circle, as it accompanies the earth in its revolutions, to describing a smaller one), not only because it is moving from a lower to a higher latitude, as explained by Dové in his excellent paper, which he gives as the cause for the gy-ratory change of the wind, but because it is also descending from a higher to a lower level, which adds to the cause of change to the westward. The reason why these gales seldom shift South of West seems to be because the reservoir from which they get their air is North of them.

So far experience seems to support our argument; but whether the

short calms on the northern verge of the West wind are simultaneous, forming one belt of calm into which the descending air from the North rushes like an immense waterfall, until, the supply being greater than the demand, a short calm takes place, as represented by the No. 1 or left hand half of the following sketch, where A represents the belt of calms, from which the S.E. Trades, B, are drawing air, and also the periodic gales c, beginning at North and ending at West, are taking their supply.



- B. S.E. Trades.
 A. Belt of calms and variables, where the barometer is high and whence the S.E. Trades and West winds draw their air.
 C. Zone into which the air is drawn to supply the West wind. N., N.W., and W. denote the changes of the wind in a gyratory gale.
 D. Constant strong West wind.

If this idea be right then c represents what goes on in that part of the sea during a gale; whilst the short calms in the same part before the gales would be represented by supposing the part c to be changed into blank paper during the calms, the lines returning as the gale came on.*

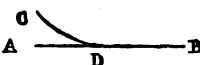
A few simultaneous logs of ships in these latitudes would prove whether the above be the system followed, or whether these winds beginning at North and shifting to West are a series of independent gales, formed by the drawing off of air and consequent falling of the barometer, in comparatively small patches in these latitudes. If the latter supposition be true, then the c part of No 2, the right half of this woodcut, would represent these independent gales with their short intervals of calm. If, for the same time, the logs of a few ships

* A ship running before a North wind would in these gales come to a West wind; but in a cyclone of the southern hemisphere (represented in the previous woodcut) she would come to an East wind. This change of wind in high latitudes contrary to the cyclonic theory long puzzled me, until the above explanation suggested itself, which is confirmed by Dove's admirable researches of a much earlier date than mine.

could be obtained which were running down their easting in from 50° to 54° S., it would be interesting to notice if there were any relation in strength between these N.W. gales and the westerly winds of higher latitudes. I am inclined to think there is.

The changes of wind in the northern hemisphere follow the same rules. After passing the calms of Cancer the first wind sailors look for is South, which draws to S.W., West, and sometimes to N.W., but often goes no further, falls light and calm, then begins again from the South, or it frequently continues at West for many days. The amount of land in the northern hemisphere prevents this from being so regular as in the southern; also, the course of homeward bound ships is not due East in 40° N.

The direction of these gales in relation to the westerly winds which they supply may be compared to the meeting of two streams of water,

represented by the figure  in which A B repre-

sents the westerly winds and c D the gales. Now if these gales did not draw their air from the upper stratum of the belt of calms, thereby increasing their westerly direction before coming in contact with the West winds, the collision would be greater, and cyclonic gales might be the result. Hence this method of easing off (as a sailor would say) one current of air into another prevents constant hurricanes in these parts.

In the case of hurricanes this cushion of calm air seems to be removed from between the Trades and *equatorial* westerly winds, for it will be noticed that they are generally originated in those parts of the sea where the easterly Trades or monsoons have been blowing, and at the seasons when those winds are forcibly displaced by westerly winds, or *vice versa*, leading to the belief that they are the result of a collision between opposing currents of air; which belief is supported by the fact that hurricanes revolve in opposite directions in the two hemispheres, for the West wind being on the equatorial side would cause a West wind on the South side of a northern cyclone, as also on the North side of a southern cyclone.

I think it is Piddington who says that hurricanes never blow within 5° of the equator in the Southern Indian Ocean or Bay of Bengal. Most probably this is because the polar edge of the *equatorial* westerly winds there, where hurricanes originate, extends beyond 5° of latitude.

With regard to the tracks of hurricanes, it seems possible that they may depend upon the general motion of the mass of air surrounding them, and it would be interesting to know what winds prevail on the south-western side of the West India hurricanes. We know that the N.E. Trades are on their north-eastern side: these would drive the meteors to the south-westward, but what is there on that side to bear up against this pressure and give them their north-westerly tracks.

Perhaps their north-westerly route depends upon the combined influence of the N.E. lower and S.W. upper currents of air, and when they pass the tropics they may be carried to the north-eastward by the gyratory winds of which we have been speaking, which in the northern hemisphere do move from the south-westward.

During the last few months I have been paying attention to the motion of the higher clouds and their connection with the weather in England. From the few observations taken, it seems that cirri moving from the West and round by North from N.E. are generally a sign of fine weather; also that the clouds change their direction a short time before the wind changes.

Unfortunately, I was from home some part of the 25th of October, — on which day the *Royal Charter* was lost. In the early morning we had a sharp frost with much lurid cirrus, and, so far as I can remember, little or no wind; the weather gradually became gloomy, and shortly after noon the wind freshened up from the eastward with much rain and very cold weather; towards night the wind changed to the southward and it became very much warmer. The few observations that were taken, compared with the newspaper reports, show that the wind was S.W. near Aylesbury when it was N.E. with the *Royal Charter*, and it seems that if her commander had seen the following remark of *Dové's* he might have been led to keep his ship in mid-channel, clear of the island of Anglesea:—"If the wind veers against the sun, *i.e.*, from N.E. through North to N.W., with a fast sinking barometer, a vessel on the Atlantic Ocean will probably be in a whirlwind storm." Now it seems to have been the case with the *Royal Charter* that the wind was going from East towards the North with a falling barometer, which made Anglesea a dead lee shore after she rounded its north-western point.

Whilst on this subject it may be mentioned that during a gale from the S.W. each puff of wind was represented by a corresponding rise in two aneroids in a room. This took place when the window, which faced the S.W., was shut, but on throwing it open they rose nearly half a tenth to each puff, showing that at any rate much of the pumping of barometers may be attributed to the mere mechanical effect owing to puffs of wind increasing the pressure in that particular spot, not to any variations in the actual weight of the air. Pumping is more common at sea than on shore, no doubt because the motion of a ship adds to the variability of the pressure of the atmosphere in the cabin where the barometers or aneroids are kept. I have often noticed that the aneroid rose with one motion of the ship and fell with the contrary motion, showing that the one forced air into the cabin and the other drew it out.

THE "WANDERER'S" CRUIZE.

On the 20th of October last, between the hours of nine and ten, Lincoln Patten, assuming the name of David Martin, embarked fifteen men on board the *Wanderer*, a yacht lying in the river below Savannah, with the excuse of assisting in taking on board provisions, water, and stores, and soon after went on board himself, accompanied by Edward Talbot, pilot, and Captain J. Black, shipping agent. He called all hands to get under way, and, drawing a revolver, swore he would shoot any one who refused to work, or who might interrupt his movements. He also threatened the shipping agent and pilot with death if they attempted to leave the vessel.

Some of the crew, who knew his plans, loaded the two guns with grape, and armed themselves to enforce his orders against those who had been induced by false pretences to come on board. Though there was a pilot on board, he directed the movements of the vessel himself, and got her twice ashore. At last she reached Tybee Light, and anchored, where the pilot and shipping master were permitted to leave her. Again she ran aground, and remained fast four hours.

At nine o'clock in the morning of October 21st, she floated off again, made sail, and slipping her chain, went to sea, carrying more than half the crew against their wishes. Captain Martin, however, to allay their fears, pretended that the vessel was bound to Matanzas and Nassau, New Providence, and back to Savannah; but a few days afterwards he declared that the ship was without papers, the collector having refused her a clearance; and instead of Savannah he told them the vessel was going to the Western Islands for more provisions and water, and thence to the coast of Africa for a cargo of 700 Negroes. These he said he should land at Cardenas, adding, that he was sure of receiving for them 650 dollars each, being well acquainted with the trade, having landed several cargoes from the barques *Niagara* and *Ocean Tyrant*, the brig *Frances Ellen*, and other vessels. The crew was also told that on leaving Savannah he had failed to procure a chronometer, charts, and *Nautical Almanac*, and consequently would have to perform the voyage by dead reckoning.

On October 23rd, however, he fell in with the ship *Troy* of Boston, and bought from her one *Epitome*, *Blunt's Coast Pilot*, and a chart of the gulf of Florida, for which he paid simply five dollars. That provided, the *Wanderer's* next feat was to chase the barque *Clara Brewer*, but on hailing her the captain proved to be an old acquaintance of Captain Martin, and it was therefore not convenient to go on board. The next day the *Wanderer* made sail in chase of a schooner carrying such a press of canvass that she carried away the square sail-yard and split the sail, but failed to overhaul her.

On the 28th of October she chased a brig and fired grape at her, but the brig would not heave to; the chase was continued till 11h. p.m., when, favoured by the darkness of the night, by suddenly changing her course the brig got away.

The *Wanderer* shaped her course for Fayal, and was favoured with a strong gale from W.N.W., before which she ran, it is said, sometimes twenty knots an hour, requiring two men at the helm to steer her. On the 31st the gale moderated to fine weather, which continued until the 9th of November, when she encountered another N.W. gale, which brought her to the isle of Flores. She stood off and on, firing guns for a pilot, and when off the settlement of Santa Cruz the British Consul, the chief magistrate of the place, and a pilot came on board; on which the *Wanderer* anchored in 25 fathoms of water. Captain Martin here produced a false clearance of the vessel under the name of the *William* of Savannah, bound to Smyrna, stating at the same time that he had lost sails, provisions, spars, galley, and chronometer, and was in want of all these. Endorsed by the British Consul and the authorities ashore, he procured thirty-eight casks, containing 4,000 gallons of water, firewood, liquor, flour, rope, 250 bushels of potatoes, an anchor, and 120 fathoms of chain. He was promised twenty tons more flour, but some of his proceedings exciting suspicion, he returned on board in great haste, and made everything ready for getting under way that night, having smuggled two Portuguese women on board, a circumstance which soon came to the knowledge of the authorities. Such being the case there was not a moment to spare, so the *Wanderer* slipped 60 fathoms of chain, left one of her men ashore, and away she went without paying one dollar for the supplies received, valued at about 1,500 dollars.

In bringing the women on board he had openly avowed to the crew that he could procure eighty Negroes for them.

The *Wanderer* now shaped her course for Madeira, touched at Point de Salee, but, unable to obtain supplies, proceeded to Funchal, where receiving information that an English steamer of war was in the harbour, she stood to sea, running so as to pass between Cape St. Ann and the Canaries. Still short of provisions, Captain Martin declared to the crew that he would obtain them by force from the first vessel he met, swearing that he would shoot the first man who hesitated to fight for such an object. Shortly afterwards he spoke the barque *Clara*, of Bordeaux, but her commander refused either to heave to or to furnish him with any supplies. Two other barques were met and chased by the *Wanderer* without being able to bring them to. At last she fell in with the barque *Jenny*, of Marseilles, which vessel hove to, and promised to furnish her with some of her stores. With a boat and four men Captain Martin boarded her, and here was the crisis which was to determine the fate of the *Wanderer*, her pirate captain, and her unwilling crew. With a promptness of action, such as the case required, they at once determined unanimously to seize the vessel and carry her to the United States. With that object in view, Mr. Henry Welton, a native of British North America, was placed in command. She was immediately run before the wind, all sail set, and when well clear of the barque, shaped her course to the westward.

The next day they made the westward of the Canaries, and saw lying in a cove a suspicious looking polacca brig, which had fired a

gun when the *Wanderer* hove in sight. Having no desire to ascertain her true character, the *Wanderer* pursued her course to the westward without any other incident worthy of notice. She made Fire Island Light, thence proceeded to Tarpaulin Cove, where she arrived with ten of her crew and the two unfortunate Portuguese women kidnapped by Captain Martin, and was placed in charge of the legal authorities.

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

More gold, exclaimed Rodmond, as he entered the Club room, more gold; the snowy mountains of Australia Felix, happy lands, are full of it!—the Snowy River is washing the precious metal itself in its stream along their sides. Why, sir, the Rodmonds are millionaires already, for the quality of it beats that of all the diggings yet discovered out and out: even the flocks of sheep innumerable have doubled their value already.

Why, then, interrupted Arion, perhaps they bear the golden fleece that Jason was so long in search of but never found? Will the *Great Eastern* be large enough to bring it all home?

Let the *Great Eastern* do her work, and make her owners millionaires if she can. Aye, let those laugh that win, replied Rodmond, exultingly. Millionaires don't trouble their heads about the *Great Eastern*.

She is at New York by this time, added Arion, for she made her start from Southampton, by the Needles on the 17th, and on the same Sunday evening was seen from Plymouth;—a Sunday's sail,—you know the rest. Depend on it by this time the New Yorkers have satisfied their curiosity about what they have called “an architectural, moving, living, sailing, dashing, magnificent, splendid reality.” And had she existed in the time of Homer, would have been immortalized in his verse, and Greek historians would have recorded an eighth wonder of the world. The Hercules, or rather the Vulcan of the “mighty marvel” would have been Mr. John Scott Russell! Talking of New Yorkers, continued Arion, reminds me of another wonderful shot feat. Have you heard of the American Captain Travis, how he drops bullets into a bottle? Clever fellow that. The feat is this. He takes an empty bottle, a champagne one, *par excellence*, and places a cork an inch and three quarters long on the top of the neck, and on the cork he lays a bullet. Then at the approved distance with a pistol ball he strikes the lower part of the cork but so exactly in the middle that as it leaves its place the bullet that was placed on it drops into the bottle through the neck. The nicety of the feat consists in not only preserving the exact line of the centre, but also towards the lower part of the cork, so as to trip it properly, or it might fall outside. Well, the captain undertakes to drop five bullets out of twenty

into the bottle, and to forfeit five out of the twenty for every one that strikes the neck of the bottle.

The business of the Club was opened by the Chairman, who observed that the most important subject before them he believed was the attempt of Mr. Lindsay in the House of Commons to extricate the report of the Commissioners on Refuge Harbours from its drowsy sleep since it had been born. They all knew his feelings on that subject, and as he believed that their views were similar to his, he would propose that Mr. Lindsay's speech be placed among their minutes. He regretted to say that although Mr. Lindsay had carried his motion he did not know how much nearer he was to gaining his point; in fact, how nearer they were to the recommendations of the Commissioners being carried out, for it seemed that there are many owners of ships who think that refuge harbours are not wanted; and again, they are not proposed at places they would patronise; that although ships might be sent to sea by their owners ill manned and worse found, and again less adapted to stand bad weather, in fact, not seaworthy, and therefore certain of wreck in the first gale that placed them on a lee shore, what was there to prevent them from doing it; and still their ships could not possibly want refuge harbours. "Any port in a storm" might be all very well for sailors,—but what had shoregoing folks to do with that, and if loss of life did take place, property was insured, and the owner suffered no loss! In fact, he could not trust himself to speak on the subject, when he thought of the numbers of our seamen who perished annually. He should conclude with the proposal he had made.

Mr. Lindsay rose to move that, in the opinion of this house, it was the duty of her Majesty's government to adopt, at the earliest possible period, the necessary measures to carry into effect the recommendations of the commissioners appointed in 1858 to inquire into the formation of harbours of refuge on the coasts of Great Britain and Ireland. This motion, he said, had stood on the paper since last session, as, in his opinion, it was a question which should have been taken up by the government, but as they had omitted or neglected to notice it he now felt bound to bring it before the house.

The greatness of our maritime trade rendered this question most important. We employed 22,000,000 tons of shipping in the foreign trade, and our import and export trade, exclusive of the coasting trade, was of the annual value of £320,000,000 sterling. In 1854 no less than 1,549 persons lost their lives in ships stranded along the sea coast of the United Kingdom. The average loss of life annually on our shores was 1,000 persons, but last year it considerably exceeded that number. The amount of property annually lost on the coast of the United Kingdom amounted to about a million and a half. All these important facts were brought under the notice of the house in 1857, and the house with one accord appointed a committee to inquire and see if anything could be done to mitigate this fearful loss of life and property.

The committee sat for two sessions, the subject was thoroughly investigated, evidence being taken from all parts of the country, and in 1858 the committee reported their conviction of the necessity, on national grounds, of these works being undertaken at as early a period as possible, and that they should be placed under some system which would secure their steady and speedy progress. They also reported that considering the enormous loss both of life and property to which the nation was at present exposed from the dangerous and unprotected state of our coast, there was no object for which public money could be more usefully and profitably employed, having regard to the present and future welfare of the country. He believed these were also the sentiments of the house, and the result was that a royal commission was appointed, at the head of which was Admiral Hope, now in command of our fleet in China.

He (Mr. Lindsay) and the honourable member for Chatham (Sir F. Smith) were the only members of that house who were on the commission. They met in London and agreed on certain points. The first object they had in view was the saving of life. That was their first consideration. The next was the saving of property; next came the consideration of giving facilities for commerce, and then came the question of defence, by fixing on such sites as might afford anchorage for our ships of war in cases of emergency, or where their convoys could assemble. They held their first meeting at Wick, and found that through the Pentland Firth 10,000 ships passed annually, and that no less than 1,700 boats were employed in fishing, giving occupation to from 8,000 to 10,000 men. They found that along the the whole of that iron-bound coast there was not a single harbour which one of those boats could take if caught by an easterly gale of wind. What was the consequence? No less than 120 men had lost their lives in one gale alone while attempting to make Wick. If the works, limited as they were, which the commissioners had recommended had been constructed, the whole of those men would have been saved. Proceeding along the coast they found a very large passing trade and fishing trade, and yet they met with no harbour which any ordinary vessel could make at low water between Wick and Peterhead.

They then arrived at the North-East coast of England, where they found that from the port of Shields sometimes from 300 to 400 vessels sailed in one tide, manned by about 6,000 men, and yet between the Firth of Forth and the Humber, a distance of 150 miles, there was no harbour which a vessel could take at low water in a gale of wind. The consequence was that in one gale alone 65 ships were driven ashore, and 85 lives were sacrificed. With respect to the Tyne, although the works the commissioners recommended should be constructed there would cost a million, the people of the Tyne said they would be willing to give £750,000 towards them, and all they asked from that house was £250,000. The people of Hartlepool also offered to give £500,000 towards the million which would be required at that place for a like purpose. Going further South they came to

Filey Bay, where they found a remarkable site for a harbour not inferior to that which Portland afforded, and for which £800,000 would be required. He (Mr. Lindsay) deprecated any further expense on the harbours of Dover and Alderney as harbours of refuge, because he thought the country would never get the value for its money in the large expenditure going on at those places. From the Thames to the Land's End they found many excellent and some natural harbours; and from the northern coast of Cornwall to the Bristol Channel they found there was no necessity to make any expenditure of the public money, because the coast in many places afforded excellent shelter for ships. They, therefore, confined their attention to the necessity of a harbour lower down the channel—that was to say, between the Land's End and Hartland Point. This would give shelter to vessels and be of vast importance in facilitating commerce, and a magnificent harbour might be completed there for £400,000.

Nature had done much for the North and East coasts of Ireland. On the West they found the magnificent harbour of Galway, and on the South the still more magnificent harbour of Cork. To the North there was Belfast Loch and Loch Foyle, both affording excellent anchorage ground. Coming to the East coast they examined a fine natural bay. There was a splendid sheet of water in itself fit to receive almost the entire navy of England, but there was a bar of rock, which engineers, however, agreed could be easily removed. They therefore recommended that the sum of £50,000 should be expended at Carlingford, and a like sum at Waterford.

The Isle of Man was the last they visited, and they found there were really no harbours at all on its coast, the passengers being obliged to land in small boats. They strongly recommended the construction of a harbour of limited extent at Douglas, the expense to fall on the Exchequer; but the people of Douglas came forward and said that as they were to be benefited by the construction of the harbour and pier they were willing to give £50,000, inviting the Exchequer to come forward with another £50,000. The whole sum which the commissioners recommended for these harbours was £2,365,000.

Our great defence ever had been and ever would be on the waters. It was not sufficient to say that everything had been changed since the application of screws to ships of war, for whatever change had taken place in the mode of conducting warfare, we were essentially a maritime people, and our great strength must ever be on the waters. As regarded, therefore, the defence of the country, he asked the house to support his resolution, and he did so on this ground, that while these harbours of refuge would provide all round the coast a rendezvous for ships of war, and stations for convoys of merchant vessels in a time of warfare, they would complete those points of defence as regarded our different ports which would be required even if £12,000,000 were expended on fortifications. There would be no end to an expenditure on fortifications; for when once they began a system of fortifying our coasts, it must be continued on both sides of the kingdom, from Land's End to John o' Groat's. And then if they spent

£12,000,000 in fortifying Dover and other places, was it likely that an enemy would land his forces before the very muzzles of our guns? Reminding the house that the committee reported in June last year that the sum required for the works they suggested was trifling as compared with the great objects which were to be attained, he asked them on the ground of the saving of property, but above all on the ground of mercy, to support his resolution, which he concluded by proposing.

It appears, added Albert, that from the monthly summary of wrecks published in the *Shipping Gazette*, that during the month of May the number of wrecks was 124. In the month of January there were 229, in February, 154, in March 146, and in April 133, making a total during the present year of 806.

He would ask permission to read an observation made in a maritime paper on these subjects.

Another gale of singular severity, resulting in great loss of property and of life, has within the past few days swept our coasts. It has not been our painful duty to record such an amount of casualties as will be found in our maritime columns this day, since the memorable gale of the 26th of last October; and, when all the reports have been received, the destruction caused by the latter gale may be found on comparison to have been less than that produced by the visitation to which we now refer, and which has carried desolation into many a home in these islands, and ruined many a goodly venture. Sufficient, however, is already reported to enable us to appreciate the character of the calamity, and to deduce some practical conclusions from the attendant circumstances.

The gale of the 27th May and following day—an unusual occurrence at this season of the year—appears to have commenced at an early hour, and to have blown with great violence from North to N.W., while on some parts of the coast it suddenly flew round to the opposite points of the compass, and raged from N.E. to S.E. Fortunately the gale, so far as we can ascertain, on the North and N.E. coast blew with the greatest violence from the westward, and on the western line of coast from the eastward, otherwise the amount of disaster must have been terribly increased. Nevertheless, at Morecambe, Brixham, Yarmouth, and Filey—points which mark almost the entire circuit of the English coast—the gale was very severely felt, and from most of these places casualties of greater or less magnitude are reported. But it is to the state of things at Filey produced by the gale that we desire to direct especial attention, because that place of late, and with abundant reason, has occupied much attention in connection with the all-important question of harbours of refuge. At seven o'clock on the morning of the 28th May, as our correspondent tells us, twenty-two as fine yawls as were to be found on that coast were riding in Filey Bay. Before two hours had elapsed thirteen of the number were total wrecks. The loss of life was, as it happened, comparatively inconsiderable, owing to the circumstance that several of the boats' crews

were on shore when the hurricane (for such it was on that part of the coast) burst forth. The property destroyed is estimated at many thousands of pounds, and the number of hands thrown out of employment is probably not less than 130. "Had there been a harbour of refuge here," observes our correspondent, "every one of these boats would have been in perfect safety. Many and hearty were the wishes of the fishermen that — and — had been among the crews. We should have heard no more heartless excuses for not making harbours of refuge."

It is stated, continued Albert, that several icebergs have been seen in the track of our steamers off Cape Race, and that they are to be expected in July appears by a letter which had been placed in his hands, referring only to last year, and which he would read. It might be added to those in the *Nautical* of this month:—

Steamer Persia, Mid Ocean, July 14th, 1859.

Then came fog, fog, for three days and nights, until one thousand miles were past, nearing Cape Race and Newfoundland Banks. Here the air began to be very cold, requiring thick winter clothing, indicating that we were approaching the region of icebergs. Sure enough, on the afternoon of the 9th, while we were at dinner, the cry of "Icebergs!" was heard through the cabin,—a convenient excuse for many to leave the table, as it was a little rough; this cry was well understood afterwards, when it became necessary for any one to leave before meals were over, and often accompanied with considerable amusement;—but to the icebergs. We rushed on deck, and there, far away over the sea, was a dim mass of white substance, which we could not distinguish from land; then another came, very large and grand, about ten miles distant—a great mountain of ice, like a huge bold promontory, jutting out into the wild waste of waters, while the waves dashed in foam and spray upon its cold and barren sides.

Then the sunlight flashed over glassy heights with a dazzling brilliancy, reflecting all the colours of the rainbow, from peak to peak, until the mass passed into a shadow, and then appeared like a great mountain of snow of the purest whiteness, untouched by that which defiles and darkens. To one, we passed within half a mile, and could with great distinctness see its huge sides cut into ridges and gullies by the streams that were trickling down to the ocean. On the summit there seemed the form of a house,—indeed, there was anything there that the imagination could picture out of such fantastic shapes and strange appearances. The cold gushes of wind that swept the ice fields came over our vessel like a wintry blast, producing the intensest cold. They say that sailors can tell when they approach icebergs, even in the darkest night, by the change in the temperature of the atmosphere,—in their own language, "they can smell them."

The Prince of Wales, it is said, observed Albert, is to leave these shores on the 12th of July in the *St. George*, on his American tour. The loyal inhabitants of Montreal are subscribing largely towards

providing a fund for the due reception of the prince. Public meetings have been held, at which the utmost enthusiasm prevailed, and there can hardly be a doubt that the grand demonstration which will be made on the auspicious occasion in the commercial metropolis of Canada will surpass anything of the kind ever attempted in British North America. Other towns and cities are also busy with their preparations, and intend to evince their loyalty in a conspicuous manner.

The following programme of the Prince of Wales's visit to Canada was circulated at the Club:—

We understand that the arrangements for the visit of the Prince of Wales to Canada are now completed, and are as follows:

His Royal Highness will start from Devonport on the 10th of July, in H.M.S. *Hero*, Captain G. H. Seymour, which will be accompanied by H.M.S. *Ariadne*, Captain E. W. Vansittart, and H.M.S. *Flying Fish*, Captain C. W. Hope.

The Prince will be attended by her Majesty's Secretary of State for the Colonies, his Grace the Duke of Newcastle; the Lord Steward of her Majesty's Household, the Earl of St. Germans; his Royal Highness's Governor, Major-General the Hon. R. Bruce; and the Equerries in Waiting, Major Teesdale, R.A., and Captain Grey, Grenadier Guards, and Dr. Acland, his Royal Highness's physician.

Mr. Engleheart, Private Secretary to the Duke of Newcastle, will accompany his Grace.

The Prince of Wales will first land at St. John, Newfoundland, then visit Nova Scotia, and thence proceed to visit New Brunswick and Prince Edward Island, and will reach Quebec by the route of the St. Lawrence. He may be expected at Montreal about the 23rd of August, and the opening of the Victoria Bridge will take place a few days later.

His Royal Highness will represent her Majesty upon this important national occasion, and will hold levees and receive addresses in the capitals of the different colonies. It is intended that the Prince should visit the principal towns in both Canadian provinces.

On his return from the western districts it is intended that his Royal Highness should drop all royal state, and assume the title of Lord Renfrew, under which he has before travelled upon the continent of Europe. His Royal Highness will visit some of the most important and interesting localities of the United States.

It is understood that the President, Mr. Buchanan, having in an autograph letter to the Queen, expressed his personal desire to receive the Prince at Washington, his Royal Highness will pay him a visit in that city, and that his Royal Highness has also accepted an invitation from the city of New York.

His Royal Highness may be expected back in this country about the middle or end of October.

The Secretary stated that he had just received the account of an experiment in submarine telegraphy, the result of which seems to warrant a rational expectation of bringing the Old and New World

into electrical contact by a process at once certain, simple, and inexpensive. Certainty, simplicity, and economy are the three conditions requisite for the success of such an enterprise as ocean telegraphy. Of these three the first and third depend on the second,—simplicity, which seems to be the distinctive characteristic of the method alluded to, and has indeed ever been characteristic of all grand inventions that have stood the test of time. Mr. W. P. Piggott, the well known medical electrician, has lately made, laid down, and successfully worked a submarine cable between the Alverstoke Beach at Stokes Bay and Ryde, Isle of Wight, the peculiar novelty of which is, and it is a great achievement too, it dispenses with the insulation of the wire from the water. But this is not all. Mr. Piggott considers that it actually makes the wire itself, through its contact with the water, to be generator as well as conductor of its own current. In other words, the wire is no longer simply passive, but is an agent in the operation. The cable is of the simplest construction and of little cost, and a small piece of zinc embedded in the earth is all that it demands for the perfect execution of its task! By this new arrangement it would appear that the electrical difficulties which have hitherto prevented the permanent efficiency of long submarine cables, will be entirely obviated. If it be right to assume that induction is the chief of these difficulties, here it does not exist; for in Mr. Piggott's system induction is impossible.

Considerable interest was occasioned by this announcement, and further accounts were anxiously looked for.

Rodmond would take leave to observe, in reference to the remarks on rifled ordnance, to which allusion had been made at their last meeting, in a paper by Commander Scott, R.N., he believed the real object of this officer was to show that where the rifling principle was obtained by *compression*, no cast iron gun could long withstand the shock; and hence the necessity of resorting to wrought iron. But the principle of rifling adopted by Commander Scott, required no compression whatever; there was in fact *no resistance even* with his method, otherwise than that by which his cast iron shot was compelled to take the course through the bore of the gun which the rifling had prepared for it. There was in fact no more strain on his rifled cannon when discharging his rifled shot than there was in the old system of the smooth bore before rifling was even thought of. They might be satisfied when they heard of rifled cannon being burst, that the rifle principle was obtained by the *COMPRESSION* of *lead coated shot*, or else by the expansion of lead on a shot by means of a wedge or otherwise, a kind of work that no cast iron gun could stand. It has been said, and he believed with much truth, that it is by no means clear that either the Armstrong or the Whitworth gun will be the artillery of the future. As to light field pieces, it is very probable that the wire principle, which all authorities agree is a sound one, may, when perfected, supersede forged guns. As to the heavy armament of ships, it is perfectly well known that 68-pounder smooth bores at short range (600 yards) throw shot with almost equal accuracy, and with far greater force of impact, than Armstrong and Whitworth guns, the

destructive effects being only limited by want of penetrating power. A certain proportion of long range guns is, of course, indispensable; but modern naval warfare will be an affair of close quarters, and for this we should provide the cheapest and most effective weapon as the general armament. We should not, therefore, be surprised to hear that some very simple modification of the form of the shot and the bore of the gun had given to a much cheaper and durable gun the power of penetrating which is now claimed for the best of our rifled cannon, with a considerable gain in destructive effects.

The Chairman said, he would now briefly notice a subject which would always be welcomed by all Englishmen,—this was the review of the rifle volunteers in Hyde Park on the 23rd of June. It has been truly said, what took place there “was one of those surprises for which no one can be prepared without a careful consideration of the history of this country. Hyde Park then saw an army such as it had not seen for half a century; an army such as any general would be only too glad to find in his hands at the hour of need—ready for action—that has sprung into existence from the mercantile, professional, and other civil classes, within the brief space of a twelvemonth. No business or professional occupations have been sacrificed to produce this result. It is the rich fruit of scanty leisure freely dedicated to a noble purpose. Under these conditions the change appears little short of miraculous, and we cannot wonder at the exclamations of surprise, admiration, and delight which greeted the Volunteers on Saturday. But the explanation is simple enough. The perfect discipline of the men represents the energy and determination that has been thrown into the movement. The sudden creation of this great national army is a miracle which the love of ‘England, home, and duty’ easily works amongst a brave and patriotic people. It expresses the stern but enthusiastic attachment which true liberty inspires. The mere whisper of danger to the land that enjoys it, and the institutions in which it is embodied, has profoundly moved the whole nation. It has summoned bands of volunteers in every part of the country to the unaccustomed discipline of arms, and, were danger imminent and threatening, the same impulse would multiply their number tenfold. This is the meaning of the demonstration of Saturday. It was the *fête-day* of constitutional freedom; and everything conspired to render its proceedings worthy of the occasion. As a mere spectacle nothing could be finer than the appearance of the Park at the mustering of the Volunteers. Again it was truly said:—

“No praise, however high, could well be deemed excessive for the Volunteers themselves. In their discipline and soldier-like bearing they exceeded the expectations of the most sanguine. If there were any who doubted either of the reality or national value of the movement, those doubts must have been set at rest. No proof could well be stronger of the deep hold it has taken of the national mind than was given on Saturday. Apart from the time devoted to the arduous work of drilling, these Volunteers have spontaneously taxed themselves to what is in the aggregate an enormous amount.”

So much for the men, observed the Chairman. The manner in which they performed their duties and maintained their noble bearing as soldiers, obtained no less praise from those who were entitled to judge.

"When the marching past had terminated, the Commander-in-Chief rode up to the royal carriage and took the Queen's further commands, the effect of which was soon perceptible in the final movement of the day. The whole of the Volunteers advanced in columns of battalions to the centre of the park, where they stopped and formed a magnificent pageant, whilst the royal bands struck up the National Anthem. The spell of discipline was now broken, the Volunteers had obeyed the order of the day to the letter: they had been firm as steel, silent as the grave, but now the 'dismiss' had sounded, and the feelings of the subject triumphed over the discipline of the soldier. A deafening cheer rose from every column, muskets were waved, shakos were tossed in the air. Then the public cheered, and in ready response, and nothing loth, the Volunteers cheered again. When the vociferous cheering of the Volunteers had somewhat subsided, and there was a chance of a word of command being heard, the signal was given, 'Mounted officers to the front,' when all the volunteer commanders galloped forward to where the Duke sat, his charger surrounded by a brilliant staff. His Royal Highness then, in a few forcible words, announced that he had the Queen's commands to express her Majesty's deep gratification at the magnificent sight she had just witnessed. For his own part, he had never seen movements carried on by such large bodies with greater precision, and he begged the officers present to communicate the opinion to the remaining officers and men of their respective corps. It is unnecessary to add that this speech caused a tremendous renewal of the pleased excitement of the Volunteers. Her Majesty seemed almost overpowered by this universal burst of loyal applause. She bowed again and again, her face radiant with smiles, and neither the cheers nor the acknowledgments terminated until the royal carriage passed slowly out of the Park gate."

Thus ended a day's proceedings which will be recorded in history's page as sterling proof of the love of Englishmen for their Queen and country. They might have been about twenty thousand, a mere handful of the flower of British youth, which may be accepted as a fair specimen of the rest. But, as has been justly observed, with 250,000 volunteers such as these in regular training, the question of national defence would be practically settled in the cheapest and most expeditious manner.

The Japanese appear to be well lionised by our friends across the water, observed Albert, they have been to Philadelphia and are to be at New York now. At Baltimore and Philadelphia alike they have been made the objects of civic displays in the usual style,—local militia and firemen of form and proportion rivalling classic athletes composing the principal part of the procession. These Japanese gentlemen admire everything with the most minute and discriminating attention. In Washington they were principally occupied with ques-

tions of coinage and currency, and the machinery in the dock and navy yards. In Philadelphia they are examining the Mint and its machinery with care, and are to examine and report upon its immense workshops and foundries, which gave it its wealth and power. A whole regiment of militia has been assigned to them as a guard of honour while they are staying at New York. They will return to their country wiser men than when they left it, and no doubt their country will profit by their visit at the expence of the U.S. Government, for they are a busy intelligent people. It is said they will return to Japan by the route they came, and that the *Niagara* has sailed for Panama to receive them on their crossing the isthmus.

Arion said that he had met with an account of a little pocket expedition to the arctic regions, which stated that it had "sailed from New London, Connecticut, on the 29th of May, on board the barque *George Henry*. It consists only of Mr. B. F. Hall, of Cincinnati, and his Esquimaux guide, Cud-la-ja-ah. Mr. Hall, who lately resided in Cincinnati, intends to leave the vessel in which he sailed at Sussex Island, taking with him a large boat, which has been constructed expressly for him, and with which he designs to make explorations in the region lying between Cape Willoughby and the entrance to Fury and Hecla Strait. A crew of five Esquimaux, which he will select at Sussex Island, will assist him in his researches. Mr. Hall hopes to obtain further traces of the party which went with Sir John Franklin. Mr. Cornelius Grinnell, of New York, Major Harris, of New London, and some of the prominent citizens of that place, went down the harbour with Mr. Hall, and returned on the tug which towed the vessel to sea."

The locality chosen by Mr. Hall is a very interesting one, not on account of Franklin's expedition, but from the new ground which will be explored by it. Sussex Island is on the North side of Frobisher Strait, a part little known, and that between it and Cape Willoughby entirely unknown. Fox's voyage extended to Cape Willoughby and but little further, for he soon returned; in fact, the whole of that district North, South, East and West is all unexplored; and Frobisher's voyages were made to his strait for the sake of the gold supposed to be found there. Mr. Hall therefore cannot fail, when he returns, to bring with him important additions to arctic geography.

The loss of a Portuguese ship of war is a novelty in the annals of navigation, observed Rodmond, and perhaps the Club will consider the following extract from a log worth preserving in their minutes:—

Ship *Oriel*, Sunday, January 22nd, 1860.—Commenced with violent gale from the N.E., with an awful sea running at times, produced by the cyclone which we are now leaving; bar. 29.20 and rainy. At daylight saw a sail astern under close reefed topsails. At 6h. a.m., shook the close reefs out, set the foresail, and reefed mainsail. At 8h. saw that the sail astern had signals flying, but was unable to make them out. At 9h. saw signal at main-top-mast-head: concluded that

it must be signal of distress. Called all hands, close-reefed the top-sails, furled the canvas. At 10h. 30m. read the signal "In great danger;" saw also that the flag was reversed, and that it was a brig. Did not deem it prudent to heave to until she was abreast; then hove the ship to with fore-topsail square, when the brig passed us (an armed brig) showing no other signal until, when about two miles to leeward, they hauled their foresail up and clewed up main-topsail, still running dead before it.

At 12h. I kept the ship off, set the foresail and came up with the brig at 1h. Then saw that he was firing guns of distress. Signalized him if he wished to abandon, or did he wish me to keep alongside of him at prudent distance. He telegraphed back "Save my crew." Shortly after he ran down to leeward of me and asked me to send him a boat; but seeing that he had three boats at his davits, and also a launch, did not deem it prudent. At 3h. hove to for him, when he commenced to abandon. At 5h. 20m. had received fifty-seven men in five boats; the boats then were all stove but one. Endeavoured to lower my quarter-boat, but swamped her and lost three of the brig's crew. At 5h. 30m. the Captain and First Lieutenant, with eight men, got on board, leaving forty-three in the wreck. Could not get a boat's crew to leave the ship. At 6h. the last boat swamped alongside. At 6h. wore and stood for the brig, and when about one mile off her, she heeled to port and went down instantly. Kept the ship for the spot, and when up with it hove to for daylight, showing good lights, in hope of picking up some in the morning. At daylight, moderate, sea gone down, no sign of anything; made sail for Mauritius, having now on board eighty-seven souls and only thirty days' provisions. The brig proved to be the Portuguese brig of war *Mondega*, from China, *viâ* Singapore.

The Chairman observed that the Club were aware that a bust of Sir John Pakington had been presented to Haslar. Some interesting statements had been made on that occasion which were worth preserving. In the course of these Dr. McWilliam said:—

In requesting permission of my Lords of the Admiralty—a permission which was most promptly and courteously granted—to place Sir John Pakington's bust here, we considered that nowhere was so appropriate for its reception as Haslar Hospital, the chief of naval hospitals; an institution, moreover, associated with some of the greatest triumphs of nautical medicine. It was here that Lind, justly designated by Sir Gilbert Blane "the father of nautical medicine," sent forth a century ago some of those remarkable works which, by first clearly pointing out what attention to the simple laws of nature could effect, contributed so largely to the health and comfort, and consequently to the efficiency, of our seamen, and gave him a high place among the benefactors of mankind.

It was here also that, some years later, the able, energetic, warm-hearted, but ill-rewarded Trotter, physician to the fleet under Lord

Howe, gave to the world those plans for sanitary and administrative reform which have proved of lasting benefit to his country. Seldom have such talents, combined with so much zeal, been devoted to the public service as were those of Trotter. A main object of his life finds emphatic expression in the dedication of his *Medicina Nautica* to Earl Howe, admiral, the flag-officers, captains, and other officers of the fleet: "It has been my wish to make the duties of the medical profession subservient to the comfort and happiness of men that have earned laurels for you, and given security to their country." To have been the means of raising the health of our navy from the lowest standard—a standard which long made a ship of war an object of aversion to seamen—to a degree which has no parallel among any other class of men; to have enabled the Channel Fleet, whose very existence was at one time endangered by the terrible ravages of scurvy, to keep at sea in a state of health and high efficiency at a most momentous period in the history of this country; to have laid down a health system adapted to all time, to all classes, and to all climates, are no mean titles to glory; and that glory, so honourably earned, posterity has awarded to the illustrious names of Lind, Blane, and Trotter, whose peers in their own department—when we except Sir John Pringle and Jackson in the army—none of our public services have produced either before or since their day.

Coming down to later times we have the honoured name, the reputation, far beyond European, of Sir John Richardson—the undaunted traveller, the man of science, and the skilled and humane physician. This museum, where he long and usefully laboured, is of itself a monument of his devotion to those branches of science which he illustrated. And did it not misbecome me to speak of those still in office and authority, I could with great advantage to my case dwell upon the high professional attainments, the long and eminent services, the rare administrative power, the untiring solicitude for the welfare of the service throughout, which characterise the present Director-General, and which, as they have beneficially influenced the past, augur favourably for the future of the department.

I might advert to such names as Lord Brougham and the Duke of Richmond in the Lords, and Boldero, Wakley, and others, in the Commons, who have benefited the service by their advocacy of the cause of naval medical officers. It will, however, be sufficient if you will bear with me while I bring before you in a few words those statesmen who, while holding the office of First Lord of the Admiralty, thought it not unworthy of them to inquire into the condition of the medical department, and make such changes and improvements as the occasion demanded.

And prominently in the foreground of such a view stand the first Lord Melville and Sir John Pakington. The bust of Lord Melville, executed by Chantrey, was placed here by a generation of our brethren now almost passed away, commemorative of him who, as First Lord of the Admiralty in 1805, obtained an order in council for the medical officers, which in that day was properly regarded as the greatest boon

that had ever been granted them. To Sir Francis Baring and Sir Charles Wood, who in 1850 and 1855 respectively held the office of First Admiralty Lord, the gratitude of the medical officers is also due for the improvements effected in the department while under their rule. Those who read the warrant of Lord Melville of 1805, and that as well as the speeches in parliament of Sir John Pakington, in 1859, will find a remarkable identity of object and purpose, even of the language used on the two occasions, and certainly an identity of view as to the course to be taken in respect to the medical officers. Both statesmen in framing their respective warrants appear to have considered it quite as much a privilege as a duty in endeavouring to provide for the case of our gallant sailors, subject to all the horrors of war, as well as to the baneful influences of climate, medical attendance not inferior to that enjoyed by the civil portion of the community. They were, in fact, actuated, not alone by the comparatively narrow motive of advancing the medical officers in rank, privilege, and emolument, but also by the higher consideration that the just elevation of those officers was conducive to the well-being of every other class of officers, indeed of the whole naval service, and consequently of this country, which in the hour of need looks to the navy as its main protection.

For these reasons it has seemed to us that this bust of Sir John Pakington, executed by the Baron Marochetti, and alike admirable as a work of art and faithful representation of the right hon. baronet, can nowhere stand so appropriately as in this museum, in companionship with that of Lord Melville, who, like himself, was an eminent benefactor of the medical department of the royal navy.

The Secretary stated, as the Club were separating, that accounts had been received of the loss of the P. & O. Co's. vessel *Malabar in Galle Harbour, Ceylon*, which he would preserve for their next meeting.

The following stanzas were found on the floor of the Club Room, supposed to have dropped from Arion's pocket-book. They are inserted at the Secretary's request, in order that Arion may not lose them:—

Oh, my love he is a saileur, so gal-li-ent and bold ;
 He is straight as any flag-staff, only nineteen years old ;
 For to cruise the wide o-shi-en he 's left his own dear,
 And my heart it is a bust-i-en because he isn't here.

His pa-ri-ents they bounded him, all for to be a carpenter,
 But a sea-faring life he did very much prefer ;
 For his spirit was tremendous and fierce to behold,
 For a young man bred a carpenter, only nineteen years old.

Oh, my bosom it is tos-ti-ed, just like the raging sea,
 For fear that his affec-shi-uns don't still pint to me :
 For a loveyer he can get in each port, I am told,
 Especially for a young man only nineteen years old.

And if my dear hus-bi-end he never will be,
 But lay a cold corpus in the bottom of the sea,
 Ob, the weeds of a widow, so frightful to beyold,
 I would wear for my saileur boy, only nineteen years old.

And it 's oh for my loveyer I grieve and repine,
 For fear that this young man will never be mine;
 All the wealth of the In-di-es, in silv-y-er and gold,
 I'd give for my saileur boy, only nineteen years old.

Secretary's Memos.

Captains of our mercantile shipping should be on their guard against the great extension of piracy in the China seas and straits. The pirates are mostly Malay fishermen, who lay in wait for Chinese vessels resorting to Singapore; but lately a number of Chinese have coalesced with the Malays, and now form large and dangerous associations.

Nautical Notices.

A correspondent has favoured us with the following notices of dangers:—

JAPAN S.W. COAST,—*Van Diemen Strait,—Powhattan Rock above Water.*

Among the dangers bounding the southern limit of Van Diemen Strait, Lieut. R. Boyd, of the United States Navy, has added the following, the account of which we preserve, as it has been added to the chart.

*U.S.S. Powhattan, Yukohama Bay,
 January 20th, 1859.*

Sir,—I herewith send you the position of a very dangerous reef, which was seen by us on our passage from Hongkong to this place during the present month.

As I cannot find it laid down upon any of our charts, I have to beg that you will give it publicity (under the name of "Powhattan Reef") for the benefit of those who navigate these seas.

I am, &c.,

ROBT. BOYD, JUN.

Position of a reef seen by the *Powhattan* U.S. steam frigate, on her passage from Hongkong to Yeddo Bay,—

S.W. Point of Volcano Island N.W.

East Point " " N. $\frac{1}{2}$ W.

East Point Fake Sima (Apollon) N.E. $\frac{1}{2}$ N.

which gives the latitude about $30^{\circ} 41' N.$, and longitude about $130^{\circ} 19' E.$

These bearings are taken from the centre rock, which is about fifteen or twenty feet high. Other rocks were seen either awash or a few feet above the level of the sea, stretching out from the centre rock about three quarters of a mile.

There are also some reefs extending to the distance of about three quarters of a mile from the Eastern and North-Eastern Points of Volcano Island, and a rocky spit from the East Point of Fake Sima (Apollos) of about a quarter of a mile in extent, which I do not find upon any charts in my possession.

ROBT. BOYD, Jun. *Lieutenant U.S.N.*

To the Editor of the North China Herald.

CHINA SEA,—off *Pulawan*,—*Danger West of the North Pennsylvania Rock.*

The following agreeing with the latitude of the North Pennsylvania, may possibly be the same danger,—but we preserve it, the position being uncertain.

The *Amy Douglas*, (now under the Siamese flag, having been sold during the time she was down in Bangkok,) on her passage up passed over a shoal not marked down on the chart. On February 12th, at noon, had good observations, and noticed about that time the water discoloured for about a mile on each side of the ship. Dropped the lead over the side and found 14 fathoms. Captain Ponsberry is of opinion that the water was much more shallow to the westward of the ship. The lat. is $10^{\circ} 52' N.$ and long. $116^{\circ} 25' E.$

GULF OF SIAM,—*Reef S.b.W. of the Kusrovie Rock.*

We find the following in the chart some five or six miles to the S.E. of that here assigned to it, and therefore preserve it for reference.

Captain Ellis, of the barque *Cowasjee Family*, reports that he observed the wreck of a ship, of about 400 tons burden, burnt and bilged, lying on a reef, (not marked on any chart,) bearing about S.b.W., distant twenty miles from the Kusrovie Rock; the ship appeared to be a foreigner. There were only six feet of water above the reef.

A MERCHANT SHIP IN CONTACT WITH A WHALE.—The ship *Herald of the Morning*, Captain Baker, arrived in Hampton Roads from Callao in a leaky condition, having been struck by an immense sperm whale when off Cape Horn. The whale struck the vessel forward, starting off about seven feet of the stem as far as the wood ends, and carrying away both bobstays. The huge monster of the deep was injured by the furious attack which he made on the vessel, as he spouted great quantities of blood.

CHINA SEA,—*Fiery Cross Shoal*,—*Ship Struck*,—*Caution*.

The following now takes its place on the chart, and appears to be on the outer or western of the numerous reefs West of Palawan, nearly midway between the Investigator and Dhaulles Shoals, full of danger to shipping.

Singapore, April 21st.—The following is the description of the reef in the China Sea on which the clipper ship *Fiery Cross*, of Glasgow, struck on the night of the 4th of March last. It lies in lat. $9^{\circ} 33'$ N., and long. $112^{\circ} 47'$ E., and is about a mile in extent, with the direction N.E. and S.W. When the vessel struck there was no broken water nor any appearance to indicate a shoal. At low water several small rocks or stones were awash, one about two or three feet above water. The *Fiery Cross* struck near the N.E. end of the reef.

LA BRILLIANTE SHOAL, *Western Pacific*. *Existence Confirmed*.—*True Position*.

The following extract from a letter, dated Flagstaff Observatory, Melbourne, 16th April, 1860, from Captain Krabb, of the *Creole*, and addressed to Admiral FitzRoy, confirms the existence of the Brilliante Shoal, and gives its correct position:—

La Brilliante Shoal, a dangerous coral reef, was discovered by the French corvette *La Brilliante* in 1847, and placed in lat. $23^{\circ} 14'$ S., long. $169^{\circ} 55'$ E. The *Nautical Magazine*, however, says (p. 366)—“The existence of La Brilliante Shoal is very doubtful, as Captain Denham, of H.M.S. *Herald*, spent six days in searching for it without seeing any indication of it.” Now we passed this shoal in the *Creole* on the 30th October, 1859, at 4h. p.m., and were within a ship's length of it. We were going eleven knots at the time, but the sea was very smooth. There were no breakers to be seen, only a little foam on the edges; but I am certain there is not more than one fathom of water on it. To all appearance the shallow part is not more than two cables' length in circumference, but very dangerous.

I made it, by very good observations, in lat. $23^{\circ} 14'$ S., long. $170^{\circ} 6'$ E.; and having passed Norfolk Island three days previously, this situation may be relied on, and agrees nearly with that of the Frenchman.

The above position assigned for the Brilliante Shoal by Captain Krabbe falls within the area comprised in the following extract from our volume for 1854 (p. 366), as alluded to,—“The whole area, therefore, from the Isle of Pines embraced by the parallels 23° and 25° S. and meridians 167° and $170^{\circ} 30'$ E., and which lies right in the path of ships as they arrive off the S.E. breakers of New Caledonia, on

their way from Sydney to Fiji, has been closely traversed under a beating wind and found to be clear."

The foregoing affords an instance not only of the difficulty of finding a reported danger, but the impropriety of arriving at an early conclusion, formed, no doubt, from insufficient data. We therefore again caution ships of the existence of this shoal, and shall hope that some opportunity will offer of tracing its approaches on all sides from deep water with the lead, that the whole of its features may be laid bare to the seaman.

PORT OF SAIGON.

In our last number the opening of the Port of Saigon was stated. We now add the regulations since published for the guidance of masters of ships bound there.

Regulations of the Port of Saigon..

Vessels admitted to trade in the port of Saigon by virtue of the declaration published on the 10th of February, 1860, by the Rear-Admiral, Commander-in Chief of the Naval Division and the Expeditionary Corps of the Seas of China, must conform to the following conditions and regulations of police:—

Art. I.—The introduction of arms and ammunitions of war into Cochin China is strictly prohibited. The following are held as contraband articles:—Guns of all kinds, gun-carriages and their implements, shot, howitzers, bombs, and other projectiles; gunpowder; portable arms; swords and bayonets; saltpetre; sulphur; implements of encampment, of military equipment and harness, and all manufactured instruments whatsoever used in war.

II.—All vessels which shall try to introduce surreptitiously arms and munitions of war at any place within the range of cruisers, or which shall not make an exact declaration of the arms and munitions of war on board, or which afterwards shall be found in the river carrying contraband objects of war, shall be immediately seized.

III.—Every vessel bound to Saigon shall, on arrival, anchor in the bay of Cape St. James, near the guard-ship. It must communicate to the latter its manifest (*expeditions*) and bills of lading, and place in depot the arms and munitions of war which it carries and belonging to its armament. These articles will be returned when the vessel shall leave the river regularly cleared from Saigon (unless they form part of the cargo, in which case they will be confiscated whatever may be the quantity.)

IV.—Before leaving the anchorage of St. James to proceed to Saigon, vessels will receive from the commander of the guard-ship a pass certifying that the conditions required by article III. have been complied with, and mentioning the nature and quantity of arms deposited.

This pass shall be shown to the captains of cruisers who may require its production, to the captain of the port at Saigon, and shall be lastly given back to the guard-ship in exchange for the arms and munitions returnable when the vessel shall finally leave the river.

V.—Vessels proceeding up the river must submit to such visits as the captains of His Imperial Majesty's cruisers may think it necessary to make.

VI.—Vessels bound to Saigon are strictly prohibited from leaving the main arm of the river leading to the town, and penetrating, under any pretence whatsoever, into the lateral branches and courses. Any infraction of this rule will entail the seizure of the vessel. The same prohibition applies to vessels descending the river.

VII.—On arriving at Saigon the captains of vessels will receive from the captain of the port orders where they are to anchor and the mode of anchoring to be followed. They must conform to the rules established for the police and the safety of the port, which will be communicated to them. When vessels are securely anchored, the captains must present themselves at the office of the captain of the port, to whom they will communicate their manifests, ships' articles, (list of crew,) and bills of lading. They are bound to deliver to this officer a list of the passengers' names, the letters and despatches intended for the French authorities, for vessels of war, and for the troops. They must not land their passengers or commence trading operations until after they have received from the captain of the port a permit certifying that they have complied with the above conditions. The list of the passengers' names will be immediately transmitted to the director of Annamite Affairs, (*directeur des Affaires Annamites*), who, after having taken the orders of the superior authority, if necessary, will authorise the disembarcations and embarcations.

VIII.—Every violation of the conditions of article VII. will be punished by a fine of Thirty Dollars. Every false declaration will be punished by a fine of Fifty Dollars.

IX.—All vessels anchoring at Saigon must pay, within eight days after arrival, an anchorage duty, the amount of which is fixed at Two Dollars a ton. The tonnage of vessels shall be determined,—in the case of sailing vessels by the ordinance of 18th of November, 1837, and of steam vessels by the ordinance of 18th of August, 1839. The payment of the anchorage duty above mentioned shall exempt the trade from all customs duties, either import or export, on all merchandise except opium. Vessels and their cargoes shall be answerable for the payment of the anchorage duty.

X.—Opium, alone, shall be subject to an import duty of 20 per cent. *ad valorem*. All illicit introduction of or attempt to introduce this kind of merchandise will entail, besides the confiscation of the opium, a fine of from 50 to 200 Dollars.

XI.—It is strictly forbidden to throw sand, stones, or any other kind of ballast into the river. These articles shall be deposited at the places pointed out by the captain of the port. Every infraction of this rule will be punished by a fine of Fifty Dollars.

XII.—If a death takes place on board a ship anchored at Saigon, either amongst the crew or the passengers, the captain is bound to communicate it immediately to the captain of the port, and to conform to the regulations of public order established on this point. Every infraction will entail a fine of Five Dollars.

XIII.—Masters or captains of vessels are prohibited from quitting the place or anchorage which has been assigned to them without having first obtained the sanction of the captain of the port. Every infraction will be punished by a fine of Ten Dollars.

XIV.—If a vessel requires to be refitted, fumigated, or recaulked, its captain must inform the captain of the port, who will prescribe the necessary measures, so that the operation may be effected without obstacles and without accidents. Every infraction of this rule, every disobedience to the orders given on this subject by the captain of the port, will be punished by a fine of Fifty Dollars.

XV.—Unless under unavoidable circumstances, trading vessels shall never remain at anchor or moored for any length of time below the South Fort. The place assigned for the anchorage of trading vessels is comprised between the rivulet which debouches to the North of the South Fort, and the second rivulet ending to the North of the branch of the Chinese bazaar. A space or passage entirely clear and sufficiently large to allow vessels to pass freely will be maintained on the left bank of the river.

XVI.—No vessel shall quit Saigon without being cleared by the captain of the port, to whom captains must present their bills of lading, list of their passengers provided with the approval of the Director for Annamite Affairs, and the receipted acquittance of the officer charged with the collection of the anchorage dues. The permit of the captain of the port must be submitted, for countersignature, to the captain of the guardship at Cape St. James.

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

Siam Gulf, sheets Nos. 1 to 5, J. Richards, Master, R.N., 1858, (each, 3s.)

Siam Gulf, Koh-Tron and Channels leading to Kamput, J. Richards, Master, R.N., 1867, (3s.)

Ireland, N.W. coast, Sheephaven, with views, Captain G. A. Bedford, R.N., (5s.)

Mediterranean, France, Port Vendres and view, (1s. 6d.)

Malabar and coast of Western India, in three sheets, by the officers of the Indian Navy, 1860, (each, 3s. 6d.)

St. Lawrence Pilot, Admiral Bayfield, vols. 1 and 2, (each, 3s. 6d.)

Admiralty, June 20th, 1860.

THE CRUCES GOLD DIGGINGS.

A ride of an hour and a half on the train brought us to the Obispo station, where landing we crossed the river of that name, a stream a few yards in width and about ten inches deep; we then struck into a foot path, well sheltered on both sides and free from all obstruction, following which we were enabled to reach the village of Cruces, within half an hour's pleasant walk, the distance being about a mile and a half.

Were it not for the present excitement, this might well be called the "deserted village," for the few huts which now remain present every appearance of recent desolation. There appears, however, now to be some spirit of improvement, and already two or three dwellings have been refitted; but beyond a little very bad native brandy, we could find nothing either to eat or drink, and had we not taken the precaution of carrying a box of edibles with us, we would have stood a good chance of going dinnerless until our return to Matachin.

Ahead of the village, and within a stone's throw of the main street, runs the river, a tolerably deep and very swift stream, with a rough gravelly bottom mixed with sand. Here, occupying a space of about seventy-five yards along its margin, we found some two hundred persons, of all shades from white to black, and almost all in a perfect state of nudity, some up to their knees, some to their waists, in the water, and all engaged busily in the exciting pursuit of gold washing. Before visiting the spot, we may remark that it was our thorough conviction that the gold of which we had heard so much was the contents of some boxes lost in the river years ago; but a very slight inspection of the *modus operandi* of extracting it and the general result of the washings, convinced us fully that we were mistaken, and that the gold is native to the soil. Most of the people were engaged with small zinc wash bowls, which they filled with the sand and gravel at the edge of the river, and then washed out until nothing was left apparently but a handful or less of fine black sand; this, on inspection, we found to contain several small particles and occasionally large grains of bright gold. The labour of washing in this way, exposed to the scorching sun, did not appear to us to be recompensed by any means by the proceeds, and we suppose an industrious man would get in the course of six hours' work about a dollar's worth; he could hardly fail to get less if he worked with any care. But many of the washers had not the patience to wash a bowlful of the dirt, and when half through, finding no big lumps, would throw the remainder away and commence anew, of course without any success whatever. Others, who were more judicious, had formed themselves into parties, and were, so far as we could see, very fairly paid. They had canoes which they loaded with gravel taken from a depth of about three feet, and then washed it carefully. A party of ten thus engaged took out in two days about a hundred dollars, and were pur-

suing their labours courageously. They were getting a cradle made, but up to the time we saw them had merely been using the ordinary bowl. Another party of two, with a small rocker, took out about six dollars' worth in an hour and a half, and every one who could afford it was having a rocker made; we saw about ten in course of construction at the village.

We met with no instance where any one who had washed a short time doubted the existence of gold in the river in considerable quantity, although there were many disappointed at the result of their labour, and thoroughly disgusted with the hard work, which they by no means relished; they thought they deserved at least one ounce a day.

Our own impression is that there is considerable gold in the river, and that a small company of industrious men, with proper machinery, could do well. At the same time we would not recommend any one to give up good employment for the chances of what he would make at washing until we know further about it.

Cruces may be reached comfortably from Panama within three hours, at an expence of four dollars, and to any one who has a spare day on hand, with ten dollars to spend for the round trip there and back, and curiosity enough to lead him that way, we can safely say that the trip is a pleasant one and worth the trouble. Three or four hours in Cruces will enable the visitor to see the lion, and in the cool of the eveing he can come down the river to Matachin, where he will find a good meal and very clean and comfortable quarters for the night at the American Hotel kept by Mr. Henriques.

Panama Star and Herald.

JAPAN.—There are many curious and interesting things connected with the religion of this people. The gods of the fishes appear here to be held in the greatest consideration. Their public worship is performed with invocations, feasts, and holidays. A season is set apart for the public invocation of the god of some particular species of fish; and forty-eight hours after they commence the orgies, immense shoals of that particular fish appear along the coast. This always happens to the very hour, and thus the god and the priests gain great credit with the ignorant multitude. The simple fact is that these particular species of fish invariably make their appearance in shoals in a certain month and at a certain time of the moon, and at no other. The same phenomenon, according to Wilkes, appears at the Fejee Islands, in the South Pacific. Thus the wily priests turn nature to account in leading the people by the nose. This, however, is but a small sample of their shrewdness.

THE
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AND

Naval Chronicle

AUGUST, 1860.

NOTES ON BARREN ISLAND.—By *G. R. Playfair, M.D.*

Having been for some days exposed to the noxious exhalations from the mangrove swamps fringing the eastern shores of the Great Andaman, it was determined by the Committee to visit Barren Island, a volcano said to be still active, and in doing so we were able to examine a place little known, and at the same time ensure, as far as possible, the health of our crew.

Barren Island, so called from the scanty vegetation which shows itself on its fire-formed rocks, is fifty miles East of the Great Andaman, lying in $12^{\circ} 15'$ N. lat. and 93° E. long.

It forms a link in the chain of volcanic action which, commencing in the island of Java, extends North-West and North in a curved line, showing itself in the bay of Bengal in Barren Island,—in the Nacondam Rock, an extinct volcanic summit forty-five miles directly East from Port Cornwallis, and in the mud volcanoes on the coast of Burmah.

Barren Island was visited by Lieut. Blair of the Indian Navy in the year 1789,—it was then in a state of violent eruption, large volumes of smoke and vapour issuing from its summit, and huge masses of rock being ejected to a considerable distance from the crater.

Another account of the island appeared in the *Asiatic Researches* upwards of forty years later. The writer, when passing in his vessel, was induced to land. The volcano, although smoking, was at that time quiescent.

I am not aware that the island has been visited by any one else, but as Sir C. Lyell, in the description and drawing given in his *Principles of Geology*, has apparently been misled as to the structure and elevation of the island, it is probable some such account exists, for neither of the descriptions above mentioned makes any allusion to the existence of water between the external crater and the central cone of elevation.

We approached the island from the South at daybreak on the 18th of December, 1857, and, at the distance of eight or nine miles, it exhibited the outline shown in the following sketch, apparently inaccessible, until we steamed round to its N.W. shore, where we found a break or ravine, along which we could see up to a cone which rose in the centre of a circular crater.



The island is nearly circular, has a diameter of 2,970 yards, and is formed of high ridges averaging 970 feet, which slope at an angle of 45° towards the sea, and inwards at a larger angle to the base of a central cone 975 feet in height, and having a diameter of 2,100 feet at its base.

Having approached in a boat to examine the break in the outer ridge, which gave the only promise of a spot on which a landing could be effected, we found that an abrupt wall of lava, about 20 feet in height, filled the greater part of it, but that on its eastern extremity there was a sandy beach a few yards in extent.

Having pushed the boat in on this beach, the men jumped into the water in order to fasten her to a rock, but more quickly jumped on board again, the water being quite hot. The tide was then about half flood, and amongst the stones at the water's edge we discovered a spring bubbling up, the temperature of which was too high to be borne by the hand, the mercury in the only thermometer in our possession rising immediately to 140° —its limit.

I have no doubt that had we been able to try the amount of heat before the spring was cooled by the rising tide, it would have been found at boiling point.

From the landing place we walked towards the base of the cone over a mass of lava, which extends the whole distance, and fills the greater part of the ravine.

At its surface it is broken up into irregular shaped blocks of loose texture, containing a large amount of felspar, crystals, the lower strata of closer texture, probably from cooling more slowly.

The eastern side of the ravine exhibited alternate layers of lava, trap, and scoria; the slope inclined towards the sea. This is repre-

sented on a small scale in the following general section of the island.



The cone, which rises at an angle of 40° , is covered with fine ashes, the inner slopes of the external crater are also covered with the same fine ash to their summits, but on the northern and eastern sides, the slopes are almost as smooth and regular as the cone itself, while the South-West aspect is so much less covered that the ridges of which it is formed are visible running inwards towards the base of the cone. The evident cause of this difference is that the S.W. monsoon blows with great force during seven or eight months of the year, the N.E. monsoon only lasting four months.

The upper part of the cone is truncated and hollowed, of an oval shape, the length from N.W. to S.E.,—the hollow being filled with rough masses of lava, and on the northern edge are numerous fissures filled with loose ashes, through which the smoke issues. At this spot the scoria and masses of lava are encrusted with sulphur.

On the edge of the hollow towards the beach there is a huge upright mass of rock, which, as seen from below against the sky, looks like a pillar.

Some smoke was seen occasionally to issue from the slope of the cone a little way below this rock.

On the slope of the cone 200 feet from the summit towards the N.W., was a projection formed by a large mass of rock, from which at some period, I believe, eruptions have taken place.

From this point to the summit the heat was felt through the soles of the shoes in ascending.

The whole bed of the island between the cone and external crater, is at least fifty feet above high water mark. I could not, after very careful examination, satisfy myself that there had been any recent upheaval of the island, none of the rocks exhibiting signs of having been water worn.

There is a great similarity, although on a smaller scale, to the island of Palma, which, however, has long been extinct. The island of St. Paul has also a similar formation as regards the external crater, but its fires having become extinct and no cone of elevation raised. The centre exhibits a basin 180 feet in depth.

The origin of the ravine or break in each of these islands may, I believe, be learned from the formation of the central cone in Barren Island. The only points of exit for the smoke are at the summit; and on the slope below the pillar-like rock in that direction, the crust of the cone is evidently thinner than elsewhere.

Were an explosion to take place, its effect on the greatest part of the cone where there is solidity and resistance, would be to throw or

bend the rocks outwards, while in the direction where the crust was weak, the explosion would blow out the side altogether, leaving a gully or ravine.

Additional Notes by G. Von Leibig, M.D.

Barren Island is a volcanic island, situated in lat. $12^{\circ} 17' N.$ and in $93^{\circ} 54' E.$ Its smallest distance from the Andaman Archipelago is in a straight line only thirty-six miles East. The distance from the nearest point of the main land, near Tavoy, is about 270 miles W.S.W. It lies not far out of the straight course between Port Blair and Amherst, about 63 miles from the former and 330 from the latter place. The *Semiramis* approached the island on the morning of the 19th of March, 1858, coming from the N.E., and steamed round it by South, keeping close to the shore until the ship was opposite the entrance of the crater, bearing about W.b.N. from the centre of the island, where she hove to, and we landed.

It is stated in former accounts that all round the island the lead finds no bottom at 150 fathoms, only a quarter of a mile distant from the shore. Captain Campbell found, however, ground at that distance on one side of the island, its centre bearing N.E. at a depth varying from $4\frac{1}{2}$ to 14 fathoms.

Nearing the island from the North and passing round to the S.E. of it, it looks from a distance like an oval topped hill; but coming closer, the sides of the mountain are discovered to belong to a steep circular elevation, sending out spurs towards the sea, and enclosing a central valley. The sides of the enclosing circle being lower in the direction of the spectator, the upper circumference of this valley is seen in the shape of an oval ring, formed by the crest of the surrounding ridge. In the middle of this ring, the upper part of a regular cone is visible, from the apex of which small white vapour like clouds emanates. It is also distinguished from the surrounding darker masses by its grey colour, and some large white marks on it, like fields of snow. An entrance is not discernible.

The slopes towards the sea are generally covered with shrubby vegetation, presenting, however, some bare patches towards the upper edge. Small trees grow about the base, where large rounded stones are washed by the sea.

Turning now to the South and S.W., the enclosing wall is higher than the cone and the crest of the opposite ridge, and both therefore disappear from the view. On this side the vegetation down the spurs to the sea may be called rich, and consists of different forest trees of moderate height, interspersed with graceful palms; and where the descent is rocky, the rocks are frequently covered with ferns.

Passing to the westward of the centre of the island, and continuing the survey towards the northern end, one of the first turns discovers a large gap in the circular wall, extending quite down to the base of

the island, through which the interior of the valley, with the cone in the middle, opens at once into full view.

The sides of this gap or fissure in the circular wall form a regular cut or short traverse valley through it, opening towards the sea into a small bay, and on the other side into the circular valley, to which it is the only way of access. Opposite this entrance, in the centre of the valley, rises the cone of grey ashes, and surrounding its base, the bottom of the valley is filled with black masses of cold lava, which are continued like a congealed stream through the gap, breaking off abruptly when they arrive near the water's edge. At its termination the stream is about ten or fifteen feet high, and its breadth seems less than further up. It looks like a black perpendicular wall, drawn across the entrance and facing the sea.

This lava consists of a black basalt mass, (matrix,) throughout which are disseminated innumerable semi-transparent little crystals of a variety of common felspar, (orthoclase,) and also many bright green granules of olivine. The lower part of its thickness is homogeneous, with a smooth fracture; but from the upper surface to a depth of several feet it is cleft in all directions, whereby the upper part is divided into rough blocks, possessing a spongy texture as well as countless sharp edges and corners.

The older lava, composing the rocks on the side of the valley and also the strata of the surrounding ridge, is slightly different from this. The colour of its principal mass is a reddish grey, felspar and olivine crystals are embedded in it in the same proportions as before, and in addition small pieces of black angite of the granular kind, with conchoidal fracture. From underneath the black lava, where it terminates near the sea, issues a broad but thin sheet of hot water, mixing with the sea water between the pebbles of the beach. The thermometer I had with me was not graduated high enough to measure its temperature, its highest mark being 104° F. (40° G.) The water where escaping from the rock must have been nearly at the boiling point, judging from the heat felt when the hands were dipped into it, or when the hot stones were touched. When bathing, we found the sea water warm for many yards from the entrance of the hot spring and to a depth of more than eight feet. It is not impossible that a jet of hot steam or water may emerge from the rocks below the level of the sea. The hot water tasted quite fresh, and not saline as might have been expected, showing that it could not have been long in contact with the rocks.

We ascended to the base of the cone, passing along the sloping sides of the transverse valley through dry grass and brushwood or over sandy ridges, so long as the solidified stream of lava in the middle left us room to do so. At last we had to ascend the rugged surface of the black lava itself, and cross the circular valley, which has about the same breadth as the transverse valley, (not quite one eighth of a mile,) until we arrived at the base, about half a mile from the sea. The cone rises from the lava accumulated in the circular valley, and its base is about fifty feet higher than the level of the sea,

at a rough estimate. It is quite round and smooth, and the inclination of its sides is 40° . No vegetation of any kind was visible along its surface. We turned to the left and went up from the North side, where the appearance of a ravine, some way up, only two or three feet deep and very narrow with some tufts of grass growing along it, promised an easier ascent for a part of the way, and where a rocky shoulder at about two thirds of the height would offer a place to rest. Our ascent commenced at about $2\frac{1}{2}$ p.m., and was certainly the most fatiguing expedition many of us remember ever to have undertaken. The sky was almost cloudless, and the heat consequently was great. The lower third and more of the slope consisted of a powder of ashes, into which we sank ankle deep, and we often fell a step back for two gained. A little higher, stones loosened when the foot stepped on them, and rolling down in long lumps, were dangerous to any one following.

Arrived at the rocks mentioned, their nature and the manner in which the side of the cone bulged out in their neighbourhood, showed that they marked the point from whence an effusion of lava of the same kind as we had seen below, had taken place from the side of the cone, not reaching the mouth of the tube at the apex. The last third of the way from the rocks upwards offering a firmer footing, the ashes being cemented by sulphate of lime, (gypsum,) which, where it was present, formed the white patches we had already observed from a great distance when approaching the island. The ground now became very hot, not, however, intolerably so, until about thirty feet from the apex a few rocks again offered a convenient seat, not affected by the heat of the ground. There the aneroid barometer and the temperature of the air were observed in the shade of an umbrella.

About half way between these rocks and the highest point, cracks and fissures commenced to intersect the ground, widening higher up to the breadth of several inches, where clouds of hot watery vapour issued from them. They were filled with sulphur, often accompanied with beautifully crystallised white needles of gypsum, and a sulphurous smell also accompanied the vapour (sulphurous acid). This smell was, however, not very strong, and did not prevent us from penetrating the clouds, when we discovered that, what had appeared from below as the summit, was in fact the edge of a small crater, about ninety or a hundred feet wide, and fifty or sixty deep. At that depth it had a solid floor of decomposed lava or tufa and volcanic sand. Its walls were made up of rocks, in appearance like those of the older lava, and they were highest on the North and South sides. Towards the West the crater opened with a similar cleft to that which had permitted us to enter the island. The vapours rose principally from the northern and southern quarters of the edge, where the fissures were largest and longest, running both parallel and across the edge. The rocks where the sulphurous vapours issued from between them, were covered with reddish and white crusts, indicating the beginning of decomposition of their substance. From the top, the horizon and more or less of the sea were visible in all directions, with the excep-

tion of the quarter between South and West. The inner slope of the circular elevations enclosing the valley, had no spurs, but was like a plain wall, falling off with a steep descent all round towards the centre. It had a uniform brownish colour, appertaining either to the surface of larger masses of the rock itself, or being derived from the dry grass and smaller shrubs covering the slope. There were no trees or brushwood visible to correspond to the richer vegetation on the external circumference. Horizontal parallel lines, traceable throughout the circle and rising somewhat like the borders of receding steps, indicated the thickness and strike of the different sheets of lava and tufa which, superimposed upon one another, formed the substance of the circular elevation. A very good transverse section of it had already attracted my attention, where the left side of the transverse valley debouches into the sea. Several strata of tufaceous formation, alternating with older rock like lava, could be seen there rising from the rocky beach. One of the most remarkable amongst these was a stratum of rounded stones, like large pebbles, cemented by tufa, exactly like those of the present beach, but at a considerable elevation (about twenty feet) above the high water mark, showing that the submarine base of the island must have been raised since those pebbles had been washed by the sea. All these strata dipped outwards from the centre of the island, parallel with the external slope of the encircling wall. It is interesting to observe that this slope continues under the sea level on three sides of the island at least, at the same inclination as above water, which averages about 35° . This is shown by the soundings, which exceed 150 fathoms at a distance of a quarter of a mile from the shore.

Judging from what we saw, as I have here attempted to describe it, I should conclude that the circular valley and its walls constitute the crater of a huge volcanic cone of submarine basis, which had been the vent for fluid masses of rock, when such eruptions took place on a larger scale than in more recent times. The smaller cone in the centre of the old crater, corresponding in its size to the diminished forces of volcanic action, is of recent origin, and represents those smaller cones of still active volcanoes, which are usually distinguished as cones of eruption from the original cones, also called the cones of elevation.

We have it on record that about sixty years ago, the crater of the little cone was throwing out showers of red hot stones of several tons weight, and enormous volumes of smoke, (Captain Blair's account, *Asiatic Researches*, 1795,) and but for the isolated position of the volcano preventing its more frequent observation, we should doubtless be able to fix the date of the eruption that left the stream of lava behind which is now filling the valley and its outlet into the sea. Since that time it has entered the period of decline of volcanic activity, without, however, leaving us the assurance that it will not some day revive again.

From barometrical observations, I deduced the height of the cone by Gauss's formula, allowing for the time of the day and the influence

of the hot ground near the summit, to be about 980 feet from the level of the sea to the northern edge of the crater. This height is confirmed by a trigonometrical measurement of Lieut. Heathcote, I.N., to whom I am indebted for the communication of his results. He visited the island about four months earlier than we did, when he found the height of the cone 975 feet above the level of the sea, and the diameter of the island 2,970 yards, 1.68 miles, North and South.

The few notes I could glean respecting the recent history of the island, are derived from the island itself, from the records of the Asiatic Society, and from Horsburgh. We found on a rock in the transverse valley the inscription "Galatea, 1846," showing that since then no alteration has taken place. The same conclusion can be extended further back to the year 1831 or 1832, judging from an account communicated to the Asiatic Society (*Asiatic Society's Journal*, April, 1832,) by Dr. J. Adam, whose informant landed in the month of March, and reached the base of the cone. By this explicit account the descriptions of the island in Lyell's *Principles of Geology*, dated 1843, and in Humboldt's *Cosmos*, both apparently derived from the same source, must be rectified. The narrator states (in Lyell) that the sea filled the circular valley round the cone.

Horsburgh states that in 1803 the volcano was observed to explode regularly every ten minutes, projecting each time a column of black smoke, perpendicularly, to a great height, "and in the night a fire of considerable size continued to burn on the East side of the crater, which was then in view."

The oldest account on record is that of Captain Blair, already quoted, taken from his report of the survey of the Andaman Islands. He must have visited the island about 1790, as far as I am able to conclude from the publication in the researches and the date of his chart of the Andamans, which is 1790. He approached nearly to the base of the cone, which he describes as the lowest part of the island, very little higher than the level of the sea; but he does not mention the black stream of lava. The acclivity of the cone he states to be $32^{\circ} 17'$, and its height 1,800 feet nearly, which, says he, is also the elevation of the other parts of the island. On the other hand, he remarks that the cone is visible in clear weather at a distance of twelve leagues, which would require a height of not more than from 900 to 1,000 feet. I think therefore that Captain Blair could have taken no accurate measurements, contenting himself with a rough estimate. If it could be proved otherwise, the island would have subsided 820 feet since he visited it.

From the description in some of these accounts it would appear that the high vegetation which we found on the external slope of the island is of quite recent origin.

Mr. Adam's authority (1831) states as follows:—

"The summits to the N.E. were completely smooth and covered with ashes; those to the S.W., although partly covered with ashes, also have a good many shrubs over them, with dry and parched grass growing on the surface."

He conjectures from this that the eruptions would take place only in the S.W. monsoon or rainy season, at which time the S.W. wind would blow the dust and ashes on the hills in the opposite direction, or N.E.; such a conjecture is hardly admissible on the ground given, it being easier to account for the vegetation on the south-western slope by its angle of descent being much smaller than that of the north-eastern slope.

The sulphur on the top of the cone occurs in such quantities in the cracks and fissures, often lining them to the thickness of more than half an inch, that the question naturally arises, whether the sulphur could not be worked with advantage.

Although in the immediate neighbourhood of the crater, where the fissures are numerous, the ground seems to be completely penetrated with sulphur, this is not so evident in other parts, only a few feet lower, where the surface is unbroken. There are, however, some reasons which seem to promise that a search might be successful. In eruptive cones like that of Barren Island, there is always a central tube or passage connecting the vent in the crater with the heart of volcanic action in the interior. In this tube the sulphur, generally in combination with hydrogen, rises in company with the watery vapour, and is partly deposited in the fissures and interstices of the earth near the vent, the remainder escaping through the apertures.

If in the present case we admit the sensible heat of the ground of the upper third of the cone to be principally due to the condensation of steam, a process of which we have abundant evidence in the stream of hot water rushing out from underneath the cold lava, it is not improbable that the whole of the upper part of the interior of the cone is intersected with spaces and fissures filled with steam and sulphurous vapour, these being sufficiently near the surface to permit the heat to penetrate. It is therefore not unlikely that at a moderate depth we should find sulphur saturating the volcanic sand that covers the outside of the cone.

I only speak of the outside, as we may conclude from the evidence we have in the rocks of lava in the crater and those bulging out on the side, that the structure of the cone is supported by solid rock nearly to its summit, the ashes covering it only superficially.

From what has been said above, the probability of sulphur being found near the surface disposed in such a way as to allow of its being profitably exhausted, will depend on the following conditions:—

1st.—That the communication of the central canal, through which the vapours rise, with its outlets, be effected not through a few large but through many and smaller passages distributed throughout the thickness of the upper part of the cone.

2nd.—That some of these passages communicate with the loose cover of ashes and stones which envelopes the rocky support of the cone.

Although I have mentioned some facts which seem to indicate the existence of such favourable conditions, and which are moreover

strengthened by an observation by Captain Campbell, who saw vapour issuing and sulphur being deposited near a rocky shoulder about two thirds of the height, on the eastern descent of the cone, still their presence can only be ascertained satisfactorily by experimental digging.

The Solfatara at Puzuoli, near Naples, is a similar instance of the production of sulphur. It is a crater in which exhalations of watery vapour, sulphurous acid, and hydrochloric acid take place, and where sulphur is also deposited. The sulphur is gained there by distilling it out of the sand of the crater, to a depth of ten metres or thirty-two feet—it becomes too hot lower down—and returning the sand, which, after twenty-five or thirty years, is again charged with sulphur. The permanency of the volcano of Barren Island as a source of sulphur would depend on the rapidity with which the sulphur would be replaced after the sand had been once exhausted. The time required for this is not necessarily fixed to periods of twenty-five or thirty years. In Iceland, at a similar spot, the sulphur is renewed every two or three years.

If a preliminary experiment should make it appear advantageous to work the cone regularly, the material about the apex, after being exhausted of the sulphur that is present, could by blasting and other operations be disposed in such a way as to direct the jets of vapour in the most convenient manner through uncharged portions of ground. If the sulphur should aggregate in periods of not too long duration, it would be possible to carry on the work of filling up new ground on one side, and taking away saturated earth on the other, at the same time, so that after working round the whole circumference, the earth that had been first put on would be ready to be taken away.

If the periods should prove too long to permit the work permanently to be carried on, an interval of time might be allowed to pass before resuming operations.

Water for the labourers could always be obtained from the warm spring at the entrance of the island.

The distilling or melting of sulphur to separate it from the adherent earth is a matter of comparatively little expence or trouble. If the sulphur be abundant, it might be effected as in Sicily by using a part of it as fuel. It is not necessary to do it on the spot; it might be done at any place where bricks and fuel are cheap.

It is impossible to predict certain and lasting success to an undertaking of this kind, all depending on the quantity of sulphur present and the rapidity with which it will be replaced.

The situation of Barren Island offers every facility for a preliminary trial. The near proximity of the Andamans insures a supply of convict labour, timber, bricks, and lime. All the wood and iron work required for facilitating the transport of loads up and down the hill, could be made on the Andamans.

DUTCH COLONIAL POSSESSIONS.

By the treaty of the 17th of March, 1824, the islands of Sumatra, Java, Borneo, Celebes, Amboina, and Banka, with their population of about four millions, passed to the crown of Holland, constituting an empire richer, more important, and a greater population than Brazil. In exchange, England, after reserving certain territories, engaged not to establish any factory on the islands of Battam, Carinian, Bintang, Dingen, or any other island South of the strait of Singapore, nor to conclude any commercial agreement with the chiefs of these islands.

The following is a statement of the Dutch East India possessions, showing the number of square miles of each island, from the important work of Mr. Arthur Mills, published last year in London. The following are

In Asia.

Java.....	50,000 sq. miles.	Timor	13,500 sq. miles.
Madura	27,000 "	Bali	3,000 "
Sumatra	160,000 "	Lombok	2,500 "
Billeton	2,250 "	Sumbawa.....	8,800 "
Borneo.....	200,000 "	Mangeray	500 "
Celebes.....	70,000 "	Jundana	3,500 "
Amboina	1,320 "	Semao	200 "
Tornate	32 "		

In Africa.

Different posts..... 10,500 square miles.

In America.

Guayana	10,500 sq. miles.	St. Martin (part)..	50 sq. miles.
Curaçoa	600 "	Oruba	16 "
St. Eustatia	22 "		

In Oceania.

Parts about New Guinea, where are several establishments.

The various islands above enumerated form in Asia alone a considerable empire, with a greater amount of population than Brazil. This consideration led to Prince Frederick being sent there in 1824 as Viceroy at Batavia over all the Dutch possessions in the East. But the insurrections which broke out in Macassar and Borneo were the occasion of this measure being abandoned. The European troops had enough to do to subdue the native population. Happily at Java, not so important in point of territory as Celebes and Sumatra but of greater population, the Dutch power was more firmly established by the death of the Sultan of this island, who left no legitimate heir. The Resident at Sourakarta also took possession of the seals of state, establishing himself at the palace without opposition on the part of the people, since which time nothing has occurred to disturb the success of the colonial government.

Previous to looking into each of these colonies of Holland, we may glance at the spirit of the new laws promulgated on the 8th of August, 1850, taking effect on the 8th of September of the same year in the

European ports, and on the 1st of January, 1851 in the colonial ports of Holland, as regards the principle of government.

From the establishment of the custom house system of 1822, certain advantages were enjoyed by the national flag over that of all other countries. These were of many kinds. Generally all imports and exports under the national flag paid ten per cent. less than other vessels, and this even was increased when importing certain articles, especially sugar, fruit, wine, seeds, salt, oil, &c. Again, the colonial commerce was almost exclusively reserved to Dutch vessels, which enjoyed almost an entire freedom from the payment of dues in the ports of the mother country, and a very considerable reduction in those of the colonies. And to encourage navigation still more from their own country, Holland not only lessened the tonnage dues to her own ships in preference to those of strangers, but also exempted them from paying them more than once a year for entry and departure.

It is very well known how fervently the advocates of free trade always propagate their doctrines, and Holland gave herself entirely to them in the two chambers of the States General. Being vigorously opposed, they obtained a great victory in the arrangements which they succeeded in making in reference to Netherland ships from the mother country to the colonies being considerably modified. The abolition in principle of all distinction previously established in the national flag was adopted: whenever this assimilation was not admitted to the level of reciprocity, the Dutch government had reserved to itself the power of adopting measures of reprisal with that country which by her situation might injure her commerce. She proceeded, in fact, conformably to the custom of all maritime powers, keeping to herself the whole of her colonial trade. In 1854 the result of this new state of things began to show itself. Dutch commerce was little inferior to that of a year of general peace, but then there was the Russian war, which had raised the price of articles, and produced a fluctuation in commercial transactions.

Nevertheless, her imports in the principal branches of commerce increased. France figured in it more than twelve millions, with exports to a similar amount. The protection system, notwithstanding all the talent of its advocates, lost ground more and more. By the law of 31st of May, 1858, sixteen ports of the Dutch Indies were declared free.

Nevertheless, to obviate this inconvenience as much as possible, the Governor-General was invited not to permit these places to import articles of foreign industry, and not to acknowledge there the right of entry. By this course foreign commerce was nearly excluded.

More recently still, in 1857, the relations of trade with Japan, thenceforth not only for Holland but for all other countries, promised fresh sources of increase. This result, obtained by treaty, claims the gratitude of the world, which Holland should certainly not withhold. The Dutch no longer shut up in the little artificial islet of Dezima, opposite to Nagasaki, and kept at a degrading distance by the Court at Jeddo, are now appreciated and sought for by the Japanese Sove-

reign and his ministers. Every one is desirous of seeing the people acquainted with the Dutch language as well as initiated in all the modern appliances of art to industry and military science. An officer of the Netherlands Navy and an experienced medical gentleman, M. Fabius and M. Van Bock, are charged with attending to this desire for instruction. Under their management a library and a collection of medals have been formed and instruments collected, and an engineer appointed to superintend them. These sensible arrangements on the part of Japan have already permitted the construction of several charts and the establishment of new commercial stations,—thus Holland is establishing a town at Kanagawa, entirely new for strangers where they may resort and establish themselves.

The Dutch by such steps as these, with a laudable readiness to satisfy all the demands on them from whatever source, made the Court leave Jeddo, in which it had been shut up for ages. If all the ancient prejudices were not annihilated at once, and if some restrictions have limited the advantages obtained, an immense result has been achieved, and an honourable treaty of commerce has been concluded: barbarous customs have been abolished of presents to the Emperor and to the great dignitaries, as well as the practice of trampling on the picture of the Saviour. What with regular steamboat communication between this country and Europe, with quick and sure returns profitable to industry and commerce, Holland will soon make up for her isolation.

Again, if the projects of the Netherlands Government may not be fulfilled this year, let us hope that a society may spring up to balance other influence in that country. It should be exclusively a national association, or a friendly nation, and not a jealous one, might unite with Holland to form one, we should welcome it in every respect, and should anticipate a happy future for it, for in those parts harbours of refuge and places for supplies are plentiful, and Japan is a new country for trade, from whence our ships cannot return empty. Mines of coal, lead, and copper are already opened in the islands of Jesso-Niagata on the northern coast of Nippon, the centre of an active commerce. Situated at the mouth of a river easily entered, thanks to the shelter from the numerous mountains about it, after rounding Sado Island, and run eleven miles W.N.W. in 7, 6, and 5 fathoms. Will England and America precede other nations there? But let us leave these first efforts of Holland on a land which has not been conquered by her, to follow up exclusively our view of her possessions, each of which we will now consider.

Dutch India and Islands.

This part of the colonial possessions of Holland always seems to have been an object of care and attention. It appears, says the Baron Dupin in his introduction to the first volume of his work on the French Commission on National Industry, that it was a noble love of country that induced the Dutch to speak thus.

“There, under the torrid zone, where the English, in spite of their power of governing, have not been able to obtain sufficient returns to

defray the expence of government and an army of occupation, we obtained ours without resistance. Our William I. became merchant. He became leading partner of an association which held it, and said to some millions of Malays of the Sunda Islands,—“Cultivate, cultivate without limit, I will purchase all, and always give a higher price than you have ever had; but I will be a privileged purchaser, and the foreigners must observe my conditions.” Addressing the native princes and Sultans, he said to them,—“Your interests and profit shall stimulate my care; I will guarantee you *your* useful government. Annexation, that evil of British India, I will never inflict upon you. You are certain of opulence and security for your heirs and successors. Second my endeavours.” They have done so. A revolution of labour followed like a miracle to this combination, and in less than twenty years unparalleled fortunes have been made.

The whole of the colony in 1857 continued to increase in prosperity, since, in consequence of the increase in the price of colonial goods, especially of coffee and sugar, the returns (bonis) which in 1850 averaged a total of twenty-eight millions and a half of florins appropriated to the current year, were the real produce of sales actually effected, and not that of those in anticipation. Mercantile gainings may be always liable to fluctuate from many causes, but Holland, scorning deception, is incessantly making them.

In a word, Baron Dupin resolves the secret of success which Dutch colonization has met with in those distant parts. Besides the well known characteristic qualities of these people, their economy and perseverance and consequent riches, and, moreover, their honest and enterprising habits, he says, that the Dutchman is always intolerant in commerce but tolerant in religion, and he has followed this system without interruption for two centuries. But as yet we have only a short period in which the first commercial company with a sovereign in it has been established in the remote countries of Asia.

Since 1795 the Company has turned over its affairs to the State, its receipts and liabilities, along with an extent of country considerably larger than their own, containing a most fertile soil, a population accustomed to labour and above all to obedience. From 1816 to 1826 this was under the masterly management of the honourable M. van der Capellen, of one of the first families in Holland, who was the first to apply a perfect system culture. The Count de Bus de Gisignies, from 1826 to 1830, continued it as well as the Count van der Bosch from 1830 to 1833. Both of these statesmen, no less remarkable for their patriotism than for their enlightened views, in lieu as is often the case in Holland of following the routine of their predecessors, determined to follow up the good work that had been begun. The system adopted was that of identifying not only the interests of the native princes and mussulman priests, but even that of the labourers with those of their rulers; each one had a benefit in the produce of cultivation, and each also in its produce in the market. Whether it was sugar, coffee, or spices, every one received his proper allowance, depending on the quantity of land he had to cultivate, and this admirable plan secured at

the same time the advantage of a system of defence from all aggression either from without or within.

Knowing that the greatest power of England lay in her navy, and careful to be beyond the reach of their guns, the Dutch Governors constructed three fortresses in the interior of the island, in commanding positions, which protect Batavia, Samarang, and Sourabaya. There the Dutch not only defied their enemies, but quietly awaited all hostile aggression. In Sumatra as in Java the principal points of defence are in the middle of the island. But be it observed that one of their principal means of defence against any external attack, is in the affection of the native population for the paternal government of Holland. The dominion of the Netherland Government is thus abundantly well established, and not this only, but, thanks to the well tried wisdom of their mode of government, it is also abundantly productive. And one of these Governors, M. le Comte van der Boch, on his return to Europe modestly told M. de Bois-le-Comte, the French Ambassador at the Hague, how he managed to effect this. "Without much consideration or trouble in the matter, but simply with one object in view, depending on the whole and perseveringly followed up, said this illustrious statesman, I have renewed and completed our political system by substituting a tax in silver from produce proportionate to the crop of each year as well as to the extent of the labour, of which I am satisfied it is a proper remuneration. If we took to ourselves the best provinces, we undertake to pay the native princes, entitled to pension, a sum at least equal to the revenue they would receive from them, leaving them the nominal suzerainty, and also hereditary, which we have guaranteed as protectors at all hazards. Thus the coercive system of labour, distasteful to the people, instead of having the character of being Dutch, would be like that of their old rulers, and as territorial proprietary is nearly unknown to Mahometan sects, since the Mussulman principle is that the land according to Mahomet belongs to God or to the Sovereign his representative, the people of every town know well the amount of culture necessary to be made for the year, and also know very well that they can dispose of their rice and other articles of husbandry for their maintenance, but that the fifth part of whatever must go to the Government that the other four fifths of sugar, coffee, are their own to dispose of."

Thanks to this system Java contributed in 1840 three times as much towards the commerce of Europe as the immense extent of country forming British India, and 800,000 kilogrammes of indigo, the fifth part of the produce of the whole of Bengal. If from that time a falling off has been evident in the sugar crop, accounted for by the progress of the same article in Germany, Belgium, and in Holland making up for it, the importation of coffee, tea, and cotton has advanced considerably in Holland, and a recent contract made for the purpose of encouraging its culture, will soon compensate for that. The Government always contributes to encourage production, by making advances to the cultivators, who repay them from the produce of their sales, and thanks to this powerful patronage, which after all

is nothing more than an advantageous commercial disposal of national means that under the administration of M. Baud in 1842 the refining apparatus of Messrs. Derosne and Cail were established in all the islands belonging to Holland under the auspices and with the assistance of Government.

To all this rich agricultural produce which may be found in all the islands mentioned, we have only spoken from memory of cochineal, spices, and rice. But we may add that important mineral discoveries have been made that will equal perhaps those of Australia and California, not perhaps in gold, but in coal. The coal mines of Borneo have already yielded 7,340 tons of excellent coal. In fact we know that in the industrial commerce of Holland 190,000 blocks of tin figure among the imports from Banca. One half of the carrying trade between Holland and her Indian colonies at the time of the establishment of the General Commercial Company in 1824, was under a foreign flag: everything now goes under the Dutch flag, and it may be said that the mercantile marine has been doubled;—and in this manner the noble ambition of the Sovereign has been attained. that of seeing Holland become a great naval market, although it may be to the detriment of the Government treasury to add to its revenue by effecting sales in Java; but the metropolitan markets are benefited by supplying the goods which the Government servants purchase for the good of the State.

This General Commercial Society, with a King for its principal lay partner, in 1849 renewed its statutes and obtained a prolongation of the charter for another fourth of a century. Their returns have been less, but there is no doubt of their increasing prosperity continuing to recompense the efforts of a wise Government, honest in its views, and which, steady in its purpose, does not hesitate to triple its expences when it is certain that by so doing it will obtain six times its receipts.

It may be interesting to insert here the tables for 1856 of the imports and exports of the several Dutch possessions in the Indian Archipelago.

<i>Imports.</i>		<i>Exports.</i>	
Netherlands	£1,008,573	Netherlands	£6,554,850
Great Britain	578,207	Great Britain	80,170
Eastern Archipelago	709,105	Eastern Archipelago ...	73,710
British Colonies	42,967	British Colonies	54,761
France	42,097	France	220,617
Hamburgh	39,483		
Sweden and Denmark ...	15,278		
Bremen	2,738		
Italy	390		
America	33,393		
Pacific	5,200		
Phillippines	30,375		
China	153,325		
Siam	17,035		
Japan	90,217		
Total....	£2,768,383	Total....	£6,984,108

Table of foreign tonnage in the Indian colonies of the Netherlands.

	<i>Country.</i>	<i>Tons.</i>	<i>Total.</i>
1. Netherlands	Metropolitan	198,343	} 296,742
	Colonial	98,399	
2. European	English	23,686	} 81,667
	French	7,320	
	Swedish	12,139	
	Hamburgh & Bremen.	6,022	
	Prussian	6,782	
	Danish	3,399	
	Small European States	2,376	
3. American	United States	16,940	}
4. Asiatic	Chinese	1,419	
	Siamese	1,522	
	Japanese	1,062	

There is no eloquence to be compared with that of figures when they display a magnificent prosperity. But in ten years who shall say this will not be doubled, bearing in mind that the islands we have enumerated can maintain a hundred millions of inhabitants, and they are only sixteen. Sumatra and Borneo principally offer new ground for agriculture of enormous extent. The Moluccas have abandoned spices for the cultivation of bark and vanilla, far more profitable. The tobacco and cocoa plantations increase every day, and to encourage them on a large scale, Government has granted to a company 1,000,000 square perches of ground, after having approved of plans for an extensive European colonization. But in recompense to guarantee the increase of rural settlers, the Dutch Consuls in China are particularly enjoined always to favour emigration there. Let us add, in fact, as a kind of conclusion to the rapid sketch we have given of the Dutch possessions in these distant parts, that the serious question for the colonies, of slavery and its abolition has never been there a serious question. The slaves there were very few at first, and moreover since 1846 M. de Rochussen, anticipating the emancipation which he foresaw would be general, commenced to interdict the employment of forced slave labour on all maritime works or those of fortifications carried on by the Government. We may say then that on the first of January, 1860, the emancipation will have imperceptibly come over a population in Asia and Oceania, the subjects of Holland, of 10,924,568, distributed as follows:—Europeans 18,625, Chinese 126,407, Orientals 29,410, Natives 10,741,656, slaves 8,410, other possessions of Java 2,923,247.

As to the Dutch establishments in Oceania, a scientific and commercial expedition left the Moluccas in April, 1858, for New Guinea, with the object of establishing relations with the innumerable islands as yet scarcely known of that great archipelago. But the results of it are as yet unpublished.

Dutch Colonies in America,—Guiana.—While the Government of the Netherlands has never concealed its preference for those magnifi-

cent possessions in Asia distinguished by their flag in observance of the treaties of 1814 and 1824, it cannot be said that Guiana is neglected no more than some islands of the Antilles belonging to them. But the vicinity of some English possessions as soon as the political and social condition of the negro population, so much in repute, became established for the benefit of the country, difficulties appeared every day. At first incessant promises of emancipation called for by England, unhinged the population, and then free labour in the Asiatic colonies was incompatible with the produce of the West in the Dutch markets. Constant fears being entertained of an approaching abolition of slavery, it is easy to imagine the unsettled state of the colony, notwithstanding all the attempts against it. We will first show by the return of the plantations of Surinam, in 1845, the great importance of that colony, composed of 9,712 free persons and 43,285 slaves, distributed among 102 sugar estates, 116 coffee plantations, 44 of cotton, and 2 of cocoa, 1 of indigo, and 49 timber grounds.

For fifteen years the slave population has never been replenished with fresh arrivals, and now consists of 39,157 individuals, and the free population amounts to 3,000 persons. From 1832 the Government of Guiana was distinct from that of the other Dutch possessions of the Antilles. The Government was placed in the hands of some intelligent and upright men, with extended powers, but who were avowed abolitionists, little to the satisfaction of the inhabitants, who petitioned in vain for their recall. The answer they obtained was, that their representatives, in abolishing certain corporal penalties and not authorising stripes but according to magisterial sentence, only acted up to their instructions to accustom them to a discontinuance of a state of things becoming no longer possible, and which was to die away; numerous instances of free labour were known and encouraged by the authorities. Fifty European families were established as an experiment on the River Copaam. Europeans and Negroes worked together and with the same implements. Spades and pickaxes were employed thus by individuals born in different climates in the formation of a canal to join Surinam with Saramaca. The workmen went to their labour preceded by a band of music; but sickness soon found its victims among the new comers. Nevertheless, Dutch perseverance yielded nothing, and the new colony, always well looked after, soon prospered. The ground recovered by draining near the canal was conceded to those who had worked there in preference to others, and very soon the sugar manufacture, which in the West Indies is so profitable, became well established at Surinam. The flourishing condition of this colony may be seen by the arrivals of ships, which increased to 225 annually, and, moreover, as another and new source of profit, the year 1857 was rendered remarkable by an iron steamer constructed at Paramaribo commencing running between that place and the estates on the rivers. If this example were followed, among the extensive forests of the colony what a wide field of profitable enterprise is offered to the well known skill of Dutch engineers. The delicate

question of emancipation may be let alone: the Government has this year given the finishing stroke to this great work of justice, as it is decreed (as well known) to take place on the 1st of January, 1860. M. de Rochessen's plan is to establish a bank at Paramaribo, to pay the slaveholders a third and the two other thirds from thence to be paid into the bank, to prevent capital from going out of the colony, and thus to force, as it may be said, the proprietors to assist the Government in maintaining the agricultural and manufacturing population of the country. The total expence amounts to fifteen millions of florins. The State annually contributes a third of this sum, and will hereafter recover these advances by the labour of the free negro.

The Dutch Antilles.—The Dutch, who carried the commerce of India to Lisbon and other parts of Europe, as soon as the Portuguese had extended their voyages of discovery soon found themselves with a considerable mercantile marine. The despotic proceedings of Philip the Second it is well known produced discord between Holland and the peninsula. A proclamation of the King of Spain and Portugal was made which prohibited all intercourse with that country. Thus excluded from all colonial commercial intercourse, the Dutch had no alternative than to leave this branch of industry entirely or else go direct to India for that traffic which was denied to them in Europe, and this latter course they at once adopted. The Dutch, therefore, led by Cornelius Houtman, a valiant seaman, gifted with a clear perception and great energy, established in 1621 for the West Indies a similar company to that which was established for the East in 1694. This company prospered by obtaining and keeping for some time a considerable amount of territory in Brazil, but lost it in 1642.

The West India Company made no such expeditions on its own account, but every one might trade to their islands as long as they paid certain duties. The mercantile expeditions undertaken without the permission of Holland were only on the condition that ships which returned to Europe should go to Holland with their cargoes. But along with political events came frequent rebellion among the negroes, and these different causes lessened Dutch power in America, and had besides the natural effect of checking the commercial prosperity of the islands. Thus, Curaçoa, St. Eustatius, Saba, Oruba, and a portion of St. Martin, the only islands where the Dutch flag yet remains, cost more than they returned, and their expenses had to be made up from other sources of West India profit.

Curaçoa, the most important of the Dutch possessions, has about 600 square miles of surface, in 12° N. lat. and 73° 10' W. Two smaller isles, Buen Aire and Oruba belong to it. Their whole population is about 17,000, comprising 5,000 slaves, which twenty years ago was nearly double. Sugar, tobacco, and cotton are their principal produce. The rearing of cattle, horses, mules, sheep, and poultry each forms a profitable branch of industry for the people, who find an advantageous market for it in the neighbouring isles, for their statistics

record an arrival and departure of 843 vessels annually, making about 47,478 tons. Williamstadt is the seat of government.

St. Eustatius has not more than twenty-two square miles of surface, but a very active commerce. In the hands of the Dutch since 1635, its produce consists mostly of sugar. It has about 10,000 inhabitants, among which not a fifth part are free men.

Saba and Oruba are two small islands of similar size, of about sixteen to twenty square miles of surface, and each with 3,000 inhabitants. In the former of these isles there are supposed to be indications of gold.

All these countries, in which the normal condition of slavery is about to disappear, it is to be hoped, will soon see a new system inaugurated. The government will take care that the emancipation will not injure either the amount of produce or the produce itself. Already meetings of 1,200 to 1,500 persons, under the old men of the island, have been commenced to introduce gradually the principles of religion and civilization. The culture of nopal and encouraging the cochineal insect, as requiring less exertion than sugar making, will no doubt extricate these colonies from the ruin with which they are threatened in a few years from their once flourishing condition.

We have yet to speak of *St. Martin*, where only since 1806, as in Europe, French and Dutch limits of territory touch each other. Perfect amity reigns between the people, both being well aware that upon this depends their mutual advantage. If they are ignorant or have forgotten that Holland has long since followed the policy of France, that in 1799, when the English, in conjunction with Russia, invaded the Helder, and the proceedings in those days, they know that in 1794 Victor Hugues, the captain of a French ship of war, took the island from the English, restored that part to Holland which belonged to her, and would do the same again.

Of late years *St. Martin* has received some marks of favour from the government. To encourage commerce on her shores, the King has consented to a reduction of duties of export. Philip Bay is the residence of the Dutch Commandant. It has a population of 3,200 inhabitants, of which one-fourth are free.

Dutch Possessions in Africa.—On the vast continent of Africa, at the extremity of which the Dutch founded a colony, their flag is not found except on some forts scattered on the coast for the protection of their national establishments. *St. George d'Elmina* is the place (it must not be called the capital) where their governor resides. *Axima*, *Acra*, and *Simbos* have commandants under his orders. Colonel Van der Eb for sixteen consecutive years has filled the office of governor with admirable fitness. If the attempts to render the gold washing process more productive, and the mineral works in general, have not turned out better than they have done, it is no less certain that a considerable amount of riches are contained in the soil, and the spirit of perseverance for which the Dutch are proverbial will bring it out.

Were it not for the indolence of the negro and his aversion to the

work of cultivation, the crops from that country would be far greater than they are. Maize, spices, and cotton are produced there with facility, and, independently of these advantages, Holland has always found recruits there for her soldiers of the East India colonies; but the difficulties raised by England have forced her lately to relinquish this plan.

Such are the colonial resources of Holland. In the session of the States this year the prosperity of these large possessions has been, as it always is, one of the grand points of consideration for the cabinet as for the monarch. In proof of the solicitude of his Majesty for the welfare of his troops, the King has signed many orders concerning the treatment and the pensions of the colonial army. The colonels, besides having more than 600 florins a year, are allowed 23,000 francs extra, and each rank receives a proportionately increased allowance. Their servitude in the colonies (which is not considered for the officers of the navy) secures them a retiring pension of twenty-five florins for every year of residence there; and, moreover, William the Third has provided for the invalids of the colonial army a magnificent asylum in one of the finest parts of Holland. European troops may well be looked for as its inmates, and especially those of the Netherlands.

Sacrifices may well be made for the colonies when the receipts from them are greater than their expenses, and the overplus is applied to those of the mother country; when the total colonial returns amount to 90,681,219 florins, and the outlay is 73,333,353 florins, being a clear gain of 17,347,866 florins. These figures convey a good idea of the condition of the colonial possessions of Holland.

CLIMATE AND SALUBRITY OF ANAM AND CAMBODIA.

The climate of the united empire of Cochin China, some parts of which differ entirely from others, has been misrepresented, and has given rise to much difference of opinion concerning the rainy season, which is sometimes stated to take place there on the 15th November, and sometimes a month later. Thus was the admiral in command of the French expedition misled in his time when proceeding to the capture of Hué. We were looking forward to fine weather and anticipating great events, when the last bi-monthly mail, *en route* for Hong Kong by the *Scotland*, a vessel freighted by the French government, and which left Tourane on the 5th January, brought us the intelligence that the rains, which still continued, had hindered the intended proceedings. While waiting for better weather they could only adopt some secondary steps connected with the object in view.

The climate of Cochin China, although having similar seasons to those in Europe, without their extremes, varies considerably in dif-

ferent parts, according to its physical aspect as well as its geographical situation.

This empire, which has the name of the Glory of the South, is the most important of those of Sudo China, and is situated between $8^{\circ} 15'$ and $23^{\circ} 10'$ N. lat., and 102° and 109° E. long. With a view to explain the differences between the various parts of this immense territory, let us divide the whole of Cochin China into three parts.

The first, or most southerly, shall include Cambodia and a small part of the ancient Ciampa, or lower Cochin China, between 8° and 11° N. lat. Here the ground is alluvial and low, without mountains. The rains begin here about the end of May or beginning of June and continue till September. This is the bad and stormy season of the year, the opposite to the mild and tranquil season. At Saigon, the largest town in this division, towards the end of August the thermometer at 6h. a.m. stands at 78° ; at noon at 84° ; and at 6h. p.m. a little higher than in the morning. The temperature in the dry season is higher there than in other parts of the country.

The second we will allow to include middle and upper Cochin China, from 11° to 18° N. lat., terminating at the old wall which divides it from Tonquin. This would be intersected by a chain of mountains lying North and South, which collect clouds, condenses them, and reverses the seasons, a phenomenon which we meet with at Celebes and in other parts of the Indian Ocean; so that in Cochin China the dry season occurs during the S.W. monsoon, and the rainy season during the N.E. monsoon! In Cochin China the rains begin at the end of October and last till March, while at Saigon this period is nearly the end or beginning of September, and at Hué and Tourane it begins towards the middle of October.

M. Borrel, a merchant who had lived in Tourane, informed us at Batavia that he had learnt from M. Chaigneau, French mandarin at the court of Hué for thirty years, that in the hottest weather which he had experienced there the thermometer did not rise beyond 88° , and that the lowest in the winter was not under 51° ,—a salubrious temperature compared with the dryness of Bengal, so pernicious to Europeans! M. Chaigneau maintains, however, that this state of the atmosphere is such during what is called the winter that it is considered a thermometrical mistake, on account of the cold and periodical rains which fall during this season of the year.

The third of our divisions will comprise the vice-royalty of Tonquin, which, with Cochin China, taking the collective name of Annam, presents in a great measure the same flat and alluvial land as that of Cambodia. The seasons are also similar in these two regions; and, exposed as it is to the direct influence of the S.W. monsoon, the rains begin in May and end in August. The heat in the summer is sometimes overpowering, the thermometer standing at 90° . The rains commence towards the month of October. The autumn months, however, (September, October, and November) are mild and suitable to Europeans. The temperature of December, January, and February

is very keen and trying during the northerly winds, which prevail even to March, with the thick fogs which prevent the sun's rays from reaching the country.

M. Retord, a benefactor of his country, which deplores his premature loss, relates having witnessed the fall of hailstones as large as eggs during a heavy rain without wind. This worthy prelate says that the atmospheric changes are very sudden, but that the climate is not unhealthy if one is careful in guarding against them. Often, after overpowering heat and a continued calm, a violent wind sets in and a hurricane begins, an occurrence very frequent on the coasts of Tonquin. These hurricanes are not so frequent on the coasts of Cochin China, and especially under the 16th degree of N. lat., so that in Cambodia they are scarcely found at all.

In reference to the salubrity of the climate, it is generally agreed on as a fact beyond dispute, especially among those who have lived in the extreme East, and who have had an opportunity of comparing it with Batavia, which settlement the Dutch have been on the point of abandoning several times. The *China Mail* of the 30th of December, 1858, and some other English papers, nevertheless assert that Cochin China is unhealthy. They have, doubtless, taken this view of the subject from the fact of some unacclimated persons having been ill, as is the case everywhere, either from accident or neglect of careful measures indispensable in all places, such as having the head covered during the heat of the day, and not throwing off dress after work in the cool of the evening, and other little rules which even in Europe are not neglected.

It is satisfactory to be able to settle these false notions of unhealthiness, from whatever source they may arise, by quoting, in opposition to the *China Mail*, the opinion of one of the journals of the same nation, copied into the *Singapore Free Press*:—"With regard to salubrity, the climate of the subdivisions of the Annamite empire is considered favourable by several Europeans with whom I have conversed on the subject. Some among them who have lived there thirty years have spoken in special praise of the climate of Hué and Saigon, and I consider that the stout and strong form of the inhabitants may also be regarded as a proof of the salubrity of these climates."

We might add to this the testimony of M. Duc Chaigneau, son of the worthy mandarin, who lived nineteen years at the court of Hue, with his family, without having more illness than he had when he resided in France. During a residence there of eleven years we have been ill but once, and can assert that old age is common. Cases of paralysis are rare, as well as the train of maladies produced by the cold of Europe; and it may be safely said that persons of middle or advanced age in these parts have a much greater chance of longevity than they have in Europe.

DR. MALLAT DE BASSILAN.

EXTRACTS FROM THE JOURNAL OF A CRUIZE IN THE ARCTIC OCEAN,
between April and July.

Last night hove the ship to from midnight until 4h. a.m., under the expectation of making the land early, but about six o'clock, having kept her off again, saw a large body of ice; weather being thick and hazy and the land not visible. We ran close up to it and found it loose and small, but no openings or clear spots in it that were of any extent. During the forenoon it lit up for a moment and gave us a glimpse of land, which was probably the north-eastern point of Cape Kamschatka. Having the wind from E.S.E., we were able to skirt along the edge of the ice and steer about N.N.E., the ice making nearly a strait line to the northward. This continued until noon, when the ice turned more to the westward, and we steered about N.N.W. until sundown. By this time we seemed to have passed the main body of the ice, and the sea was clear towards the land.

April 25th.—During the night the wind shifted round to North, bringing with it a heavy snow storm; and this morning decks, spars, sails, and rigging are completely covered with ice and snow. This, with the ice floating around us and occasionally giving the old ship a bump by way of salutation, makes things on deck look rather desolate and gloomy. Ship has been lying to all night under easy sail, and is now (9h. a.m.) making the best of her way to the eastward through the ice under close reefed topsails. About 10h. a.m. fell in with a strong body of ice extending as far as the eye could reach, nearly due North and South. Attempted to work through it, but soon found it was too much for us. This ice was much heavier than any we have yet seen; the pieces being large and thick, and the heavy swell made such navigation very dangerous. We were right glad to get out of it and stand to the North and West into clear water. The old ship got two or three pretty solid bumps on her sides and bows, which made every timber in her tremble, but nothing was started. At eleven o'clock the fog cleared away and showed us land on the weather bow, bearing North to N.N.E., which proved to be Karanekoi Island, near the coast of Kamschatka. Stood in for it, but found it protected by a belt of heavy ice extending out from shore eight or ten miles. Kept off and steered to the southward to get round the lower end of the island, but met another projection of ice running out to the eastward, and seemingly joined with the ice we were in this morning. Concluded from this that the bay inside this island must still be frozen, and accordingly stood to the eastward again, where was the only clear water.

April 30th.—We are now fast in the ice, but a half mile seaward is a space that is more open, and which we hope to reach this afternoon, so as to take advantage of the wind and work up the bay. Eight p.m., in spite of our best endeavours we are still prisoners. The open space that was ahead of us this morning was closed up by the drift

from the northward before we could get to it, although we had warps and anchors in constant use. The *M*—— got perhaps a quarter of a mile ahead of us, but is now as fast as we are. At four p.m., both vessels furled every thing and lay at a drift, the shore of Cape Oukniskoi being about four miles off, the outermost or seaward peak bearing S.W.b.S.

April 30th.—At sunset I noticed a mirage in the southern horizon, a phenomenon which is quite common in high latitudes. For a distance of thirty-six degrees on the horizon there appeared to be a wall of ice rising about ten degrees above the surface of a streak of clear water which was right under it. It had the exact appearance of an immense cataract frozen solid in an instant, showing a blue shade in some places and glittering icicles in others. The upper part was perfectly level, while its base seemed to present the boiling and surging appearance that we see in the pictures of Niagara.

June 19th.—To-day we have seen plenty of walrus and any quantity of sea fowl. All kinds of ducks, such as canvas backs, black ducks, crowbill ducks, ducks with a red topknot, ducks with a black and ducks with a white topknot, cormorants, gulls, and whale birds, have been round the ship in such numbers as would make a sportsman's heart beat with delight. Unfortunately we are not supplied with the proper ammunition, and can only now and then tickle our palates with a bit of game. I fired at several ducks to-day, and though the charge fairly buried them, it had no other effect; the shot were too small.

The bay of the Archangel Gabriel, notwithstanding its lofty title, proves to be a great humbug, as we are satisfied that no such bay exists, at least not in the vicinity of its reputed location. We have thoroughly searched the coast between Capes Navarine and St. Thaddeus, and an opening of the magnitude described on the charts could not possibly have escaped our notice.

June 20th.—To-day a new species of duck has been about the ship in great numbers. I say new species, because we have not seen them before this season, but I remember having seen them in this sea in 1852 and 1853. They are quite small, almost black, have a flat bill, and a little knot on their heads, which looks very much like a cock's comb. We used to call them "bedbugs," because one of our sailors, a Portuguese from the Western Islands, said one day that these ducks were no longer than the bedbugs at Fayal; but, in spite of the disagreeable name, we found them good eating, and had many a nice sea-pie made of them. Bedbugs are certainly no worse an article of food than "biled lice," a dish which I have frequently heard announced; and, by the way, not a small portion of the population of the islands prefer the latter article raw.

June 22nd.—Late in the afternoon a party of Esquimaux came aboard. They brought nothing to trade for, but pretended to have a large quantity of whalebone and ivory at their dwelling-place. I thought it a good time to test the value of Norton's *Vocabulary*, and found many of the words to be the same spoken by the people. The

numerals were almost identical. I was able to make a few additions to it, mainly of words that will be useful to use in our trade with them. Two of the party were married females. They were tattooed on the chin, with lines about a quarter of an inch apart extending from the lower lip and the corners of the mouth to the base of the chin. Their dress is exactly the same as the men's, and they can be distinguished only by their unshaven heads and hair parted in the middle. Their faces are not unpleasing, but their short stature makes them look like children.

June 23rd.—We were soon boarded by canoes from shore, and in less than an hour after anchoring had probably over a hundred natives on the deck. A few brought trade with them, but the majority seem to have come from curiosity, and to get what they could by begging and stealing. They are certainly the most unblushing out and out thieves I ever saw. They will pat you on the shoulder with one hand in token of friendship, and with the other relieve your pocket of anything you may have been unguarded enough to leave in it. Nor are they at all backward about asking for what they want. All day I have been pestered for tobacco, beads, knives, &c., by rascals that had nothing to trade for. I think if they had the ship and cargo they would still be unsatisfied. The little trade that was brought off we secured at the best rate possible, but could hear of no trade on shore that was worth going after. Towards evening a canoe load came down from the upper bay, where the head chief Pelekante lives. They were most of them intoxicated, and we came very near having serious trouble with them. At eight p.m., finding there was no likelihood of any more trade coming off, and the crowd of natives was on the increase, we got under way for the purpose of getting rid of them. By the time we had got a mile from our anchorage they had all cleared out, very much to our satisfaction, as their company is not at any time very agreeable, particular so when they have nothing to trade for.

July 8th.—This morning died Wahimenoholaa, one of our foremost hands, a native of Hawaii. The poor fellow had been sick for a month or more from a disease that resembled pleurisy, but which seemed to be entirely out of the reach of any remedies our limited skill could suggest. There being no place on shore where a grave could be made, except right in the village, the corpse was sewed up in canvas in the usual manner, with weights at the feet, and placed at the gangway. Permission was then given to the kanakas to perform any ceremony they wished, and I was much surprised to see one of them produce a Catholic prayer-book, and after devoutly crossing himself, read a portion of what I presumed to be their burial service. The rest stood round with hats off, and when the reader had finished he made the sign of the cross on the body, and it was then launched overboard. As usual, the lighter feelings of the crew had been restrained while the corpse remained on board, but in five minutes after its disappearance beneath the waves, everything was as before,—no one would have supposed that we had just been witnessing the burial of a shipmate.

July 9th.—We visited a native village, which we found to consist of perhaps fifty huts. The population we were unable to form any idea of, but, from the great number of children that swarmed about us, we concluded that the race was in a fair way to be perpetuated for many years yet. The dwellings do not display so much ingenuity and workmanship in their construction as those of the Hawaiians, but, as regards cleanliness, they are about on a par. They also answer the double purpose of a domicile and doggerly, to which, as the dogs perform the labour of horses, might be added that of a stable. This is a custom they have in common with Hawaiians, who not only domesticate their dogs in their houses, but very frequently their pigs.

The scarcity of wood in these regions the natives make up for by using the ribs, jawbones, and other parts of the skeletons of the whales they capture, and I noticed that a large number of the huts were formed of such material. Walrus hides, stretched and dried, make the covering.

We had an opportunity of seeing something of sledge travelling with dogs. A team of twelve drew a sledge with only the driver on it at the rate of four miles an hour on bare ground. A continual volley of shouts and unsparing use of the whip were necessary to accomplish this degree of speed. It did not require much time for us to see all that was worthy of note.

Some of the crew have got it into their heads that the ghost of the seaman who died yesterday was in the ship last night. I have not taken much pains to investigate the facts concerning this supernatural visit, but have learned that sometime in the night, (which was unusually dark for this time of the year) the dog "Tow" set up a most strange and unaccountable howling, and the conclusion of the watch on deck was that he was terrified by the presence of the spirit. Some of the kanakas, I hear, actually saw the apparition. Here we have an instance of the superstition which is so prevalent among sailors of every nation. The cause of their belief in the supernatural I will not attempt to analyse, but if sailors, as a class, were as well educated as are people of most of the trades and occupations on land, ghosts and apparitions would be less frequently seen on shipboard.

In the year 1851 one of the seamen of the ship —, then on her passage from home to the North Pacific, *via* Cape of Good Hope and Indian Ocean, had one of his feet badly crushed by the fall of a heavy cask. Every care and attention was bestowed on him by the captain, even to giving him a berth in the cabin, where he would be much more quiet and comfortable than in the fore-castle, and he soon seemed to be recovering as fast as the nature of the injury would permit. A week passed away without any unfavourable symptoms appearing, but it happened that poor Tom's constitution was enfeebled and his blood diseased, and suddenly inflammation set in, which in a short time proved fatal. But, as the cause of his death in no way relates to my subject, I will proceed by saying that none of us supposed that Tom's illness was dangerous until a very short time before his death. That afternoon I was at the mast-head, keeping the customary look-out,

and, as it happened, had a companion. We were passing away the time in spinning yarns to each other, when all at once he screamed out "Look there, poor Tom's going to die." I was of course startled at the sudden exclamation, and, looking down where he pointed, saw an enormous shark close by the quarter. It was swimming in the same direction with the ship, but a little faster, and when it had got perhaps half her length ahead turned, swam round the ship several times and then disappeared. This led to much argument between us, he believing that it was a certain sign of death, and I insisting that it was no such thing. The finale of the story is that we agreed not to mention to any one our having seen the shark; but when we came down from aloft that afternoon we heard it whispered that Tom was worse, and in two hours from that time his soul was in eternity. The ignorant sailor who, with me, saw that shark, will believe to his dying day that it was aware of Tom's sickness, and was waiting to gratify its insatiable appetite upon the corpse when it should be launched into its watery grave.

NOTES OF A VOYAGE TO THE PACIFIC IN H.M.S. "HAVANA,"—
Captain T. Harvey.

(Continued from page 361.)

Sailed on the 30th June for the Sandwich Islands. Met with light baffling winds, calms, squalls, rains, and frequent thunder storms until we were in 106° W. long. This description of trying weather we have had continually since the beginning of May; and indeed until within a week of the Sandwich Islands very unsettled squally weather.

From July 28th, in 14° 48' N., 118° 14' W., until August 9th, in 14° 21' N. and 126° 20' W., westerly winds, proving the correctness of Lieutenant Maury's remarks on the prevailing winds in this part at the present season. From 125° to 140° W. winds N.b.W. to N.b.E., when they hauled round to N.E. Made the island of Mowee on the morning of the 19th and anchored off Honolulu the same evening after dark, in eight fathoms,—too close, fifteen or sixteen fathoms the least for a safe anchorage. Towed in by a steam tug in the morning, and moored head and stern alongside the reef.

This passage would be easier accomplished by following Maury's advice, viz., to push South and S.W. until getting the S.E. Trade. Stand on with this, in from 2° to 5° N., as far as 116° to 125° W., making nothing according to the time of year; in the summer the latter longitude is preferable, and then cross the variables for the N.E. Trade. By this route the miserable weather of the central coast is avoided. H.M.S. *Swift* followed this plan and made the passage from Panama to Honolulu in forty-seven days; but in 1848

H.M.S. *Herald*, although towed from Panama 1,000 miles, took forty-two days to get clear of the Doldrums, through keeping in lat. 9° to 10° N.

Making the Sandwich Islands, it is better at all times of the year to keep clear of Owhyhee and to make Mowee from the northward. Do not anchor off Honolulu in the winter months, as southerly gales* are dangerous and the holding ground is bad; in the summer (April to December) vessels may anchor with safety in about sixteen to twenty fathoms, Punchbowl N.E.b.E., peak of Diamond Head E.b.S. The passage through the reefs into the harbour, though well buoyed, is dangerous, and should not be attempted, even if the wind be fair, without a thorough knowledge of the port. A pilot ought always to be taken.

H.I.M.S. *Embascade* arrived on the 30th of August, thirty-one days from St. Jose de Guatemala, having made a direct course across. She had very heavy weather, yet with fair winds, between 125° and 135° W., during which the mainsail and maintopsail were blown away.

During our stay at Honolulu a survey of the port was made, from which it appeared vessels drawing as much as 22ft. 6in. may be brought in at high water by the aid of steam. But it should not be attempted if there is a continued break on the middle bank. A white buoy (now a bell buoy) in sixteen fathoms marks the outer anchorage. A large ship should steer N.W. from this buoy until the inner ball buoy is seen on with the outer red buoy. This mark will lead over the bar in twenty-three feet. Stand on in the line of buoys to the inner harbour. To deepen the bar to five fathoms a space of about 700 feet square would have to be cleared out, varying in depth from 7 to 11 feet, sand and coral. There is a very heavy swell on the bar with southerly winds, making it very dangerous. On November 24th the whale-ship *Nauticon* was wrecked on the middle bank, the tug not having sufficient power to tow her against the wind and sea.

It is high water full and change at 4h.; rise and fall being 2ft. at springs and 1ft. to 1ft. 6in. at neaps; but the tides here are much affected by the winds, gales, whether from North or South, bringing high tides and a rise of 3ft. In the month of January, 1857, the water was remarkably low, rise and fall not being above 6in. and high water being about the old low water mark of September.

This survey was undertaken at the request of the Hawaiian Government. The following letter was received from R. C. Wyllie, Esq., their Minister of Foreign Relations:—

* On this subject we find the following in the voyage of *La Bonite*.—Ed. Southerly gales generally last twelve hours, and bring heavy seas to the roadstead of Honolulu, obliging vessels in the winter to lie in the port. But for eight months of the year the roadstead is perfectly safe, like the rest of the open roadsteads of this archipelago. It is very remarkable that southerly gales give notice of their approach by a heavy swell in the outer anchorage of Honolulu for a day or even two days previously, although the usual breeze continues, unless a calm prevails. As soon as this warning is given vessels anchored in the roadstead should either go to sea directly or run into the port.

*Department of Foreign Relations, City of Honolulu,
14th November, 1856.*

Sir,—By special command of the King, I have the honour to convey to you his Majesty's thanks for the chart of the harbour of this city, which, through H.B.M.'s Commissioner, you presented to his Majesty at your audience last week.

And I am commanded further to request you, in the King's name, to thank your officer, Mr. Hull, who has shown so much exactness and talent in the preparation of that chart.

In justice to others, I must add that having consulted Admiral Hamelin in March, 1846, on the improvements of which the port was susceptible, he approved of the plan which the King's Government are now endeavouring to carry out; regretted that he had not time to make a minute survey of the port by his own officers, but promised to recommend to the Governor of Tahiti to send an officer of the engineers by the first vessel of war visiting Honolulu, to make the survey and a plan of general improvement.

On the 16th of May, 1854, a minute report, with plans prepared by Mr. Webster, on the same subject, was made to the King and Privy Council, and laid before the Legislature of that year.

In 1855 an old chart of the harbour by Lieutenant Walden, of the British Navy, was revised and enlarged by Lieutenant T. A. Phelps, of the American Navy, and engraved by Mr. Emmert.

But there was still room for the chart prepared by Mr. Hull, which is the largest and most complete we have ever had, and which shows in the clearest manner the vast and solid and the valuable improvements of which the harbour and reefs are capable. He has thereby, with your sanction, rendered an important service to the King's Government, who, as you know, are engaged in an extensive plan of improvements, demanding great present outlay; but the effect of which will be greatly to augment the capacity of the port for the accommodation of vessels of war, for steamers, merchant and whaling vessels, and to gain for the Government an *area*, on each side of the harbour, of vast extent and value, for wharves, coal, and other depots, warehouses, merchants' offices, public offices, and even whole streets of private houses.

If our trade should increase during the next twenty years in a *ratio* at all proportionate to its actual increase since 1844, the population and resources of Honolulu will, before 1876, be developed to an extent requiring all the improvements contemplated by the King's Government.

I avail myself of this opportunity to assure you of the high personal respect and consideration with which

I have, &c.,

R. C. WYLLIE.

Capt. T. Harvey, H.B.M.S. Havana.

On December 6th we embarked a Kanaka (islanders) crew, with their canoe, and sailed for Bird Island (the north-western of the Sandwich

Group) to ascertain whether any quantity of guano was to be obtained from it. Observed Bird Island on the morning of the 8th. Closed it and found a furious surf and heavy sea. From the observations taken to make a small plan of it, on which such soundings as we obtained are laid down, the island was found to be about three-quarters of a mile long by one-third of a mile broad, and 880 feet high, the North side being a perfect precipice but on the South side there is a little bay where landing has been made in the summer season.

The weather was such as to prevent our closing the island again until the 11th, when there was still such a heavy sea breaking on the rock that the natives could not attempt a landing. The Master went as close as a boat could safely approach and pulled along the island to observe the practicability of a footing being obtained in more moderate weather. He found within 600 yards there were soundings in 15 fathoms. Could only see one spot—a large boulder beach of about 200 feet in extent, where it appeared possible in the finest weather to land. The men-of-war birds came round the boat in some numbers, and were troublesome. A large shark kept company with the boat when in with the island. No seals, sea lions, or animals of any description were observed, nor any appearance of guano. From the formation of the rock and the large amount of heavy rain that falls in its vicinity, I do not imagine it possible that any quantity could accumulate;—nor were birds seen in such quantities as to warrant the expectation.

On the 18th December we again anchored in Honolulu, having decided that this was a very bad time for cruising among the islands, the weather being very unsettled, gales strong and frequent, with heavy squalls. On our return to Honolulu we found the harbour still crowded with whalers, but they were leaving daily. There had been about a hundred and fifty sail of whale ships in the harbour. The season was a moderate one; several vessels suffered severely from gales in the latter part; one vessel had lost her lower masts and bowsprit.

At Honolulu, with a base of 10,748 feet, the heights of the under-mentioned peaks were ascertained. Peak right of Nuana Valley, 3,129 feet; Peak left of Nuana Valley, 2,748 feet; Kariki Peak (more to the left), 2,752 feet.

January 22nd.—Went with the Master, to examine Pearl River or Lagoon. One entire day was spent sounding on the bar without obtaining any satisfactory result. The channel in has only twelve feet water, is intricate, and requires a skilful pilot to take the smallest vessels through it. The harbour is very extensive, with sufficient water for any ship, six and seven fathoms being found alongside small cliffs not more than from ten to twelve feet above the level of the sea, the land behind them being flat. Fresh water might be conducted from a stream in the neighbourhood, at a trifling expense, to a point where tanks or boats could fill alongside. Well water is brackish: used by the natives with impunity, though invariably disagreeing with strangers. The surrounding country is capable of affording supplies in

any quantity. It being considered practicable to open a deep channel into this magnificent sheet of water, the extensive and rapidly increasing traffic of Upper California with Australia, India, China, &c., the consequent rising importance of these islands, and the inestimable value of such a port if made available, is my reason for noticing it here.

We found a good leading mark that would take a boat in with eleven feet,—Montgomery's, or the salt-work's flagstaff on with the meeting of the high land of Waimea and the neck below it, bearing about N.N.W. $\frac{1}{2}$ W.

February 1st.—Sailed from Honolulu for Valparaiso.

February 12th, 3h. 30m. p.m., wind easterly, 5 to 7 q. m. p., head S.b.E., observed Christmas Island S.S.E. to S.W.b.W. distant about six miles, making very low with scattered stunted bushes on it, the surf breaking furiously and spray flying in clouds over the land. Bore up N.W.b.W. 4h. 10m., observed two hummocks ahead; hauled up N.W.b.N. 4h. 30m., made the North point, also very low, the bushes more numerous and of larger growth than those on the East end, the surf apparently heavier. 4h. 50m., North point bore W.b.S., when the cocoanut trees described as growing on the West point were seen. 6h. 35m., saw the last of the island, bearing S.W.b.S. By our run and bearings made the island twenty-four miles long. On the day of making the island we found the current S. 36° W. 26 miles; the day following S. 59° W. 31 miles. Our longitude of the N.W. point was $157^{\circ} 20' W.$, twelve miles to the eastward of Captain Cook's, which is $157^{\circ} 32' W.$ This may be accounted for by our using the Honolulu longitude, $157^{\circ} 49' W.$ I never saw a more dangerous, desolate, or dreary looking spot than that presented by it in the weather of that day.

Mr. Hobson, Consul for the United States at Valparaiso, had the misfortune to be wrecked on Christmas island when taking a passage in an American whaling ship. They landed with great difficulty, having the best possible boats, with experienced surf crews. He was on the island eighty-nine days, when, with the party, he was rescued by a vessel brought from the Sandwich Islands by a portion of his ship-mates, who had started shortly after the loss of the ship for assistance in one of the boats. They fortunately found some casks of water washed up from a previous wreck (none of their own was saved), and contrived with a boiler, also washed up, to distil sufficient for their wants. I was much struck with his account of their great danger when leaving the encampment for any distance from the almost certainty of losing themselves, several having nearly perished on such occasions. This prevented their obtaining turtle or fish, said to abound on the opposite side of the island to that on which they were. The cocoanuts he declared to be salt! The walking was exceedingly difficult from the rotten nature of the ground, which he supposed had been burrowed by large birds for shelter. Captain Cook relates with some astonishment that two of his crew lost their way when roaming from the shore!

The following, from a San Francisco newspaper, relates to Christmas Island, Fanning Island, and Diana Shoal:—

“As the longitudes of Christmas and Fanning Islands is incorrect on most charts, we give the correct location.

“*Fanning Island*.—The harbour of Fanning Island lies in lat. $3^{\circ} 49' N.$, long. $159^{\circ} 20' W.$ Approach the island from the East, and sail round the South side. There is no such island in the vicinity as is laid down on the charts as ‘American Island.’

“*Christmas Island*.—The harbour, which is under the lee of the N.W. point of the island, is in lat. $1^{\circ} 58' N.$, long. $157^{\circ} 30' W.$ The East point of the island lies about forty-five to fifty miles eastward of the anchorage, and vessels, in approaching, cannot be too careful of this point, as it is here where nearly all the wrecks occur. The island is not more than eight feet in height, and cannot be seen from a ship’s deck more than seven or eight miles off.

“*Diana Shoal*.—This shoal has never, we believe, been laid down on any chart. It lies in lat. $8^{\circ} 40' N.$, long. $157^{\circ} 20' W.$ It was discovered by Captain English, of Fanning Island, and has on it only six feet of water. The observation was taken at mid-day within a short distance of the shoal, and may be relied on as correct.”

February 16th, at 4h. a.m., lat. obs. $8^{\circ} 43' S.$, long. $158^{\circ} 32' W.$ 6h. 30m. a.m., a fine clear morning, passed within ten miles of the position given to Penrhyn Island by the *Dolphin*, one of the U.S. exploring expedition, in *Findlay’s Directory*, p. 994, part 2, without seeing land. It is described as being only fifty feet high.

17th. — Wind easterly, 3 to 7, c. g. q. At noon a heavy squall struck the ship without the slightest warning. At 3h. p.m. observed two water-spouts, one rapidly approaching from the E.S.E., which was lost sight of in the squall at N.E., then about half a mile distant. On the clouds closing the rain fell in torrents and two heavy gusts of wind, each of only a few seconds duration, came from the mass, the first from the N.E., the other from the N.W., when it fell calm. The ship’s head on the approach of the squall was S.S.E.

19th.—At noon, lat. $16^{\circ} 35' S.$, long. $159^{\circ} 15' W.$, wind S.E., 3, bcm, sea remarkably smooth. Sunset, wind from the same quarter, 4; dense clouds rising from E.b.N. to West. At 7h. 30m. p.m. a tremendously heavy squall struck the ship from E.b.N., blowing furiously for half an hour and veering to N.b.E. Rain in sheets of water. Wind afterwards E.N.E. 1, r. c. g. Midnight, calm, o. g. Communicated the following day with the American whaling barque *Illinois*, of New Bedford; which vessel was thrown on her beam ends by a similar squall at 11h. p.m. the previous night. The captain declared that it was the heaviest blow he had ever experienced in these waters.

(To be continued.)

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—NO. IX.

Before commencing the business of the meeting the Chairman stated that a paper had been placed in his hands that he thought was worthy of being registered among those of the Club, having reference, as it appeared, to the Japanese Embassy to the United States, which Government had been put to no small expense on its account, but which there were doubtless good and substantial political reasons for doing. The business-like character of the Japanese, their thirst for general knowledge and the scrupulous inquiries which they made everywhere in their power, along with their industrious habit of noting down every piece of information they could obtain and sending it off to their own country, might account for the document in question, and might invest it with the character of dropped correspondence. Be this as it might, it would at least convey an idea of the peculiar characteristics of these extraordinary and much to be admired race of people. It runs thus and appears first to allude to the Sandwich Islands and thence the isthmus:—

HOLI OLEBENO HANZOBORO, *the servant of Sina Harni, of the Province of Sinonora, to JAMERI GORDONI BENETI DEM, Chief Sombre (Editor) of the Furious Loud Thundering Dispenser of Universal Intelligence, Jeddo.*

11th Day of 5th Moon of the 122 Cycle of Aski—
Panama, at the Division of the Seas. In the
Flying Chariots of Fire (Train).

Be it known to you we are well—it is even so. May the sun of prosperity shine on us to the happy termination of our great travel.

O, light of wisdom, the world is vast as the starry firmament, and men are of all kinds. I, Holi Olebene Hanzoboro, have said it. The *Furious Loud Thundering Dispenser of Universal Intelligence* itself—the centre of information-distributing-knowledge—is not capable of containing all I have to say of our travel in the wheel-revolving ship called *Powhatan*, of the monster teeming, ever moving ocean, of the islands of the sea called Sandwich, where rise mountains higher than the mighty Fusi-yami; of the many thousand wonders of San Francisco (a tributary to the Tycoon of America). I write borne along in the swift-flying fire-chariot called a train, whilst my mind is incited to tell you the wonders of this far off land, and of our landing on the isthmus called Panama. I beg, therefore, humbly to kiss the ground at your feet, and to spread before you a description short as a day in Pi-apio (winter).

At the first hour (six o'clock) the most high Princes, the noble first officers, and all their reverently willing vassals (servants) left the big ship, amid loud thundering salutations of cannons, and entered one of a lesser size for the purpose of landing. A few small junks lay at anchor in the bay. The city was in the distance; from the

ocean it appeared a heap of ruins, as if often moved by the World-Spirit (earthquakes).

As we drew near the landing-place, we beheld a crowd, not vast in number, but varied in colour like the valued inlaid work of Naski-fanki. Our ship came near to a structure running out into the sea,—it was long and narrow like Nugijuka (a local allusion unknown to the translator). Heavy ropes made fast to large posts secured our ship, and the spirit of the fire was put to rest (engine stopped).

On the place were many people; few nobles or high officers were among them, if I could judge from their dress, at least there were none of two swords. Two I saw with triangular ki-atas (head pieces); their dress fitting tightly to their figures and covered with gold lacquer; they only carried their hari-kiris.

When a joining of the ship to land was made, after much delay, some of the chief officials came on board to do homage to our most high Princes. Foremost was the Lieutenant (Consul) of the Tycoon of the United States, a dignitary of portly figure and grave deportment. He wore no official dress nor distinguishing mark of rank, except it was a white collar of linen round his neck of large dimensions. He bowed to the Princes, but did not prostrate himself, nor did any of the others.

Then came the two Governors of the country, for here, as in Japan, they have two rulers. The Chief Prince (who is the representative of the King (?), living many thousand horse-shoes from here, far away in the mountains) is a young man of haughty bearing. His dress was simple and he carried no sword. It is said, however, that he is about to make war on the Governor of the adjoining provinces. He has lately forbidden the traffic in arms and swords, which an intelligent person, who gave me much information, assured me was the reason that none of the officials carried their swords or hara-kiris.

The second Prince was next presented; he is older than the former, of joyous features and benign countenance; he carried a gold headed stick of office. He was attended by his chief scribe, who carried a similar rod of office, but smaller.

Then came the representatives of various great nations, some old, some young, all clad, except two, in sombre coloured vestments. The chief superintendent of the flying road was also there. He was very particular in his attentions, for I learn that if any accident had happened to us, he and his family, with all the people employed on the road, would be put to death.

Many ladies crowded the narrow landing. They all wore the dress-extending frame of which I wrote you before. They were as beautiful as the roses of Min-house. I also saw small black boys. It is not true, therefore, as O-hadi-Mami-Goro relates in his learned book on the ten elements, that this colour is due to the heat of the sun. They are born so.

A portion of the Prince's army was drawn up to receive us. They looked like braves of great valour. With their drums and trumpets they made a hideous noise, which I was told was meant to do us

honour. At length we entered the norimon (car), a long chamber with many seats. Presently, a loud shrieking of the fire-monster announced that we were to start. Slowly the chariot moved at first, then faster, then it flew. The mountains seemed to dance past us; we crossed many rivers and much swamp, and up many mountains and through valleys. I confess, whilst I felt no fear, I was overcome by the rapid moving sensation, and longed to reach the end of our journey.

At a tea-house called San Pablo we stopped to rest. Here was provided the sakee of the country (champagne) and salted pork meat (ham), also vegetables preserved in vinegar (pickles); chickens roasted whole were also served up. My friend told me that the people who cross this road are always thus entertained by the company to which it belongs. This must be so, for the price of a passage is three gold cobangs and an itzibu, with the eighth of a nichon a pound for all the personal effects.

After an hour's delay we again proceeded and duly reached the other ocean,—the vast unknown sea on which we have again to sail before reaching the far off land of the United States. Even now I must contain myself, it is time to embark. This is true,—let it be reverently laid before the people. May the spirits of good intentions protect you: I have said it.

No doubt the re-embarkation and the progress and visit to the States would be duly related as such state matters should be.

But, continued the Chairman, we will now proceed with the real business of the Club, and the first subject which naturally claims attention is the interest expressed by the highest person of the realm in the Arctic *Fox*, not the Arctic Fox of early Arctic discovery—that facetious Yorkshire gentleman who called himself “North-West Fox,”—but the little vessel in which Sir Leopold McClintock performed his voyage, which resulted in bringing us the only authenticated written statement of the fate of Franklin's ships, so long searched for by the Government in every place but the right. And yet he must observe here, for it is but justice to do so, that the locality in which the document was found by McClintock, proving where the unfortunate ships were detained and ultimately lost, was alluded to in the orders of the very first of the searching expeditions. The place, as is well known, was never reached, nor was it ever searched, but left for Sir Leopold McClintock, who, furnished with the means of doing so by Lady Franklin, took her little vessel, the *Fox*, to this only part left unsearched by the Government, and was rewarded for his enterprise by the discovery of *the paper*, bearing the signatures of the commanding officers of the expedition, and which stated where the ships had been, where they were abandoned, and when and where the gallant Franklin breathed his last. Such a vessel, after such a service to her country, was well worthy of royal attention, and we can imagine the interest which would be excited by the little vessel passing a whole winter drifting about with the ice in

Baffin Bay, in her *dock*, locked up in the midst of an old stout floe, braving with its borrowed strength the pressure of the accumulated ice around her,—while her captain and crew were enjoying themselves day after day on real English Christmas fare, notwithstanding the noise of the "Arctic Artillery," as Kane calls it, and when winter was over recommenced her voyage.

The *Fox* that had stood all this was well worth seeing, besides which she is to brave the ice again on another Arctic voyage, but with a different object, with which we are all acquainted. The event, however, being one of no ordinary nature, should be recorded in our papers, and may stand thus:—

Southampton, 19th July.

This morning her Majesty, accompanied by the Prince Consort and the Princesses Alice, Helena, and Louisa, paid a visit of inspection to the steam-yacht *Fox*, previous to her departure on the surveying expedition to Iceland, Greenland, and Labrador, for determining the practicability of a telegraphic line from England to the United States *viâ* those places. The *Fox*, by her Majesty's directions, had taken up her moorings opposite Osborne House on Wednesday evening, to be in readiness for the reception of the royal party. At ten o'clock this morning the royal yacht *Fairy* got up steam, and proceeded from Cowes to the landing-stage at Osborne House, and embarked her Majesty and the royal party at half past ten. Having steamed to within a short distance of the *Fox*, her Majesty's barge was lowered and conveyed the illustrious visitors on board. They were received at the gangway by Captain Allen Young, commander of the expedition, Mr. Davis, who accompanied Sir James Ross on his expedition to the South Pole, Dr. Rae, who goes in command of the land parties, and whose Arctic expeditions are known to the world, Mr. J. R. Croskey, Captain Shaffner, and Mr. L. S. Magnus, the concessionaries of the northern route, and Mr. J. E. Woods, the secretary to the expedition. Her Majesty and suite were conducted over the ship, and minutely examined the various equipments for the expedition. On leaving the *Fox* both the Queen and the Prince stated they were much pleased with their visit, and expressed the interest they felt in the objects of the expedition, and wished both Captain Young and his officers every success. On the departure of the illustrious visitors the crew of the *Fox* manned the rigging, and gave them three hearty cheers.

The *Fox* is expected to sail this evening from Cowes Roads. She will proceed direct by the North of Scotland to the Faro Islands, where it is expected she will arrive in a week or ten days. Captain Young and his officers will survey and select a suitable bay, possibly in the Isle of Strom, for the reception of the cable, from whence occasional deep-sea soundings will be made.

A paper in the July number of our adopted work, continued the Chairman, sufficiently explains the object of the *Fox's* voyage.

Another event, observed the Chairman, of a more momentous nature in its general object is the departure of the Prince of Wales on a tour through her Majesty's American eastern colonies, which seems to have originated in a desire on the part of her loyal subjects in Canada that the Victoria Bridge should be opened by her Majesty in person. The event has been alluded to in our papers, and this visit of the Prince duly announced.

On the morning of the 10th of July, at nine o'clock, the Prince Consort and the Prince of Wales left Osborne to embark in the royal yacht *Victoria and Albert*, for Plymouth, where H.M.S. *Hero*, Captain H. Seymour, was waiting to convey the Prince of Wales to Canada. Her Majesty drove down to the Trinity Pier, East Cowes, with the Prince Consort and the Prince of Wales, accompanied by the Princess Alice, Princess Louise, Prince Arthur, and Prince Leopold, and attended by the Countess of Caledon and Major-General the Hon. C. Grey. The Prince Consort and the Prince of Wales embarked immediately, and the royal yacht left Cowes Roads for Plymouth, where she arrived about seven in the evening. Shortly after her arrival the Town Council of Devonport waited upon the Prince of Wales with a congratulatory address, which was presented on board the royal yacht, and was most graciously received and replied to by his Royal Highness. About nine o'clock his Royal Highness proceeded on board the *Hero*, which sailed on Wednesday morning, attended by her escort, the screw steam-frigate *Ariadne*, 26, Captain E. W. Vansittart.

The suite which accompanies the Prince of Wales to Canada consists of the Duke of Newcastle, Secretary of State for the Colonies; Major-General the Hon. R. Bruce, Governor to the Prince; Major Teesdale, R.A., and Captain G. Grey, Equerries; Dr. Acland; and the Earl of St. Germans, Lord Steward of Her Majesty's Household.

The Prince of Wales has been invited to visit Bermuda, and £1,000 sterling has been awarded to defray the expenses of the reception, should the invitation be accepted.

It is considered that Newfoundland, Halifax, New Brunswick, Prince Edward Island, Quebec, and Montreal will be successively visited by the Prince, where the ceremony of opening the Victoria Bridge will be performed. Kingston, Toronto, and of course the celebrated Falls, will probably be taken on the return route.

But on this subject the following gratifying sentiments have been interchanged between Queen Victoria and the President of the United States. A correspondence said by an American paper to interpret the true sentiments of America and England:—

President Buchanan to Queen Victoria.

To her Majesty Queen Victoria.—I have learned from the public journals that the Prince of Wales is about to visit your Majesty's North American dominions. Should it be the intention of his Royal Highness to extend his visit to the United States I need not say how

happy I should be to give him a cordial welcome to Washington. You may be well assured that everywhere in this country he will be greeted by the American people in such a manner as cannot fail to prove gratifying to your Majesty. In this they will manifest their deep sense of your domestic virtues as well as their convictions of your merits as a wise, patriotic, and constitutional sovereign.

Your Majesty's most obedient servant,

JAMES BUCHANAN.

Washington, June 4th, 1860.

Queen Victoria to President Buchanan.

Buckingham Palace, June 22nd, 1860.

My Good Friend,—I have been much gratified at the feelings which prompted you to write to me, inviting the Prince of Wales to come to Washington. He intends to return from Canada through the United States; and it will give him great pleasure to have an opportunity of testifying to you in person that these feelings are fully reciprocated by him. He will thus be able, at the same time, to mark the respect which he entertains for the chief magistrate of a great and friendly state and kindred nation.

The Prince of Wales will drop all royal state on leaving my dominions, and travel under the name of Lord Renfrew, as he has done when travelling on the continent of Europe.

The Prince Consort wishes to be kindly remembered to you.

I remain, ever your good friend,

VICTORIA R.

It is a remarkable fact that while the Prince of Wales is on his way to Canada, the brother of his Royal Highness, Prince Alfred, is on his way to the Cape: each destined to connect his name in history with important works of art at those places. The former told the people of Plymouth, in reply to their address of welcome,—“It shall not be my fault if I fail to convey to our brethren across the Atlantic the feelings entertained by the Queen and the people of England for the descendants of those men and for the countries which they founded. I go to the great possessions of the Queen in North America with a lively anticipation of the pleasure which the sight of a noble land, great works of nature and of human skill, and a generous and active people must produce; and I shall endeavour to bring home with me such information as may in the future be of use to me in all my associations with my countrymen.” Sentiments worthy of the source whence they sprung, and which cannot fail to increase the enthusiastic reception which awaits his Royal Highness.

And, again, at the Cape they are not a people who are backward in similar expressions of loyalty, for it is stated that Prince Alfred is to accompany Sir George Grey on a tour through the colony. The Assembly have passed a resolution authorising the Governor to expend any amount he may think necessary for receiving the Prince with due honour. His Royal Highness will meet with an enthusiastic recep-

tion, for her Majesty is almost worshipped by the loyal colonists at the Cape.

These are things as they should be, alluded to as they were by the Prince Consort himself at the annual banquet at the Trinity House on the 23rd June, when he said—"It will be a curious coincidence that nearly at the same time, a few weeks hence, though almost at the opposite poles, the Prince of Wales will inaugurate, in the Queen's name, that stupendous work, the great bridge over the St. Lawrence, in Canada, while Prince Alfred will lay the foundation stone of the breakwater for the harbour of Cape Town! What vast considerations, as regards our country, are brought to our minds in this simple fact! What present greatness! What past history! What future hopes! And how important and beneficent is the part given to the royal family of England to act in the developement of those distant and rising countries, who recognise in the British Crown and their allegiance to it their supreme bond of union with the mother country and with each other!"

It appears that Captain Wilson, commander of the *Great Britain*, arrived in London from Montreal, reports having exchanged signals with H.M.S. *Hero*, having on board his Royal Highness the Prince of Wales and suite, on the 11th inst., at noon, in lat. 49° 45' N., long. 9° 15' W., accompanied by the *Ariadne*, steam-frigate. On the 12th the *Hero* and *Aradue* were again spoken, lat. 49° N., long. 11° W., by the *Parliament*, arrived at Havre.

Turning to the next subject for our attention, continued the Chairman, we have the first voyage of the *Great Eastern* across the Atlantic to record. It will be remembered that, leaving Southampton, she passed through the Needles on the 17th of June, a feat which a ship of so large a draft of water (twenty-seven feet) as the *Great Eastern* could not have performed without the chart constructed from the late survey of Captain Sheringham, published by the Admiralty. It appears that she arrived at New York on the morning of the 28th. With the exception of two days, she had experienced fine weather. She had forty-two passengers, including several of the directors of the company. She steamed the entire passage, ranging from 254 to 333 miles per day. Her engines were not stopped until she was off George Shoal, for soundings. The distance from Southampton, as usually steamed, is 3,190 miles, but, to avoid the ice, she went further South. The following is the number of miles made per day:—17th June, 285; 18th, 296; 19th, 296; 20th, 276; 21st, 304; 22nd, 280; 23rd, 302; 24th, 299; 25th, 325; 26th, 333; 27th, 254. She took thirty-eight passengers and eight guests. The highest speed obtained was 14½ knots. List of passengers:—General Watkins, Colonel Harrison, Major T. Balfour, Captain Drummond, Captain Carnegie, Captain M'Kennon, Captain Morrison, R.N., Captain Coryton, R.N., Mr. and Mrs. Cook, Mr. J. S. Oskford, G. S. Roebuck, S. G. Wilkes, N. A. Woods, T. R. M'Kenzie, Mr. and Mrs. Stainthorp, Miss Herbert, Mr. Barber, C. Field, R. Moran, G. Hawkins, T. Simpson, T. Hubbard, Rev. Mr. Lawthey, W. S. Taylor, G. D. Brooks,

S. Hornby, H. Merryfield, H. Maun, H. W. Wells, W. Save, M. Julianoff, Professor Desford, D. Kennedy, N. E. Taylor, S. Colborne, N. S. Russell, J. S. Kinnear, A. Halley, M. Murphy.

The American visitors seem deeply impressed, not only by the magnitude of the vessel, but by the extreme fineness and beauty of her lines, for which they had scarcely given her credit. At the same time, there seems to be a little *arrière pensée* of jealousy that she is not an American. This feeling is not only natural, but even creditable in a high-spirited nation, who in all relating to maritime excellence have so closely contested our empire of the sea. To do them bare justice, however, they are foremost in admitting that the *Great Eastern* is far ahead of all others, and are even louder in their praise of her as she is now than very many patriotic Englishmen.

A general view of the first voyage of the ship was here preserved, and her speed, which was no doubt affected by the foul state of her bottom,—and the list of her passengers was also added as a matter of personal interest. On the whole, he considered it satisfactory to the company as a commencement of her career.

At a former meeting he (the Chairman) had alluded to a little expedition of an American gentleman to Sussex Island. Expeditions to the Arctic regions were becoming mere excursion trips of pleasure. From San Francisco he was informed that the American schooner *Olivia*, Captain Redfield, had been chartered by a party for a five months cruise in the Arctic Sea. Dr. S. P. Ford and Mr. Widfield take passage in her, and it is their plan to cruise along both shores, from Bhering Straits as far North as it is possible to go, taking soundings and making surveys of the coast line, as well as sketches of the scenery. The doctor also purposes obtaining specimens of all the Arctic animals and birds attainable, with the view of collecting and preserving them for the benefit of natural history. The expedition is an important one, and if care is taken in procuring reliable information relating to the currents, winds, soundings, &c., of that desolate region, the journal of the party may prove a most valuable and interesting contribution to commerce and literature. The doctor's well known literary and scientific attainments eminently fit him for successfully carrying out the objects of the expedition. The schooner was to sail on the 21st or 23rd of April, and will be absent five months, and it is to be hoped will penetrate North on the meridian of the strait, for the shores of the strait are pretty well known as well as the winds and currents, from observations of Capt. Maguire and his officers, that he had already seen in the pages of the *Nautical Magazine*.

Then again it appears that the American schooner *Spring* is to be fitted out at Boston for a voyage up Smith Sound, and will be commanded by Dr. Hayes. We shall look with much interest for the results of all these expeditions of our American cousins, who seem to have caught the spark of emulation from their predecessors of old among our own countrymen.

Turning from these subjects, continued the Chairman, I must now

revert to the old one of wreck, a fine vessel of the P. and O. Company being added to the already extended list of these disastrous events. One peculiarity attending it is the loss of the ship having occurred in a harbour—the harbour of Galle, such as it is, a complete basin about two miles across, with an opening of a mile and a half wide, leaving it exposed to the whole ocean swell, while there are abundance of coral reefs inside it, and sandy beaches for the accommodation of any ship that may be driven *for refuge!* upon them. There is an air of precision in the narrative of the wreck of the *Malabar* in this famous harbour on the 22nd of May last, that entitles it to a place in our annals, and I have received the following from our Secretary.

Galle harbour is formed by a bay, or inlet, about a mile and a half wide. The land runs out on the East, and would effectually protect ships anchored under its lee from N.E. gales. But this portion of the bay is, during the S.W. monsoon, exposed to the full force of the surf and swell. About half way up the inlet stands Watering Point, where the land juts in with a sharp angle. Thence to the Point de Galle Fort is a distance of a mile and a quarter. Between the two lie reefs and large rocks, affording a slight and inefficient protection against the southerly gales. Inside, on the West, is the anchorage ground. It contains exactly fifty-six acres, with moorings for three steamers. Should a fourth unexpectedly arrive, she must wait in the roads until a berth be vacant.

The anchorage is fringed with reefs and rocks on every side. North, South, East, and West are enormous boulders, over which the surf dashes high into the air, or more dangerous hidden reefs. Some are revealed by the break of the swell, while others are ten to sixteen feet under water, and give no sign of their existence. To the S.W. angle of, and about 300 yards beyond, the anchorage ground lies the Beluvaka or Hospital Reef. It is some 700 feet long, and 150 wide, the depth of water varying from four feet in the centre to eighteen on the tail. The rocks are coral, sharp and pointed. It was on this reef we struck.

The "China berth" is at the S.W. angle of the anchorage. There lay the *Malabar*, an iron-built ship of 1,080 tons, and just two years old. She was built in five compartments, two abaft and two before the engine, which formed the fifth. She was anchored, her head nearly South, with one best bower 30 cwt. anchor. Astern was the usual mooring anchor, with a 10-inch hawser. Her draught of water was 15 feet 6 inches aft, and 13 feet 6 inches forward. She arrived from Bombay at ten a.m. on Sunday, and was moored in her berth by one of the regular pilots, Daviot by name. This pilot was on board on the 22nd, for the purpose of taking the ship out of harbour.

About half past two o'clock the *Malabar's* commander, Captain Grainger, goes to his cabin for a change of clothes. He is hardly there when, suddenly and without a moment's notice, comes a terrific squall from the North-east. It sweeps across the bay and strikes the

Malabar on her port side, causing her to heel completely over. The mooring hawser snaps, and she swings round head to wind, completely reversing her former position. Then comes a shock which shakes the vessel from stem to stern; a second which brings the saloon skylight crashing into the cabin. Again, and lamp after lamp is shivered to pieces. We are on the reef, and the rocks are smashing in our plates one after another. Captain Grainger is on the bridge—the engineer at his post, but the steam is not up, and the ship crashes and crunches with every swell. The pumps are sounded, and give three feet and a half water in the after compartment. Five minutes later and five feet are announced.

Our position is most critical; not a boat alongside,—not one of the ship's boat's ready for launching. Before us is the bay with its roaring swell; behind, at 400 yards distance, the fort, with the sea dashing over the rocks which jut into the water, and breaking in tremendous spray right against the parapet wall. The wind still keeps from the North; if it does not shift, but a few minutes and all will be over. Hold on by the anchor—let it drag but six feet and the engine compartment will be smashed to pieces. Let those heavy engines descend with all their weight on these pointed rocks, and our vessel must split in two. A double danger then awaits us. We shall be blown into the air by collapse of the boilers, or down we shall go among the sharks and the breakers.

The anchor holds. The squall abates, the wind goes back to the South. She swings clear of the reef. But now commences a new peril. The after compartments are filling fast, and she is visibly settling by the stern. The water rushes into the tunnel, and indicates seven feet in the hold. Unless steam be got up, down she must go, stern first, in a very few minutes. A panic seizes some—happily but a few—of the passengers. A rush is made to the boats. If they be launched, the Lascar crew will refuse to work, and in the general rush they will be sunk or stove in.

Quietly seated on the poop, Lord Elgin is conversing with his usual tranquillity. Some few days before our arrival he remarked to me that Galle was an unpropitious place for him, as there he first heard the news of the Indian mutiny in 1857. "*Absit omen*," was my reply; but in the very height of the crash, amid the howling wind and the hissing sea, he asks if I remember what he told me about Galle.

Baron Gros nobly seconds his colleague. He is cool and collected as though walking on the Boulevards, and England and France were never more worthily represented than by their two Ambassadors, who set an example to every one.

The panic is but of short duration. The cowards are ashamed by the quiet courage of the chiefs. Twenty-five minutes have elapsed, and Mr. Bailey, the Peninsular and Oriental agent, with Mr. Janty, the Acting Harbour Master, comes on board, and now the steam is up, the chief engineer having poured gallon after gallon of oil on the coals to quicken their action. A rumour is spread that the captain is going out to sea. In truth, that was his first idea. The vessel is

provided with powerful pumps, which can only be worked when the engines are going. There is no room in the harbour to steam ahead, and the captain trusts he can keep her afloat outside with the pumps, and so save ship and cargo.

All hope is soon destroyed by the fearful rapidity with which the water rises. The chief engineer rushes on deck. "In the name of God, captain, don't proceed to sea; we are in a sinking state. Beach her at once." But the rumour gains ground, and some of the passengers pester Lord Elgin with vain requests:—"Will not your lordship order the boats to be lowered?" "Will you not protest against going to sea?" "Will you not speak to the captain?" Lord Elgin steadily refuses to interfere with the captain in the discharge of his duty, but sends Colonel Crealock with a message:—"Lord Elgin presents his compliments, and wishes to know if you are going to sea?" "Going to sea! we are going down." And so we are, and that visibly.

Still not a boat alongside, the cargo boats having disappeared after the first bump. The quartermasters are at the helm, which they have never quitted during the wildest confusion. "Heave at the anchor." "Cheerily, men, cheerily." They work with a will, and, God be thanked, at the first revolution of the engines the screw drives her ahead. The bilge injection is set to work, but the water gains rapidly. It is up to her stern ports. The saloon and cabins are full. She is sinking fast. Will she live across the bay and reach the sandy beach? Mr. Loch, Lord Elgin's private secretary, served in the navy in early life. He goes to the captain and asks leave to prepare one of the quarter boats for lowering, so that if we sink in crossing there may be a chance of saving the women. Permission is readily granted, and Mr. Loch, Colonel Crealock, and a few others soon have the boat ready for launching.

Now we are off. The stern sinks lower and lower. "Keep your eye on that mast," quietly remarks an old sailor to me; "I don't expect we shall get across, and if we sink it may be above water." At length we reach the sand. Let go the anchors. She swings, and the order is given to go astern; but at the first revolution the engines are brought up all standing. The broken hawser is round the screw! Had it twisted the other way we could never have gone ahead. We veer cable, and she is quietly beached on the sand, stern first. It is high tide. A little longer and the water is in the engine room.

The ship's boats are now lowered. So great is the swell that to lie alongside is a work of danger. There are some twenty vessels in port, but two only send boats. The first (English) is swamped in the heavy surf. The other (French) gets under the ladder and fills, but the men are active and quickly bale her out. Both have their skippers on board. Let their names be recorded, for they well deserve it. The Englishman is Peter Upton, commanding the barque *Waverley*, of Newcastle. The Frenchman is Ch. Messemaccher, Capitane au Long Cours, and his ship is the *Paul Auguste* of Dunkirk.

Lord Elgin and Baron Gros dispatched Mr. Loch and the Comte de Bastard to thank them in the name of their respective governments, and sure am I that all England will second that vote of thanks. But we must return to the wreck, where all is prepared for saving the women.

During the whole scene, amidst the wildest excitement, the ladies behave most nobly. No shriek is heard, and, though a few tears are shed, there is neither confusion nor dismay. To get them into the boats is no easy matter, but happily it is concluded without accident, one boat receiving them on the starboard, another on the port quarter. Push off, land them quickly, and return to the ship. But here are two men on the starboard gangway attempting to escape in the women's boat, which is full enough already. The officer on duty pushes them back, but they are not to be repulsed. They slip past him, and leap; the first for the stern, where he tumbles among the ladies and nearly capsizes the boat; the second for the bow, which he misses, and takes a header right into the water. There I should have left him, but the sailors are more compassionate, and haul him in, quite drenched, and half killed with fright. Neither of these men is English or French.

And now boats arrive from the shore, and the Governor's barge is among them. But Lord Elgin will not quit the vessel until every passenger is saved. One after another he sees them over the side, and at length steps into the barge with Baron Gros, the *attachés* of the two embassies, and the writer of this letter. We look at the stern, which is all but level with the water, and cease to wonder at the narrow escape of Mr. Gifford, one of the passengers. He went to his cabin to recover something for his wife. A sea dashed through the port, filled the cabin, closed the door, and but for the venetian blinds which give egress for the water into the saloon, he would have been drowned like a rat in a hole. We pulled for the jetty, where the Ambassadors land, sorely shorn of their glory, but having shown under the most trying circumstances a rare example of courage and steadfastness.

And now we begin to look about us, and ascertain our loss. Except the few things which were taken on board the previous night, all is in the hold, and cannot be reached. Both Lord Elgin and Baron Gros have lost their credentials, their instructions, and all their more important papers. Lord Elgin's Orders of the Thistle and the Bath lie "full fathom five." Baron Gros is *minus* a very considerable sum he took out in specie for the expences of his mission, and a large service of plate. Two newly-married couples have lost their *trousseaux*, their presents, and the home reminiscences given to the ladies before starting on their distant journey. But one portmanteau has been saved by either.

As for myself, I got wet through going on board in a squall; and, finding every particle of my luggage thrust into the hold, I borrowed a dry shirt and trousers of a friend, who afterwards had the satisfaction of seeing me saved in his garments. My kit for joining the army

in China would have delighted the soul of Sir Charles Napier and gained the approval of Lord Clyde. It consists of a toothbrush, comb, shirt collar, and shoehorn. I have not even saved the piece of soap. All the rest—books and papers, letters and maps, woollens and linens, waterproofs and bedding—have gone to the bottom.

No sooner was the ship beached than Captain Grainger made every effort to save the mails. In a few minutes eighty-four boxes and bags were got up. The sea then burst into the mail room, completely filling it, and nearly drowning the men who were at work.

The divers at Galle have recovered a small quantity of luggage from the wreck of the *Malabar*, among which are cases containing her Majesty's autograph letter to the Emperor of China, Lord Elgin's credentials and instructions, and his orders of the Thistle and the Bath. The letter is legible, though much discoloured, while the credentials are in very fair preservation. Baron Gros has also recovered his "papers," which word must be construed literally, as the ink is all but obliterated. The autograph letter of the Emperor is a blank sheet. The luggage is utterly ruined by the salt water and the bilge, the opium and oil, the coal dust and filth wherein it has been submerged. A portion which was insured sold by auction for a mere song.

The greatest dissatisfaction has prevailed among the passengers of the unfortunate *Malabar*, in consequence of the refusal of the agent of the Peninsular and Oriental Company at Galle to pay the hotel bills incurred during the fortnight. He grounds his refusal on the plea that the company is "not liable for detention or delay of passengers arising from accident or from extraordinary or unavoidable circumstance," a notice to that effect being endorsed on the passage tickets. Lord Elgin, Baron Gros, and the Comte de Bastard have served the agent with separate protests.

It says little for a *harbour* that a ship should be thus lost in it, but questions of precaution on these occasions will no doubt be looked into by the authorities.

In reference to the subject of harbours generally, continued the Chairman, he regretted to say that the proposed refuge harbours on our own shores lay as yet untouched. But he had met with a statement of a Portuguese harbour for Oporto to avoid the dangerous bar of that river. This was a proposition before the Cortes to build an artificial harbour to the northward of Oporto, to be connected with the town by railway, thus avoiding the perils to life and property of the very dangerous bar of Oporto. The proposition is an excellent one, and was made years ago by our own engineer, Sir John Rennie. Speaking from personal acquaintance with the locality of the proposed harbour, the plan proposed is easy of execution, and if well directed would secure a good interest on the capital invested.

There is, somehow or other, added the Chairman, a forbidding spell over harbours. There was once a harbour proposed at the Azores,

but it disappeared among the "Flyaways," perhaps these will follow. But we must not blame Portuguese tardiness!

Another curious statement had appeared in reference to communication (postal) between this country and France. It was very plausible, and might no doubt take place, although the transit of passengers was not so easy. It was stated that Dr. W. H. Brown (formerly one of the lecturers at the Panopticon and Polytechnic) has devised a method of transmitting parcels under water across the Channel with great celerity; so that deliveries of these and letters could be effected on both sides several times in twenty-four hours. The details of the scheme are not before us, so that we cannot offer any opinion as to its feasibility; but the advantages which would attend its realization are obvious, and might no doubt be effected by means of a tube of no great dimensions, the arrangements and management of which are perhaps as much within the scope of human ingenuity as the electric cable.

The Chairman then said he would conclude his present review of those affairs which concerned the Club with a glance at the projected measure regarding the proportion in the size and testing of anchors to be used by law in ships of the merchant service of this country.

The Bill introduced into the House of Commons by Sir James Elphinstone and Mr. Fenwick, for testing anchors and chain cables in the merchant service, has just been printed. It comprises 32 clauses, which provide that the Admiralty shall publish particulars of "Admiralty proof" for anchors and iron cables. Harbour authorities to be empowered to provide for proving anchors and chains, for which purpose they may obtain land, building apparatus, and workmen, and may make regulations by bye-laws, subject to the approval of the Board of Trade, and which may be enforced by penalties. In default of payment of dues, anchors, &c., may be sold by auction, or the dues recovered by action. The Board of Trade to appoint inspectors, to fix their remuneration, and regulate the mode of making inspections of proof by apparatus of private persons. Any owner of apparatus for proving anchors and chains may employ such apparatus by certificate of Board of Trade, but the Board may revoke such certificate if it should think proper. Certificates and documents purporting to proceed from the Board of Trade to be received in evidence. Penalties to be enforced for fraud with respect to certificates, declarations, and marks under the Act. All ships registered after the 1st of January, 1861, if passenger ships, within the Passenger Act, 1855, to carry three anchors and two iron cables at least, certified to have passed "Admiralty proof." Penalties to be inflicted upon owners and masters of troop ships neglecting to provide proved anchors and iron cables.

It appears that the proceedings of the Club then turned upon the recent calamitous events in Syria, which elicited expressions of disgust at the complicity of the Turks in frequently taking part with the Druses in their murders and cruelties on the Christians. Also on the proceedings of Garibaldi, which are too considerable for our limited

space; but from among the latter we preserve some account of a Neapolitan prison in the story of Francisco Casanova, as a specimen of what our own countrymen underwent a short time ago in that wretched country.

When he left his prison he was supported by two persons, for he was unable to walk. He looked like a ghost. "Where am I?" he exclaimed, as he looked confusedly around; and well he might, after six years and a half of confinement from all intercourse with man.

I landed in Genoa from Boston, he continued, some time in 1853, and wishing to see the South of Italy, travelled till I came near to Viterbo, when I was cautioned not to go to Rome; but I still persevered in my intention of doing so, when I was arrested as not having a passport, and carried to the Eternal City, where I was placed in the *Carcere Nuova*. Not satisfied with the report I gave of myself, I was tortured for three months as follows. My hands and arms were bound together, and then, by ropes tied round the upper part of the arms, they were drawn back till my breast protruded, and my bones sounded, "Crick, crick." There was another species of torture practised upon me, which was this:—At night, whilst sleeping, the door was secretly opened and buckets of water were thrown over my body. How I survived it I cannot tell; the keepers were astonished, and said they never had such an instance. "But you will never get out alive," I was told. I replied that I never expected to do so, and prayed for the angel of death to come. The worst torture of all, however, was the prison itself—a room, into which a few rays of light struggled from above, and the stench of which was as bad as death. For three months I suffered thus, and then, without any reason assigned, was taken from it and placed, always alone, in a room called "*Salon dei Preti*," a large airy room, and was well fed and well treated for twenty-one months more. I was prisoner of the Cardinal Secretary Antonelli.

About the middle of 1855 again, without any reason being given, I was sent off to Naples, was placed first in the *Vicaria* and afterwards in San Francisco, in a small close room, where I was detained for four years and a half. I was questioned on several occasions, and at last refused to answer, saying that my persecutors already knew what I had to say, that I was unjustly and illegally confined, and nothing should compel me to utter another word. On another occasion I was called before Bianchini, the director of police, who interrogated me. I appealed against my suffering, and all the reply I received was "*Va bene, va bene*," from a Christian man to one suffering as I was. I have been asked to send a supplica for my liberation, but my invariable answer was, I will die first; never will I ask anything of this government.

When first I arrived here I had a little money, which for a short time procured me better food than prison fare, and then by degrees I sold my clothes. At last I sold my black bread to have a little salt to sprinkle over my beans, and sometimes to procure some incense to

relieve the horrid stench of my prison. As for water for purposes of cleanliness it was never supplied me, and all that I could do was to dip one of my own rags in a jug of drinking water and wash some portions of my body. During the day I could repose, but at night I was covered with black beetles, fleas, lice, and every conceivable species of vermin. I expected death, and desired and prayed for it as a relief; but it never came. My clothes were at last so reduced that I was all but naked, and so I have passed four summers and winters, pacing up and down my narrow chamber.

I will show you my prison dress, said he; and going out, returned in a few moments. He might have stood as a model for Lazarus risen from the tomb. The lower part of his body was covered with a thin pair of linen drawers, nothing more. On his feet was a pair of shoes with soles and upper leathers all in holes. He had no shirt, but over the upper part of his body was thrown a rag, something like a common kitchen towel, one corner of which he had placed on his head, as the long elfin locks which had not been cut for many years hung down over his neck and shoulders. He appeared more like a brute beast than a Christian man. "See this rag," said he, "how I have botched it! This was my dress, and so clad I paced up and down my solitary den."

Various severe remarks followed the reading of this story, which expressed in no measured terms the disgust which it produced among the members of the Club. But good humour seems to have been re-established by the reading of the following lines which among others accidentally fell from the papers of Arion.

Had you ever a cousin Tom?
 Did your cousin happen to sing?
 Sisters we've all by the dozen, Tom,
 But a cousin's a different thing:
 And you'll find, if you ever had kissed her Tom,
 (But let this be a secret between us,)
 That your lips would have been in a blister, Tom,
 For they're not of the sister genus.

There is something, Tom, in a sister's lip,
 When you give her a good-night kiss,
 That savors so much of relationship,
 That nothing occurs amiss;
 But a cousin's lip, if you once unite
 With yours, in the quietest way,
 Instead of sleeping a wink that night,
 You'll be dreaming the following day.

And people think it no harm, Tom,
 With a cousin to hear you talk;
 And no one feels any alarm, Tom,
 At a quiet cousinly walk:
 But Tom, you'll soon find, for I happen to know,
 That such walks often go into straying,
 And the voices of cousins are sometimes so low,
 Heaven only knows what you'll be saying!

And then there happened so often, Tom,
 Soft pressure of hands and fingers,
 And looks that were moulded so often, Tom,
 And tones on which memory lingers;
 That long ere the walk is half over, those strings
 Of your heart are all put in play,
 By the voice of those fair, demi-sisterly things,
 In not quite the most brotherly way.

And the song of a sister may bring to you, Tom,
 Such tones as the angels woo,
 But I fear if your cousin should sing to you, Tom,
 You'll take her for an angel too;
 For so curious a note is that note of theirs,
 That you'll fancy the voice that gave it
 Has been all the while singing the *National Airs*,
 Instead of the *Psalms of David*.

I once had a cousin who sung, Tom,
 And her name may be nameless now,
 But the sound of those songs is still young, Tom,
 Though we are no longer so.
 'Tis folly to dream of a bower of green
 When there is not a leaf on the tree;
 But 'twixt walking and singing, that cousin has been,
 God forgive her! the ruin of me.

And now I care nought for society, Tom,
 And lead a most anchorite life,
 For I've lov'd myself into sobriety, Tom,
 And out of the wish for a wife;
 But, oh! if I said but half what I might say,
 So sad were the lesson 'twould give,
 That 'twould keep you from loving for many a day,
 And from cousins—as long as you live.

Secretary's Memo.

Mitchell's *Maritime Register* states that the list of "Ships Arrived Home," from the 15th to the 22nd of July, contains about 1,000 sail, the largest number of vessels ever, to our knowledge, reported inwards from distant ports in a single week. This does not include those vessels that have arrived from the Baltic, or from any European ports outside the straits of Gibraltar.

The Lords of the Committee of Privy Council for Trade and Plantations, have received from the Secretary of State for Foreign Affairs, a copy of a despatch from her Majesty's minister in China, reporting that the port of Saigon, in Cochinchina, had been opened to foreign trade, the only charge made being a tonnage duty of four dollars a ton. The regulations will be found in the July number of the *Nautical Magazine*.

It is stated from Amoy that H.I.M. screw steamer *Isere*, going into that harbour struck on the end of Kulansoo, and soon became a total wreck. She was loaded with shot, shell, and coals, and there were troops on board, who were saved.

A telegram from Kurrachee, dated June 21st, says:—"The ship *Stamboul*, of 1,279 tons, Captain Reid, bound from London to Kurrachee, was wrecked last night six miles westward of Manora Point. Crew saved.

The *Bombay Gazette* states that a telegram has been received from Muscat, giving intelligence of the loss of the I.N. sloop *Elphinstone* in the Persian Gulf.

It is stated that on the passage from Honolulu to Callao seventy of the unfortunate Coolies died who were destined for the Chinha Islands—an average of two a day to be thrown overboard. Still, it is asked, are not those who died thus far better off than their survivors?

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 275.)

Name.	Position.	Where.	F. or R.	Ht. in Feet.	Dist in Mls.	Remarks, &c. [Bearings Magnetic.]
15. Corcubion	Cape C6	49° 54' 8" N., 9° 10' 1" W.	F.	82	8	Est. 31st July, '60. West point of entrance. Light red.
Majorca	Cape Cala Figuera	39° 27' 7" N., 9° 33' 9" E.	F.	116	12	Est. 31st July, '60. S.W. coast, 108 yards from cape. (a.)
16. Jupiter Inlet	Florida	26° 55' 4" N., 80° 5' 1" W.	Fa.	143	18	Est. 10th July, '60. Red building.
Galveston	Harbour	Two beacon lights	..	..	..	Est. 2nd April, '60. For leading into channel.
17. Gull Stream	Floating	One light	R.	..	..	Est. 30th June, '60. A flash every 90 seconds.
North Fore- land	.....	.....	F.	..	..	Est. 4th June, '60. Between Tongue Light and Margate Sand, distant a cable's length from it, a red ray from N.b.W. ¼ W. to N. ¼ E. (b.)
18. Cardigan Bay	Between St. Bishop and Bardsy Is.	.....	R.	95	9	Est. 1st July, '60. Red. Interval half a minute—when it appears brightest. (c.)

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

(a.) 15.—*Extension of Almeria Mole.*—The captain of the port of Almeria on the South coast of Spain, reports, on the 14th May, that the mole in course of construction at that port has been extended during the past year 100 yards in a direction S. 33° E. (true), having at its outer end a depth of 35 feet of water.

It appears, therefore, that this new mole, situated 634 yards to the westward of the Torre del Tiro, advances into the sea in the mean direction of S. 18° E. (true) to an extent of 598 yards.

(b.) 17.—*Buoys.*—Also that, in consequence of the extension of Margate Sand to the eastward, the N.E. Margate and East Margate buoys have been moved in that direction, and that they now lie with the following marks and bearings:—

N.E. Margate buoy, in 8½ fathoms at low water springs, with the low tower

of Moro castle just seen East of Neptunes tower, South; East Margate buoy, S. $\frac{1}{2}$ E.; North Spit buoy, W.b.N. $\frac{1}{4}$ N.; and Tongue light-vessel, N.W. $\frac{1}{4}$ W.

East Margate buoy, in 4 $\frac{1}{2}$ fathoms, with Margate old church tower open East of the new church, the apparent length of the body of the latter, S.W. $\frac{1}{2}$ S.; S.E. Margate buoy, W.b.S.; Longnoee buoy, South; and Elbow buoy, S.b.E. $\frac{1}{4}$ E.

An additional buoy, painted *black* and *white* in *vertical stripes*, and marked North-West Goodwin, has been placed in 11 fathoms at low water, near a spit of dry sand on the N.W. side of the North Goodwin Sand, with Upper Deal mill in line with a white house, or twice its length to the northward of the Time Ball tower at Deal, W.b.S. $\frac{1}{4}$ S.; St. Lawrence mill in line with St. George church at Ramsgate, N.N.W. $\frac{1}{4}$ W.; Gull light-vessel, W. $\frac{1}{2}$ S.; Bunt Head buoy, S.W.b.W.; Goodwin Knoll buoy, N.E.b.E. $\frac{1}{4}$ E.; and Gull buoy, N.b.E. $\frac{1}{2}$ E.

(c.) 18.—The light-vessel is moored in 26 fathoms at low water springs, with the South Bishop lighthouse bearing S.W.b.W., distant 36 $\frac{1}{2}$ miles; Strumble Head, S.W. $\frac{1}{2}$ S., 21 $\frac{1}{2}$ miles; Kemmaes Head, S. $\frac{1}{4}$ W., 16 $\frac{1}{2}$ miles; Causeway buoy, E.b.N. $\frac{1}{4}$ N., 25 miles; and Bardsey lighthouse, N.E.b.N., 23 miles. A ball is exhibited at the mast-head by day.

The bearings are magnetic. Variation, 24° 20' W. in 1860.

LOUISA BANK,—*Pacific Ocean*,—*N.W. of the Fiji Islands.*
Soundings of Thirteen Fathoms.

We learn that Captain Hatheway, of the barque *Louisa*, while on the passage from New Zealand to the Ochotsk, discovered on the 14th of March, 1859, a bank in lat. 11° 45' S. and long. 175° 52' E. He sounded on it and found from 13 to 17 fathoms water and coral bottom. There was no shoal or anything else in that vicinity laid down on his chart or any other he had seen.

This is an important contribution to the chart, and would seem to belong to a submarine ridge (of which the Navigators Islands form the eastern end) extending West, northward of the Fiji Islands, where it shows several peaks, of which this is one; a part branching off to the Ralick and Radack Chains to the North-West. As there may be shoaler water on the bank, ships will be careful when in this unknown district.

HOLLAND OR HOWLAND ISLAND,—*Pacific.*

The following account of an island stated by the *Liverpool Albion* not yet to have appeared in the charts, seems to be no other than Holland Island, already there. The confirmation of this by Captain Eldridge is important, and would have been still more so had some particulars of the general size of the island been given with his remarks.

Captain Eldridge, of the American barque *Amazon*, reports the discovery of an island in the Pacific Ocean, several hundreds of miles from any land laid down in the charts. In a letter, dated at sea, January 16th, 1859, he says:—"It is in lat. 0° 45' N. and long. 176°

35' W., very low and dangerous, and is, I expect, the last resting place of the crews of some of the ships which have been missed in years gone by. I ran along the lee side within pistol shot of the beach, but it was too rough to land; and after convincing myself that there were no living people upon the island, squared away again. On the highest part of the island is a house, apparently built from pieces of a wreck, with a flagstaff at one end, from which still dangled the halyard block. Near the house were several little hummocks, each with a tall upright stone upon it, evidently the graves of the poor fellows who had escaped from the wreck of their vessel and died on this dreary spot, where perhaps they had spent months in vainly looking for a passing sail to relieve them from their weary prison."

We find the following additional information on Howland Island in an American paper.

"Howland Island is a barren uninhabited island, according to the best authorities in lat. $0^{\circ} 50'$ (one authority says $0^{\circ} 43'$) N. and long. $176^{\circ} 3'$ W. It is about two miles long, by one broad, of coral formation; has a tolerable good landing on the West side, and is almost covered with a deposit of bird excrement. It was discovered by Capt. George E. Netcher, of New Bedford, on the 9th of September, 1842, he being then in the ship *Isabella*, of Fairhaven, and is now owned by the United States Guano Company, of New York. It has upon it both a house or a hut and a *flagstaff*—the latter erected as a guide for vessels—but no graves that I know of. I sailed by it in the course of the same season of its discovery by Captain Netcher, but have never landed upon it. The best landing place is said to be directly directly opposite the house.

"The island is not laid down, probably, upon any chart in the possession of Captain Eldridge, and hence his belief that he had discovered a new island. But since its discovery by Captain Netcher, several of our whalers have seen it, and its location, about thirty-five miles North of New Nantucket, is pretty well determined. The latest English authority that I have seen locates it in lat. $0^{\circ} 43'$ N., long. $176^{\circ} 47'$ W., which is two miles further South and twelve further West than the location given by Captain Eldridge. Still another authority, quoted by the president of the U.S. Guano Company, locates it in long. $176^{\circ} 33'$ —a difference of only two minutes. This location was certified to by Captain John Paty, of schooner *Liholiho*, at Honolulu, in 1858, who states that the island is partly covered with a growth of vegetation. There cannot be a shadow of doubt, I think, that this (Howland) is the island referred to by Captain Eldridge."

Holland Island is placed in the Admiralty chart in $0^{\circ} 50'$ N., and $176^{\circ} 48'$ W. But there is a Howland Island on the chart in $0^{\circ} 12'$ N., and $177^{\circ} 18'$ W., about sixty miles West of New Nantucket or Phœbe Island, while Holland Island is forty-five miles N.W. from this latter. Thus it would seem to be uncertain whether there are two or three islands, and what are their real positions.

There is an episode full of melancholy interest connected with this Nantucket Island worth adding to these remarks, as illustrative of the

uncertainty of life among sailors,—who are but saved sometimes from one wreck to perish with another.

“The ship *Virginia* belonged to James Beasley, Esq., and was wrecked on New Nantucket Island on the 16th of May, 1869, while on an expedition in search of guano, and fourteen of the crew, after remaining on that island until the 25th of July, were taken off by the American brig *Josephine*, and landed safe at Honolulu on the 14th of August. The rescued crew had previously, on the 11th of July, boarded, in a boat, the whaling barque *Andrew*, of New Bedford, the captain of which vessel promised to stand off and on the island until the next day, in order to give the shipwrecked mariners time to consider and arrange about their departure. The next morning, however, when everybody had been ready to leave the island, no ship was visible; the captain of the *Andrew* having in the middle of the night steered clear away from New Nantucket and the unfortunate crew, leaving them to their fate, which, however, turned out better than was anticipated, for, as before stated, the *Josephine* hove in sight on the 25th of July, and the captain warmly received on board the ill-served crew. But the most interesting and affecting part of the narrative remains yet to be told. Captain Withers, the master of the ill-fated vessel, with nine men comprising the remainder of the crew, after being nineteen days at sea in an open boat, and enduring innumerable privations, all arrived safe at the Fiji Islands, and from thence they were conveyed to Sydney, New South Wales.

On arriving at Sydney, Captain Withers learned that the *Royal Charter* was at Melbourne, and about to sail for Liverpool. He consequently went to Melbourne, and embarked on board that steamer, little thinking that she too, like the vessel he had commanded, would meet with a similar fate. He was the same Captain Withers that one of the survivors of the *Royal Charter* described as “behaving himself with such noble fortitude and unflinching bravery” when all seemed lost, and when it was even a mockery to hope for succour in such a fearful tempest. But he was evidently doomed to die a sailor’s death; and the last seen of him was when he called out to Captain Taylor and his chief officer, Mr. Stevens, “God bless you, Taylor! God bless you Stevens! Keep firm!” The *Royal Charter* broke up immediately after. The remainder is already too well known.

ISLANDS SOUTH OF NIPON,—Japan.

We preserve the following as communicated, although not of very recent date, since the information it contains may be serviceable hereafter:—

San Francisco, May 15th, 1851.

On the 26th of March, 1851, on my passage from Manila to San Francisco, passed within two or three miles of a small island, moderately elevated, with uneven appearances, the position of which (by good observations) I made in lat. 30° 42' N., long. 140° 30' E. Same

day, steering N.b.E., saw a rock, resembling much a ship under full sail, which at first I supposed it to be; tacked ship and stood close to it. It is high and steep, and bears about N.b.W. $\frac{1}{2}$ W. from the above island, eight or nine leagues distant. A few yards to the eastward of it lies another small rock, upon which the sea breaks most furiously. These dangers are not laid down in any of the charts, and are directly in the track of vessels from the China Sea toward California.

JOHN K. STICKNEY,

Master of the American barque *Sarah Warren*.

We think Captain Stickney errs in supposing this island and the two rocks not laid down in any chart. In a statement published in the *Pennsylvania Inquirer* on the 15th January last, and prepared by the Messrs. Blunt, a group such as he describes are mentioned as existing in $30^{\circ} 40'$ N. lat. and $140^{\circ} 10'$ E. long., the larger rock being estimated at some 1200 or 1500 feet in height; and the difference in position is too slight to lead to the supposition that these latter are not identical with those seen by Captain Stickney. Many of the small islands in the Pacific were located at an early period when observations at sea could not be made with the exactness with which latitude and longitude are now determined, and, consequently, errors were unavoidable. The increased trade between China and the West coast of the United States naturally takes many into those seas who are unacquainted with the peculiar features thereof; and any danger not marked on the chart at the precise spot where they find it, is heralded at once as a new discovery. It is important, however, that the exact positions of these and other dangers in the Pacific should be accurately determined, and Captain Stickney deserves much credit for his efforts in this particular.

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

- Barnstaple and Bideford, Commander Alldridge, R.N., (5s.)
- Sligo and Killala Bays, Captains Bedford and Beechey, R.N., (5s.)
- Lough Swilly, Captain G. A. Bedford, R.N., (5s.)
- Bayonne to Oporto, Spanish surveys, (4s.)
- Santandar, Spanish surveys, (2s.)
- Situbal, French survey, (1s. 6d.)
- River St. Lawrence above Quebec, sheets 11 to 13, (each, 3s.)
- River St. Lawrence above Quebec, Montreal, (3s.)
- Sheet 10, Gulf of St. Lawrence, Captain Bayfield, R.N., (5s.)
- Scatari Island and Menadou Bay, Captain Bayfield, R.N., (3s. 6d.)
- Mediterranean Sea, Syrian coast, Port Ayas and Karadash Road, Commander Mansell, R.N., (2s.)
- African coast, Kivara River, 2 sheets, Lieutenant Glover, R.N., 1859, (each, 2s. 6d.)
- Indian Ocean, Mayotta Island, French survey, (3s. 6d.)
- Admiralty, July 24th, 1860.*

TABLE LXXVI.

For converting English into Swedish Fathoms and Swedish Fathoms into English.

1 English Fathom = 1·0268039 Swedish Fathom.

1 Swedish Fathom = 0·9738958 English Fathom.

Eng. or Swed. Fathoms.	Swedish Fathoms and Dec. Parts.	English Fathoms and Dec. Parts.	Eng. or Swed. Fathoms.	Swedish Fathoms and Dec. Parts.	English Fathoms and Dec. Parts.	Eng. or Swed. Faths.	Swedish Fathoms and Dec. Parts.	English Fathoms and Dec. Parts.
1	1·027	0·974	40	41·072	38·956	79	81·128	76·938
2	2·054	1·948	41	42·099	39·930	80	82·144	77·912
3	3·080	2·922	42	43·126	40·904	81	83·171	78·886
4	4·107	3·896	43	44·153	41·878	82	84·198	79·859
5	5·134	4·869	44	45·179	42·851	83	85·225	80·833
6	6·161	5·843	45	46·206	43·825	84	86·252	81·807
7	7·188	6·817	46	47·233	44·799	85	87·278	82·781
8	8·214	7·791	47	48·260	45·773	86	88·305	83·755
9	9·241	8·765	48	49·287	46·747	87	89·332	84·729
10	10·268	9·739	49	50·313	47·721	88	90·359	85·703
11	11·295	10·714	50	51·340	48·695	89	91·386	86·677
12	12·322	11·687	51	52·367	49·669	90	92·412	87·651
13	13·348	12·661	52	53·394	50·643	91	93·439	88·624
14	14·375	13·635	53	54·421	51·616	92	94·466	89·598
15	15·402	14·608	54	55·447	52·590	93	95·493	90·572
16	16·429	15·582	55	56·474	53·564	94	96·520	91·546
17	17·456	16·556	56	57·501	54·538	95	97·546	92·520
18	18·482	17·530	57	58·528	55·512	96	98·573	93·494
19	19·509	18·504	58	59·555	56·486	97	99·600	94·468
20	20·536	19·478	59	60·581	57·460	98	100·627	95·442
21	21·563	20·452	60	61·608	58·434	99	101·654	96·416
22	22·590	21·426	61	62·635	59·408	100	102·680	97·390
23	23·616	22·400	62	63·662	60·382	150	154·020	146·084
24	24·643	23·373	63	64·689	61·355	200	205·361	194·779
25	25·670	24·347	64	65·715	62·329	250	256·701	243·474
26	26·697	25·321	65	66·742	63·303	300	308·041	292·169
27	27·724	26·395	66	67·769	64·277	350	359·381	340·864
28	28·750	27·269	67	68·796	65·251	400	410·722	389·558
29	29·777	28·244	68	69·823	66·225	450	462·062	438·253
30	30·804	29·217	69	70·849	67·199	500	513·402	486·948
31	31·831	30·191	70	71·876	68·173	550	564·742	535·643
32	32·858	31·165	71	72·903	69·146	600	616·082	584·337
33	33·885	32·139	72	73·930	70·120	650	667·423	633·032
34	34·911	33·112	73	74·957	71·094	700	718·763	681·727
35	35·938	34·086	74	75·983	72·068	750	770·103	730·422
36	36·965	35·060	75	77·010	73·042	800	821·443	779·117
37	37·992	36·034	76	78·037	74·016	850	872·783	828·811
38	38·019	37·008	77	79·064	75·990	900	924·124	876·506
39	39·045	37·982	78	80·091	75·964	1000	1026·804	973·896

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle

SEPTEMBER, 1860.

THE CALIFORNIAN LAGOONS.

The coast of Lower California, from San Jeronimo Island to the great lagoon, trends S.E., presenting a nearly unbroken range of rugged mountains, scantily clothed with cedar trees, but in many places barren of all verdure; and, to judge by the appearance from seaward, unfit for human habitation. For about thirty miles the sierra closes on the sea, throwing out bold rocky promontories, offering no shelter for vessels, promising deep water close in shore. Here and there long stretches of white sandy beach appear, on which the surf rolls heavily. Following the coast down to where Cedros Island bears about S.W., a headland will be observed in the main land, known by the name of Lagoon Head, from rising abruptly out of a low country which is passed after leaving the mountain ridges already mentioned. This headland is high and black like a hummock, but appears to have no other elevations inland from it.

Immediately to the southward of this is a lagoon about ten miles long by seven broad, to which no name has yet been given. It was entered by whaleboats last year, and partially explored; but there is not depth enough for a ship to pass over the bar, on which a heavy surf breaks in westerly winds. The land subsides again into a low marshy country from Lagoon Head for about twelve miles, when, in following the coast to the S.E., the mouth of a second and larger lagoon is opened. This is about fifteen miles long by eight wide, and has depth of water to float a ship; but the bar is very dangerous. It

is known as the San Domingo Lagoon. Navigators will be very apt to mistake this or the first one for the Big or Whaling Lagoon (Ojo de Lievre); but care should be taken to pass by *two* entrances before standing in for the land. The whaler *Black Warrior* was lost at the mouth of this second lagoon, while attempting to enter, having mistaken it for the large one, which is still farther to the southward. On leaving Lagoon Head, a ship may stand along at a distance of six miles from the beach, keeping in about seven fathoms of water.

After passing the second lagoon, about ten miles from the Head, the outer breakers at the entrance of the big lagoon may be plainly seen, as well as those on the bar, stretching four or five miles seaward; keeping inside of these the inner breakers will appear in shore, and the channel lies midway between the two lines. This channel may be plainly seen, it opens gradually, shoaling until on the bar, which has two fathoms at low water and three at high water spring tides, and is from half a mile to a mile wide. The bar is about a quarter of a mile across, and when passed, the water rapidly deepens to four, five, and six fathoms. The entrance is then plainly visible, formed by two sandheads, about thirty feet in height. The deepest water is midway between the heads, after passing which the right hand shore should be kept aboard, and with the lead going there will be no difficulty in running into the lagoon.

This lagoon (Ojo de Lievre) was first entered by Captain Scammon in the spring of 1856. While whaling in Magdalena Bay, a Mexican informed him of it, but never having been there, he was unable to describe its situation, although he judged from the low character of the country and the receding of the mountains in that direction, that the lagoon must be there. He accordingly set out on an exploring expedition, and first struck the small or northern one, which, with the next, he partially explored, and was three days getting down to the big one, the approach to which looked very dangerous to a stranger. Having sounded the channel with his boats, he took his ship in, and during that and the next two seasons had splendid whale fishing all to himself, without fear of competition, as the secluded nature of the place, and the fact that no whaler knew of the existence of such a lake, made the chances very few that any one would put in there on a similar errand.

The explorations which have thus far been made lead to the supposition that these three lagoons were, at one time, a single body of water, and it is thought that, owing to the marshy character of the country, there may still be, during the rainy season, communication by sloughs or branches; but this is not known. The mountains, with their serrated peaks, traversing the Lower California peninsula, generally close with the coast, either within a few miles of the beach, or from jutting headlands washed by the waves of the ocean. The chain opposite to where the lagoon is, turns inland about twenty miles, opening a sort of amphitheatre, forming the bed of the lake, which is filled from the ocean, and the only inlet or outlet to which, thus far discovered, is the entrance already described. A small space of rising

land intervenes between the western border and the foothills of the mountains, which are wooded in a few places, but appear generally to be sterile and valueless.

The usual way of taking whales in the lagoon, is to first fasten to them with the harpoon. Instead of using the common hand lance, they now use the bomb lance, which is shot from a peculiar gun. This weapon is held to the shoulder, and the instrument is buried with terrific force into the yielding blubber of the fish, where it explodes. The lance is about eighteen inches in length, and consists of a pointed tube, an inch and an eighth in diameter, the lower portion of which is filled with powder from the end. This is placed in the barrel and shot as any other gun. Three feathers or barbs, like those of an arrow, are placed at the upper end, which give something like precision to the missile. Great precaution is necessary, however, to be able to shoot skilfully, and this boom lance will range about forty feet. Sometimes they are projected with such force as to go entirely through the whale and explode in the water. When they are shot with skill so as not to pass through, they explode inside the whale, and rarely fail to place the unweildy animal *hors du combat*. This gigantic and exciting sport is followed during the spring weather, when the cow whales resort to the lagoon to calve and bring up their young, which they do in the lagoon from December to May. They come in great numbers, and pass immediately to the upper water, where it is perfectly still. At times the females are seen in the shoal water, where there is hardly depth enough to float them, busily escorting the young whales about, and showing them the greatest tenderness and care. No other whales but this species are known to thus frequent shoal water, and hence comes the name that whalers have given them, of "mud diggers;" and owing to their determined fights when attacked, they are also sometimes called "devil fish." When the calves get into too shoal water for the old whale, she starts off as though intending to leave the young one, who immediately follows. The calves, when they first make their appearance, are about ten feet long; but they grow very rapidly, and can scarcely be distinguished from the old ones by the time of leaving the lagoon. These are the California or grey whale (a species of the right whale). Some have been taken yielding seventy-five barrels of oil. They average about forty barrels.

Very soon after leaving the lagoon the whales are seen making to the northward, and next appear in the Arctic Ocean and Ochotsk Sea, where they pass the summer, and are followed thither by the whaling fleet, with the certainty of finding a good season's work. In November they return again, arriving most regularly in point of time. That these are the same whales there is no question among whalers. This species is only found in the northern regions and along the Californian coast, and at the seasons already alluded to, between which seasons they are observed regularly pursuing their way North or South. Some whalers believe that they have seen them also on the Japan coast, but it is doubtful. This instinct teaches these huge creatures to

migrate at stated seasons, to and fro, between their breeding and feeding places, thousands of miles distant, and with unerring certainty as to time and location, and they are as regularly followed by the whaling fleet. Their habits in these respects have been closely observed by whalers, and it is found that they do not visit in large numbers any other places to the southward but the big lagoon and Magdalena Bay, still further down the coast.

Around the borders of the lagoon are ranges of sand hills, extending in every direction, being apparently the collection of ages, drifted in from the ocean. This feature gives to the vicinity an aspect somewhat similar to that of the ocean beach opposite San Francisco, but without the rocks and headlands. These sands are ever moving and changing, in consequence of being thus driven by the fierce ocean winds. A boat which was left for a few days near the southern border of the lagoon was completely filled with sand, and would, in another week, have been entirely hidden from sight by it. Of course no trees or herbage of any kind exists there, nor can any kind of cultivation be carried on. Changes in the face of the country are going on constantly. Logs of redwood, three or four feet in diameter, are even found half covered over by sand, and sometimes several miles from the water. These are evidently of Oregon growth, and have either been thrown into their present position by the surf, in some tremendous storm, or being once lodged on the beach, the sands have encroached on the water, leaving the logs far inland in the course of time. Their presence is accounted for by currents setting down from the northward. Fresh water and wood are very scarce, and should an unhappy wayfarer chance to get lost in these trackless wilds, starvation would be inevitable. Several instances of this are very well known.

The lagoon from its entrance expands at once into a vast sheet of water. In every direction nothing is to be seen on the shore but scrub bushes and stunted grass. To the southward, a small lagoon, about eight miles in extent, is connected with the larger one, and is navigable. It is known as Fort Lagoon, but whales seldom go into it. The lagoon contains several islands, covered with stunted grass and weeds, with the exception of two, which are supposed to contain guano, although this conclusion is not yet well established. The distance from the bar to the western border is between thirty and forty miles, but counting the northern lagoons already described, and which are believed to have been at one time a portion of the main one, this body of water would be upwards of seventy miles in extent. The breadth is between twenty and thirty miles. In every part, except close to the shore, may be found from two to five fathoms, and good anchorage everywhere.

When a whaler enters the lagoon, she anchors in the most likely looking place for the fishery. Ships having a small schooner or tender possess an advantage over others, as the water is generally shoal where the whales are taken. A whale, when killed, usually rolls up on one side, and as the under fin hangs down, the fish requires

at least nine feet of water to be towed in. These schooners, drawing but four or five feet, instead of towing the whale as with boats, sail to where it has been killed, cut in at once, and carry the blubber to the ship, which is at anchor in deeper water. In this way the boats can keep half a dozen whalers on the string at a time. The work is as brisk as can be imagined in a large smooth expanse of water, and the whales as numerous as could be desired.

The big lagoon is also the haunt of myriads of other fish, which resort there to breed. Among these are mullet, which are taken in nets in any quantity; wick-fish, resembling the haddock; the jew-fish, like the sea-bass, weighing sometimes one hundred pounds; a large species of flounder; several kinds of shark, among which are the shovel-nose, ground, and leopard sharks; sardines in vast shoals, smelt, and mackerel. The latter may be taken from April until June; the others abound all throughout the year. The lagoon is one of the greatest fishing-places in the world, millions of the above kinds can be caught with seines. Green turtle also resort thither in great numbers, appearing on the flats at half-tide, usually in a foot or two of water, and feeding on a floating spongy substance. These turtle weigh from 50 to 150 pounds, and are both excellent eating and numerous.

During the latter part of the whaling season a terrible enemy of the whale appears in the lagoon, attacking the young, many of which he destroys and devours. This is a large black fish, from twelve to twenty feet long, known as the "killer." He has a sharp head, with a large mouth and sharp teeth, and has a dorsal fin about midway along the back. He attacks the calf-whale, seizing him by the lips like a bull-dog, dragging him under water and forcing him towards some shoal point, where he keeps his victim until he has wounded and bitten him to death.

Two or three, and sometimes even more, of these "killers" will get round an old whale and her calf, and immediately a terrible commotion is witnessed,—the killers darting around and under the calf, now disappearing like a flash, and then springing half their length out of the water. The old whale is as terror-stricken as the calf, and swims rapidly round it in great perturbation, making the water circle, eddy, and foam with her agitation in behalf of her young. The enemy seldom attacks her, but directs all his efforts on the calf. Now and then the killers rise to the surface to breathe, and at such times are seen with pieces of blubber in their mouths, either to eat, or which they have torn from their victim. The water is then discoloured with blood, denoting the sanguinary work going on. When the old whale finds that her young is then destroyed, and there is no hope, she leaves the scene and swims off into deep water. The killers are seen entering the lagoon in squads, and passing up to the head of the shoal, where they await the appearance of the calves; if not found at once in sufficient numbers they then attack the young seals, which they pursue with great voracity among the rocks and even into the

shoalest water. They are as ravenous as sharks, but have never been known to attack a boat.

The lagoon in all parts abounds with game. In the winter season the place is full of squadrons of geese, brandt, curlew, snipe, quail, duck, and in short all the birds common to that coast, and that seem to have a peculiar liking for those solitudes, where for ages their kind have resorted without fear of molestation. Plover and curlew particularly abound, and are easily shot. There are also cranes, bitterns, buzzards, and gulls. Animals are rare in the immediate vicinity of the lake, except on its western borders, towards the range of mountains, where bands of antelopes may be occasionally met with. Coyotes and wolves are seen now and then sneaking along the shores of the lagoon, or standing on the summit of some desolate sand hill, and howling at the strange apparition of men and ships. The deer and antelope have been seen in bands of a hundred, and occasionally successful hunting parties have gone from the ships in quest of them. The country in the vicinity is not much cut up with sloughs or marshes, and the hunting is by no means an arduous undertaking.

The deposit of salt, to which allusion has already been made, is of vast extent, reaching far beyond the range of view, in a belt two or three miles wide, and stretching to the southward. Two Mexicans, who have the exclusive right to work and export it, have got out large quantities, which they occasionally ship off. There is a natural salt bank of unknown depth, and it seems to have been formed by the process of evaporation.

On the southern entrance to the lagoon may be seen the remains of the *Tower Castle*, an English whaling ship, belonging to London. By a date cut in a rock near by, it is concluded that she was lost in 1827. When first discovered the remains of the house or shanty built by the wrecked crew were to be seen, as well as remains of casks, broken crockery, and some of her spars, lying on the beach in a sound condition as evidence of the aridity of the climate. Several of the small studdingsail booms were made into boats' masts, and were found equal in strength to new ones. Remains of rigging, copper, blocks, and other matters were found strewn along the beach.

The story of this disaster is somewhat veiled in mystery. The outlines of it were known to an old merchant of Boston, who, thirty years ago, was trading on the N.W. coast. But it appears that the ship was wrecked, as above stated, in 1827. Finding that she could not be got off, and that the surrounding desolate country offered no means of subsistence, the captain, taking with him a boat's crew, went in search of a vessel at some port to the northward, with which to take off the remainder of the crew and their effects. They were unsuccessful, or at least were detained on their journey much longer than they had anticipated, and on their return found only dead bodies to represent the party which they had left.

At the camp or house was found, among other relics, a diary written by one of the party, in which he had from day to day noted down

their condition, and the gloomy forebodings as to the return of the others. He described their sufferings from hunger, and the sad record grew shorter and less intelligible each day, till at last it ended. Surrounded by a desolation of sand and salt water, they had perished from starvation; but the "ribs and trucks" of their unfortunate ship, the *Tower Castle*, may yet be seen on the beach.

REEFS AND WRECKS OF ISLE RODRIGUEZ.—*The Old Story!*

We all of us know, and seamen do to their cost, that there are rocks and shoals enough in the ocean, but there are some persons who would have more. One party, for instance, and that a tolerably numerous one, would place a solitary danger to the N.W. of Ireland, to bring up ships bound to Liverpool, and this they dubbed Aitkin Rock. This same rock kept its place on the charts, remaining as a kind of bugaboo to the Liverpool trade, until it was fairly dislodged by the perseverance and energy of Captain Vidal, R.N.; who, in the *Onyx* and *Leveret*, dissolved the rock into drift timber and fallen trees! and Aitkin Rock, to which the losses of many vessels had been attributed, was no more.* Another of the same genus started up in the middle of the Providence N.E. Channel some years ago, and was duly recorded† as the Lorton Rock, because the *Lorton*, a British brig, was lost upon it. This, indeed, was but a short-lived danger, for a very few months afterwards, some iron pipes, which the *Lorton* had in her as ballast, were found by Captain R. Owen,‡ not in the middle of the channel, but on Egg Island Reef, on the southern edge of it. Accordingly this danger disappeared.

Another rock of the same kind has been conjured up to the N.E. of Bonavista, of the Cape de Verde Islands; one which has in a remarkably accommodating manner adapted itself in size and position, and even in the important particular of depth of water over it, quite to the taste of its latest discoverer. Like Captain Warner's invention, this too has been "blown out of the water,"§ and lodged on the outer reefs of the island of Bonavista; which, in consequence, can boast of the various names of Hartwell, Madeline, Bonetta, Charlotte, Phoenix, or the more euphonious one of Bom Felix of antiquity, and many others, among which even the most fastidious hydrographic taste might select one for adoption. But what does all this answer, this wholesale making of rocks? The answer is obvious,—it answers, the

* In the *Geographical Journal* for 1831, (Murray,) will be found, at p. 51, Captain Vidal's account of his examination and a reduced chart of his tracks, with the names of all these vessels.

† *Nautical Magazine*, 1832, p. 56. see commander's letter.

‡ *Nautical Magazine*, 1834, p. 131.

§ Vide Sir R. Peel's speech, *Nautical Magazine*, 1842, p. 639.

charts* take the blame. With the uninitiated it passes current and answers the intended purpose; it is one thing to say that a rock exists in a certain place, and it is quite another thing to answer that it does not.

A precisely similar case to the foregoing has just presented itself in two wrecks which have occurred lately off the island of Rodriguez, in the Indian Ocean. Two British Indiamen, the *Queen Victoria*, of Liverpool, of 715 tons, and the *Oxford*, of 621 tons, have been recently lost on the reefs surrounding that island,—and what has been the consequence? As usual, the charts are in fault. No blame can possibly lie with their commanders while the charts supply erroneous information; therefore all charts are declared bad alike, but those of the Admiralty are prominently set forth as laying down the reefs “five miles from the island,” when they are “fifteen.” This, indeed, was a formidable charge. Incorrect charts are well able of themselves to account for losing ships, and it is easier to say that they are wrong than to prove they are not so. The accusation stands in page 60 of our number for January, 1844, in all the imposing attitude of truth; and, in our innocence of its real character, we alluded to it in the following number (page 108), cautioning our traders to beware of the new danger! This will assuredly relieve us from the charge of apathy respecting the safety of our fleets of merchant shipping daily traversing the ocean,—a charge which it would be difficult to support against the *Nautical*.

Now, Rodriguez happens to occupy an important maritime position. It lies in the very high road followed by ships home and out to India, serving as a kind of sign post by which the behaviour of a chronometer is ascertained, the reckoning checked, and a new departure taken as a fresh start in the race of the voyage. Like Bonavista, of the Cape Verds, it forms a kind of elbow or projecting point, the sight of which is hailed with satisfaction, after occasioning, perhaps, many a wearied look-out for it. And in this proper light it was considered by Captain Sir John Marshall, in command of H.M.S. *Isis*, who left the Mauritius for the scene of wreck, to survey the reefs, to correct the imperfect charts, and to afford that assistance to the unfortunate sufferers which is so welcome in distress, besides giving that protection to property which in his official capacity can be afforded by the captain of a man-of-war.

The information respecting the position of any maritime danger given in a protest being important to seamen, as assigning the position of it, the following extract from that of the *Queen Victoria*, the first of these ships, might therefore be of service to them:—

* “The charts” is a kind of general name, under which is included, of course, all those published, all being supposed alike; whereas the very reverse is the fact, each (more especially in foreign navigation), differing in many particulars from the others. But the Admiralty charts, which in parts, like all others, are imperfect, from want of surveys, must be included by inference, and being pronounced wrong, is a sufficient reason for all others being so, and sufficient also to account for the loss of a ship.

Sailed from Liverpool, with cotton and sundries. On the 3rd of April, the barometer fell, weather looking bad. On the 4th close-reefed topsails. On the 5th weather more moderate, wind ranging from North to N.W., with heavy swell from S.W.; made all sail at noon. On the 6th, lat. obs. $18^{\circ} 41' S.$, long. $64^{\circ} 35' E.$; a fresh gale at N.b.E., with dark weather and heavy swell from northward; at 6h. p.m., weather more threatening, shortened sail. Rodriguez bore at noon by account S.W. by compass ninety miles, and at 4h. p.m. S.W. $\frac{1}{2}$ W. by compass fifty-eight miles, having steered since noon S.W. At 4h. altered course to S.W.b.S. $\frac{1}{2}$ S., when at 12h. 30m. a.m. breakers were seen on starboard bow; hauled the ship to the wind on larboard tack and braced up. The ship struck on a rock, which tore off the rudder; drove immediately on the reefs, morning terrifically dark; out away main and mizen masts in the hope of her driving over the reefs. On the 7th, at daylight, found the ship upon a reef from thirteen to fifteen miles off the S.W. point of Rodriguez; ship fast breaking up, boats stove and washed away, as were rafts. The chief mate, three seamen, and a passenger were drowned, being washed from off the bowsprit when over the side; the rest of the crew were saved by clinging to broken pieces of wreck, bales of cotton, &c., and were washed over the reef into smooth water, where canoes received them and conveyed them to land. Remained there thirty-six days, and were removed to Bourbon by the *Colibre*, French brig of war, Captain Oriel, and sent to the Mauritius.

The following additional testimony of the position of the reef having also its value is equally entitled to be recorded.

Declaration of the Inhabitants of the Island of Rodriguez.

Rodriguez, April 15th, 1843.

Messrs. Marin and Chelin, and other principal persons, inhabitants of Rodriguez, declare that the ship *Queen Victoria* was wrecked on a reef extending fifteen miles, to the best of their belief, from the S.W. end of Rodriguez. They confirm Captain Black's statement, and add the sea was making a full breach over her, and full ten feet above any part of the wreck, and twenty persons were saved.

J. MARIN.

C. CHELIN.

The foregoing will inform our readers of the position of the reef, according to the statement of the commander of the *Queen Victoria*, confirmed by the opinions, "to the best of their belief," of the principal inhabitants of the island; and who could have better opportunities than they had for forming those opinions,—better than the said inhabitants, or the natives in the canoes which conveyed from the reef to the shore the unfortunate survivors of the wreck? Really, considering the amount of correct hydrographic information to be found in protests of this description (especially when supported by such incontrovertible authority as the foregoing, by no less than that of the inhabitants of the place where the wreck occurs), it is some matter

of surprise that the Shipwreck Committee should not have recommended the publication of them in all cases where such valuable information may be gleaned, as being of so much service to navigation.

Leaving this, however, for the consideration of the Committee,* we will proceed to record an extract from the protest of the *Oxford*, which no doubt will confirm the statement in the preceding documents, if it should not afford conclusive evidence of correctness in the position assigned to the reef off Rodriguez.

Port Louis.

August 31st, 1843.—The ship *Oxford*, of 621 tons, worth £150,000 to £200,000, lat. at noon 20° 4' S., long. about 120 miles W.½S. from Rodriguez, sailing eight or nine knots, steering W.b.S. At 4h. a.m. on the 1st of September, saw the land at N.W. (true), no moon, distant about nineteen or twenty miles; continued on a W.b.S. course, no studding sails set, having taken them in at midnight. About 5h. a.m. breakers seen on the lee quarter; the ship immediately struck off, hauled up to S.b.E., and braced up; breakers seen then ahead, ship not having made more than a quarter of a mile from first striking; struck heavily forward, foretopmast went over the side, the ship paid off broadside to the reef and fell over to starboard; cut away fore and main masts to prevent her falling on her beam ends; sea breaking over the ship, men could only stand on the deck in a few places.

Daylight found the ship on the S.W. reef of Rodriguez, fourteen or fifteen miles from the island. Got the launch out on the port or weather side, she filled and broke adrift; starboard cutter was stove in pieces by mizen-mast-head; the only available boat on the larboard quarter, in which I intended to land,—Lieutenant Allerdyce, wife, two children, and one native female servant were put into her, with a crew. About 10h. or 11h. a.m. the boat was lowered, and got safely over the reef into smooth water in seven or eight minutes, where canoes were in readiness to receive them. The boat could not return to the ship. The crew then began to leave the wreck on spars and hencoops: they all got safe over the reef. Myself, the chief mate, and boatswain, with two or three seamen, remained on the wreck all the night of the 1st, until 3h. p.m. of the 2nd, when, the ship breaking up rapidly, we made a raft, and drifted in safety over the reef. Did not save an article of any kind, not even the log-book.

After leaving the wreck, the crew were received on the island by Captain Chelin, and treated during our stay with the greatest hospitality. The only portion of cargo saved from the wreck were a few pieces of silk; of piece goods 396 were saved by Captain Marin and a small quantity by Captain Chelin, one-third of the same being given up for salvage. 423 pieces were left on the island, to be forwarded to the Mauritius by the first vessel that arrived.

* Why should not a protest on account of wreck be examined before some tribunal? Surely underwriters would find a just decision to *their* advantage.

I consider that a great portion of the cargo must have washed ashore, but was taken away by the black inhabitants, and conveyed to the mountains.* I think cargo to a considerable amount might have been saved had there been any person invested with the power of a magistrate, which is much required in the island, the blacks doing just as they please. Captains Chelin and Marin are the two principal persons on the island, the latter having purchased the wreck of the *Oxford* for the sum of 360 dollars. I was told by the above named persons they did not expect to get anything done by the blacks for six months to come, as it was their opinion a great deal of rum had been conveyed to the mountains or buried in the sand.

Captain Marin having the launch of the late ship *Queen Victoria*, he kindly offered it for the use of myself and my crew, and on the 23rd September we embarked in her, and got safely on board the ship *John Renwick*,—Captain Marin being with us to take his boat back. The late second-officer and three seamen were left on the island, they not being forthcoming when I and the rest of my crew and passengers embarked in the launch. I cannot explain their motives for staying behind, with the exception of one man, who might be induced to remain on the island to evade the punishment he so justly merits, namely, by striking me two or three times when on the wreck, in the presence of the chief and third officers, for endeavouring to prevent him from taking too much brandy, a little of which was in the larboard awning cabin. The same individual struck me again, and gave me a black eye, on the evening of the 9th of September, whilst sitting at dinner in company with the abovenamed officers and Lieutenant Allerdyce and his lady.

THOMAS MARSHALL.

The above accounts agree tolerably in assigning to the reef a position distant from thirteen to fifteen miles from the S.W. end of Rodriguez. And that position it would have taken on the charts but for the timely investigation of Captain Sir John Marshall, the result of which is stated in the following letter received from him. On such authority, therefore, and with the triangulation of the officers of the *Isis* before us, on which we see the position of the remains of the *Oxford* within three miles of the island,—relieving our minds from all suspicion of there being any detached reef,—we may assure seamen that they need not trouble themselves or entertain the least anxiety about reefs fifteen miles S.W. of Rodriguez; and that the old plan of D'Apres, one of the Admiralty charts, in which "they are laid down and described as only five miles" from the island, is, after all, tolerably correct!

H.M.S. Isis, Port Louis, 11th November, 1843.

Two British merchant ships of considerable tonnage, the *Queen Victoria* and the *Oxford*, having been wrecked on the coral reefs off

* We understand much of this was given up to Sir John Marshall, and conveyed by the *Isis* to the Mauritius.

the South side of the island of Rodriguez within the last seven months, and the masters of these vessels, with their officers and crews, having in their protests declared on oath that the said reefs extend from thirteen to fifteen miles from the island, whilst hydrographical authorities confine their limits within five or six miles.

This difference in their positions, if correct, would subject our commercial marine to considerable danger, particularly as a great number of ships sight Rodriguez on their way from India to the Mauritius and England.

I considered the subject of sufficient importance to submit to his Excellency Sir William Gomm, the expediency of my proceeding there in H.M. ship under my command, for the purpose of ascertaining the actual position of these reefs; and accordingly proceeded from Port Louis on the 12th of October, and arrived at Rodriguez on the 19th; where, assisted by my officers, I carefully examined the reefs, extending from Flat Island, on the South side of Rodriguez, round the West end to Booby Island, on its North side, and *in no part does the reef extend beyond five or six miles.*

Ships are recommended to pass to leeward of the island, giving the N.W. part of the reef a good berth.

J. MARSHALL, *Captain.*

We have reprinted the foregoing from the volume of this work for 1844, in order to show the flimsy character of *protests* as far as the *real positions* of the rocks are concerned on which certain ships manage to be lost. The protests of the *Queen Victoria* and the *Oxford* asserted boldly that the reefs on which they were lost were fifteen miles from the island. The remains of the *Oxford* were *found on the reef*, which surrounds the island, and are marked on Sir John Marshall's chart as about "*three miles*" from it; while those of the *Queen Victoria* were washed over the reefs on which she drove into "*smooth water*" (inside them) "from whence canoes" received those of her crew who were saved, and "conveyed them to land," as appears in the words of the protest. Captain Sir John Marshall moreover adds in his letter "in no part does the reef extend beyond five or six miles" from the island.

The attempt therefore failed in 1844 to establish a rock in the chart at the distance of fifteen miles from Rodriguez, but it appears to be renewed in the statement of the *Nussur Sultan*, which we find in the papers of the day, and here append to the two others in order that we may see the kind of authority on which this assertion is again made. In that valuable paper, the *Shipping and Mercantile Gazette*, of the 27th June, we read as follows:—

The Board of Trade has received the following report of a Court of Inquiry held at Mauritius to investigate the circumstances attending the loss of the ship *Nussur Sultan*, Page, from Calcutta for Mauritius, on the Reef to the southward of the island of Rodriguez:—

It appears from the evidence that the *Nussur Sultan* was nearly a

new ship, and that she was tight, staunch, and seaworthy. At the time of her loss she was earning a tolerable freight, which was payable at the port of discharge, and was sufficiently manned, having a numerous crew for a vessel of her size. Although Rodriguez is rather out of the track of ships from Calcutta bound for Mauritius, the commander gives as a reason for passing near that island the desire of verifying his chronometer, and also that he passed on the most dangerous side in consequence of a northerly set having carried his ship so far to the southward of the position he expected to find her in on the 31st December, that a course to the southward of the island was the most direct one for Mauritius. He further declares that the only guide he had in reference to the dangers surrounding Rodriguez was *Horsburgh's India Directory*, which states that the reefs extend only five or six miles from the land, whereas it is beyond doubt that they extend to at least double that distance on the South and S.W. sides. The place where the vessel was lost is known to the fishermen on the island as the *Quatre Vingt Brisans* (Eighty Rollers), the sea almost always breaking there at certain times of tide, and is considered by them as being from twelve to fifteen miles from the shore (twelve miles is probably near the truth). Horsburgh gives $19^{\circ} 41'$ S. lat. and $68^{\circ} 20'$ E. as the long. of the body of the island. Allowing, therefore, three miles for the half-breadth of the island, and six miles for the distance of the edge of the reef from the shore, would place the extreme danger to the southward in lat. $19^{\circ} 50'$ S.

At noon on the 31st December, 1859 (the day preceding the wreck), the *Nussur Sultan* was in lat. $19^{\circ} 59'$ S., long. $60^{\circ} 35'$ E., by good observations, which were verified by afternoon sights, and was steered $W. \frac{1}{2} N.$ by compass from that time till just before she struck, which would be a $W. \frac{1}{2} S.$ course true, and ought to have carried her at least fifteen miles clear to the southward not only of everything mentioned by Horsburgh, but also far to the southward of the real limits of danger. But, whether from the influence of a northerly set (though that is not probable in the S.E. Trade), or the effect of the S.E. swell, or from bad steerage, or error in the compasses, or perhaps from the effect of tides, which were strong near the edge of the reefs and are not sufficiently taken into consideration, she did not make so much southing as the course by compass warranted the commander in anticipating,—the result being the loss of the ship and the drowning of four native passengers and six of the crew (Lascars).

The commander appears to have taken every precaution so far as a good look-out was concerned, and was on deck himself when the ship struck, having seen the land shortly before, and altered the course in consequence. The Board therefore acquits him of all blame, and considers the loss of the ship as almost entirely attributable to the erroneous description of the dangers surrounding the island, as laid down in Horsburgh; but the Board would offer a few remarks on what may well be considered the dangerous practice of sighting Rodriguez when bound for Mauritius, a practice which the Board has reason to

believe is followed by many commanders coming from the bay of Bengal to Port Louis, and also by those coming from the Australian colonies. Rodriguez is, to say the least of it, a very dangerous island to approach by night, the high land being frequently enveloped in mist, and the reefs extending to so great a distance. It is also not a little out of the track of ships from India to Mauritius. It is useless, in the opinion of the Board, to run the risk of approaching it for the purpose of verifying chronometers, because, if the chronometers be erroneous, that risk is increased, and if they are correct there is no necessity for making any land to verify them; besides, if the watches are erroneous, it is better to find that out at Mauritius than to try to find it out by sighting Rodriguez, as there is no risk whatever in approaching Mauritius with proper precaution. Let a ship, the accuracy of whose chronometers is doubtful, get into the latitude of Round Island (say sixty miles to the eastward of its true position, and it would be a very bad watch that would be out so much as that) and then run West till the land is seen by day, or the Flat Island Light by night, and Mauritius must be made with so little risk as hardly to be worth mentioning,—in fact, it would be difficult to quote any part of the world that could be approached more safely, either by night or by day, from the East and E.S.E. The Flat Island Light is visible in clear weather thirty miles from the poop of a vessel of 500 tons. Round Island can be seen at least twenty-five miles in a clear day, and has no danger whatever on its eastern side, the water being so deep close up to it that the largest ship could run her jibboom against the rocks and would still be afloat.

There is always a certain amount of risk in making any land, but the risk of approaching Rodriguez is infinitely greater than that of approaching Mauritius, and a glance at the chart will show that the voyage is prolonged thereby. What, then, is the object of this useless risk? It may result in the wreck of the ship and the loss of human life, as in the case of the *Nussur Sultan*, but can certainly be productive of no good. If the island of Rodriguez lay right in the track of ships bound for Mauritius, there would be a necessity of passing somewhere near it; but to go out of the way for no other purpose whatever but of sighting it, when bound for Mauritius, is, in the opinion of the Board, an unwise, imprudent, and unnecessary proceeding.

In offering these remarks the Board is not desirous of casting blame on the commander of the *Nussur Sultan*, who has only done what is continually done by other commanders. What is here expressed is simply an opinion, which, if made public, may lead many to think for themselves instead of following the example of others.

DOUGLAS WALES, *Harbour Master and President.*

GEORGE IRELAND, *Lloyd's Agent.*

P. A. WICHE, *President of Chamber of Commerce.*

T. H. MULLENS, *Surveyor to the Mauritius Marine Insurance Company.*

Now, it appears that Sir John Marshall recommends ships to pass to *leeward* of the island,—that is, to the northward of it,—with the view of keeping them from being drifted upon the reef. But the *Nussur Sultan* attempts to pass to windward, or to the southward, of it, and is lost in consequence, like the other two; owing, of course, to that northerly set or current to the northward which Sir John Marshall saw, and any seaman would also foresee, but which does not appear to be *understood* by the *Board* at the Mauritius that exonerates the *Nussur Sultan* from blame in this loss.

The piece of calculation showing that the ship would pass fifteen miles “clear to the southward” of all danger, from noon of the preceding day, is unfortunately lost upon us by a misprint in the longitude. But it is clear the ship was to the southward, or to windward, of the reef, and from the observations of the tides being “strong near the edge of the reefs” and that the ship “did not make so much southing as the course by compass warranted,” there is reason for concluding that the ship, after all, was on the reef, for then follow, by way of diverting the attention from these, the remarks about the impropriety of ships bound to Mauritius making Rodriguez at all! The soundness of these remarks is somewhat peculiar. This learned Board says that “it is useless to make Rodriguez if the chronometers be correct, but if erroneous the risk is increased.” Ships’ chronometers are generally of the latter kind, and yet if they run for Rodriguez and do not make it, they still have the chance of making Mauritius. But if, not attempting to make Rodriguez, they run for Mauritius and fail to make it, where are they?—to leeward of their port, which will cost them time and trouble to regain, if ever they do it. Therefore, to use the terms of the report, it would be “an unwise, imprudent proceeding” *not* to verify the chronometers by sighting Rodriguez when bound to Mauritius or the Cape from India, and one equally so to pass to windward of it.

But what is this *Board* at the Mauritius composed of? The answer itself is ominous. The Harbour Master, Lloyd’s Agent, the President of the Chamber of Commerce, and the Surveyor to the Mauritius Marine Insurance Company, and these gentlemen give their opinion (they call it after all) that the *Quatre Vingt Brisans* (Eighty Rollers), on which the *Nussur Sultan* was lost, are twelve miles (as being probably nearer the truth than fifteen) from the “shore” of Rodriguez. We would ask the Harbour Master, as the only one likely to be a seaman of the four, the reasoning on which this opinion is formed,—what measurements he has made, or by what operations he has come to that conclusion? A reef of even eighty rollers, breaking ever so high, at twelve miles from the island, would be invisible from it. How was this distance determined? The people of the island, perhaps, as in the two former cases, *said* the reefs were fifteen miles off! Twelve is adopted by the Board, and is no doubt *nearer the truth*, because that truth is between five and six. As to the other gentlemen who composed this Board of landmen, they would probably know more about charters and insurance policies than they would

of measuring distances at sea. But until we are assured from some qualified officer of H.M. service, who has nothing to do with such matters, and may find some opportunity, we hope, of visiting the *Quatre Vingt Brisans* of Rodriguez, and assures us to the contrary (with the necessary calculations to prove it), our former conclusion will not be disturbed, and we shall repeat our counsel to seamen not to heed the opinion of the Mauritius Board; but, in making the island for the purpose of testing their chronometers, to follow the advice of Sir John Marshall, not to pass to windward of it.

At the same time we may take the opportunity of observing that a note appears in page 458, containing our opinion, expressed sixteen years ago, of the propriety of *properly qualified persons* looking into the statements attending these losses. Something would have been gained had a proper inquiry been made into this;—not that we think the opinion of the Board above enumerated is worthy of attention, when they assert, as above stated, “the loss of the ship (*Nussur Sultan*) as almost entirely attributable to the erroneous description of the dangers surrounding the island.” Their limits are known. But the *origin* of the opinion abovementioned, of the distance of the reefs on the S.W. side of the island, would have been ascertained as consisting perhaps in the fact of their being about fifteen miles in a direct line from the settlement on the N.E. side of it; and which fact, for convenient purposes, on these occasions is perverted into the statement that they are fifteen miles from the island itself. And why cannot the Mauritius Board honestly proclaim this to the world? and that the *Quatre Vingt Brisans* (or Eighty Rollers) form part of the reef which nearly encloses the island, between five and six miles from it, instead of keeping up the deception by again asserting that those Eighty Rollers are twelve miles *from the “shore,”* and then attempting to mystify the whole matter by their silly remarks about the propriety of seamen with faulty chronometers making the island at all! As if seamen wanted, or would be likely to follow, *their opinion* on these matters! Perhaps such straightforward dealing does not suit their trade! But it would save the lives of many an unfortunate *merchant seaman* who has to take his chance in the great game of marine insurance of property, in which that unfortunate *merchant seaman* is too often the loser of his life. But, alas, what are the lives of *merchant seamen* in comparison with—what?—with *riches*! Will this Moloch never be crushed? He never will be satiated! But—

“Doubtless the pleasure is as great,
Of being cheated, as to cheat!”

as old Hudibras told us long ago, and so things go smoothly on, as matters should do with that easy-going happy mind so generally found in that credulous old gentleman John Bull; who, if his seamen cannot do so, will doubtless appreciate the wonderfully clever opinion which has been invested with the dignity of a report by that Board of LANDSMEN sitting on nautical matters at Isle Rodriguez.

OBSERVATIONS ON NEW CALEDONIA.

The parts of New Caledonia under the S.E. Trade wind have an equable and regular climate, most healthy, and especially adapted to the culture of cotton, the sugar cane, coffee, and other tropical produce. The island is about 225 miles long, with a breadth varying from 30 to 60. On both sides of the island, to a distance from eight to twelve miles from the shore, a chain of mountains fills its whole length, some of which attain a height of 3,300 feet. These two chains of mountains are covered with forests, which contain a great number of scented woods, principally sandal wood, and are relieved by extensive fertile plains. Surrounded by a girdle of coral reefs, which in some places extend as far as forty miles out to sea, New Caledonia possesses a great number of excellent ports, among which on the East coast is the bay of Kanala, and on the West St. Vincent. Between the shore and the outer reefs is a channel, which is especially adapted by its stillness for navigation, and everywhere, besides where the rivers fall into the sea, where coral banks are not formed, there are large passages, capable of admitting vessels of the largest description.

The port of Nunua, now called Port of France, is the seat of the Colonial Government. It is extensive, very safe inside, but very difficult to enter. The site of the town has already some houses in it, but as yet does not reckon a hundred inhabitants besides three companies of marine infantry which form the garrison. The naval station has five or six vessels of war, which occasionally cruize about the island exploring its coasts. The commandant has his flag on board the *Thisbe*, and there is a regular mail vessel running between the Port of France and Sydney, in connection with the monthly mail to Europe by Suez.

The governor is a capitaine de vaisseau, with a naval commission, which exercises authority over all the French possessions of the Pacific.

The French, who are naturally no great colonists, have done as yet but little in the way of colonization in the island. Independent of Catholic missionaries from Lyons, a small number of colonists have made some small plantations of cane and coffee, which have succeeded admirably, for the soil, originally volcanic, is well adapted to this kind of produce.

The valleys, which form the richest part of the island, are only used by the natives for the cultivation of the sugar cane, potatoes, maize, cocoanuts, tara, which they plant on the declivities of the hills, assisted by the numerous water courses found there.

A considerable amount of arable land may be immediately placed under cultivation, requiring only planters and European or American capitalists. The natural resources of the country are very great. Near to Port France the coal crops out on the surface at some yards from the shore, and being tested has proved excellent. It is abundant

in other parts of the island, and especially in the bay of Kanala, on the eastern coast.

Copper is found in the mountains, and an experienced associate of the firm of Aram and Co., at Sydney, has found specimens of the first quality of it. The mountains of the northern part of the island are found to be of the same formation as the Australian Alps, containing very fine quartz; and the celebrated Dr. Clarke, of Sydney, is of opinion that gold will be found in large quantities in New Caledonia. Some nuggets have already been found by the missionaries of Balade; but as the quartz is only found in the northern part of the island, and which as yet has been the least explored, no digging of any importance has yet been made.

The presence of numerous indications of coal in the soil of New Caledonia, is a fact of the greatest importance; situated as it is in the intended route of mail steamers between Sydney and Panama. At present the only coal which these steamers can get, is that of Newcastle, about sixty miles North of Sydney; but the port of which is only accessible to vessels under fourteen feet draft of water. The consequence is that it is transported to Sydney and sold at twenty-five shillings the ton. At Kanala the price would be one half. Kanala is one of the finest ports in the world and always easy of access to the largest ships, with excellent anchorage. In fact, Kanala is admirably placed by nature to serve as the coaling port between Australia and Panama, for the line of steamers, which would not fail to profit by it as a place of call. The coal trade would moreover be carried on from Kanala to Callao, the Chinchas, where it is much required, and ships employed in taking coal there from New Caledonia would fill up again with Guano. In like manner ships for China or India passing New Caledonia by Torres Strait, or the route by New Guinea, and which are often in ballast, would have the advantage of taking a cargo of coal from Kanala.

This port is not only likely to become of importance hereafter as the principal coal port of the Pacific, but will be the centre of commerce for sandal wood, noix au suif, and trepang, of which the Chinese consume large quantities. Sandal wood also has always been an article much used in China for household ornaments and other matters, besides which it is used for burning in their pagodas along with incense. Formerly this wood was obtained from islands where it has now totally disappeared, and it is now obtained from those of the South Pacific. The exportations, in fact, have been so considerable always that it is no longer found in many of the islands.

In New Caledonia, on the contrary, there are whole forests of it, extending ten or twelve miles from the shore, and especially near Kanala. The natives have scarcely penetrated these forests, in consequence of their interminable wars with each other, especially between those of the coast and those of the interior, and having no means of transporting it to the coast beyond their own strength. To work these forests all that would be required is a road to transfer the

produce to the coast, a work of but trifling expence, by which a million of trees of superior quality might be obtained annually, and which sent to China would fetch from 130 to 200 dollars the ton, according to the quality; the expence of the return voyage would not be above fifteen to eighteen dollars the ton.

Trepang is found in abundance along the coast about Kanala, and Mr. Padden, a merchant of Sydney, has an establishment in that neighbourhood, and employs a number of natives as well as Europeans in collecting it. He trades also with the natives for sandal wood, and freights ships of nearly 200 tons with these two articles of commerce. For these he receives chests of tea, which he sends to Australia, and thus realizes considerable profit, for a cargo of wood and trepang obtains a cargo of tea. Trepang is sold in China at the rate of 200 to 300 dollars the ton when it is of good quality. Mr. Padden has not been established at Kanala above two years and a half, and has thus amassed a sum of 260,000 dollars. He lives on excellent terms with the natives; he employs a large number of them and has married the daughter of one of their chiefs.

Among the numerous trees which cover the face of the island, there is one which produces a nut similar to the European nut, with a green exterior. This nut, which is only found in some islands of the Pacific, contains an oil of a superior quality, that is worth at least 160 dollars the ton. Large quantities of it have already been sent to Sydney and to France, and the oil extracted from it is of the above value. It would be easy to make large collections of this nut if Europeans came to the colony. What results, in fact, might not be obtained from a spirit of enterprise in this beautiful country, abounding as it does with coal, scented woods, rich oil nuts, and trepang! Commerce would immediately avail itself of all these, the exportation of which, excepting coal, would require but a trifling outlay. The prospect of copper and gold mines might equally tempt the emigrant, but at the same time gold should not be reckoned on for the colonization of the island. Sugar and cotton, according to my views, are the two products which in course of time would yield great results, and among them a ready subsistence by the employment of the natives. The first is indigenous; it is found in all the valleys in the vicinity of the coast, and is much consumed by the natives. At a missionary station about nine miles from Port France, there are plantations of sugar cane, sugar, and coffee, which are all in a flourishing condition, and the missionaries have produced a compact and well granulated sugar, although what they sell is a very imperfect article.

It does not appear safe to reckon on a regular attendance to work on the part of the natives; but any number of workmen may be obtained from the people of the New Hebrides and among the islands to the North, and even among the islands of the archipelago. These people are satisfied with a low rate of wages, and from the short distance they are away, the cost of bringing them to the island would be very little: in fact, I am persuaded that the labour of these natives would cost less than half that of the coolies employed in the sugar

plantations. Thus, low prices for the principal labour in a soil of volcanic elements and matter formed of vegetable decomposition, in a magnificent climate, these contain all that is necessary for the culture of tropical produce. Added to this, from the want of breadth of the island, the expence of transporting produce from the interior to the coast will be always trifling in amount.

The French Government are about to publish a decree which will confer nationality on all the colonists, with the rights and advantages of French citizens, without the necessity of undergoing any formalities. It appears, also, that the Government intends admitting free for twenty-one years into France the produce of the colony. This would place New Caledonia opposite the metropolis in the same condition as the custom-houses of Algeria.

Such an arrangement would evidently give an impetus to the colonization of the island, to encourage its cultivation in every way, but especially of sugar, and the exemption from duty would be an immense advantage to the first planters. It appears evident that in a short time there will be a considerable emigration from Australia to New Caledonia. It appears that every year a number of individuals leave that country, after making some thousands of dollars, for New Zealand, the Cape, and even for England, to carry on farming. This emigration of small capitalists from Australia arises from several causes. In the first, land of good quality fetches a high price, especially if it has a running stream on it, and is near a town, or on the banks of a navigable river, or near a sea port. In the next place, the price of carriage is such, that cereals, after being transported fifty miles, reach a price which renders their sale impossible.

The high price of labour is another obstacle to agriculture. The labour of white people is the only one to be had in Australia, and this is so high that a labourer can earn as much as two dollars and a half a day by working on the public roads. There are many places in Australia, for instance, North of New South Wales, particularly adapted for the work of Negroes; but the colonies have a constitution, they enjoy a universal suffrage, and the working classes (European) with the view of keeping up the price of labour, always successfully oppose the introduction of any foreign labour. The result of all this is that agriculture is not profitable in Australia, and that those who have amassed some capital from mines, after innumerable hardships, have no fancy for undertaking agriculture of any kind that is not lucrative and that does not employ foreign labour.

In New Caledonia the capitalist would be certain of finding what is wanted in Australia, land and the help of a good market. Independent of these great advantages, they would have other outlets for their produce in the distant markets of Sydney and Melbourne. The first of these towns is four days and the second six days distant by steam navigation. The price of freight by steam is less than carriage by land and a circuitous route in Australia of thirty or forty miles from the coast. Like other countries recently discovered, New Caledonia from its numerous resources deserves to be appreciated.

The islands of the Pacific, from their first discovery, have been renowned for the fertility of their soil and their unrivalled climate, and distance alone has prevented these beautiful countries from being colonized. The discovery of gold in California and Australia has materially advanced the knowledge of them, and the establishment of a line of packets between Panama and Sydney, shortening their distance, will speedily develop their riches; in fact, a considerable commerce is already established between New York and Boston, Melbourne and Sydney. If our merchants would turn their attention to New Caledonia they would certainly find there the means of improving capital, for in point of natural productions and resources of commerce it is not surpassed by any other country.

THE JAPANESE EMPIRE.

[The Japanese having been extricated from their exclusive condition, and by the energetic proceedings of our American cousins no longer permitted to live for themselves only, must for some time yet become the subject of inquiry among us old fashioned people on the western confines of the Old World. The following general view of these people, their country, and their government, forming the substance of a lecture delivered at Shanghai in China two years ago, places these in so clear and interesting a position that we have considered it would be welcomed by our readers.]

The word *Japan*, as it comes to us, is of Chinese origin, and in its meaning is identical with *Nippon*, the native name of the largest island in the group: the word means "Sun's Origin," or the Day-spring. The people themselves, however, do not recognise the word "Japan." The other two islands Kiusiu, i.e. the Nine Departments, and Sikok, or the Four Kingdoms, lie South of Nippon. The area of all that the Japanese claim is estimated by Siebold at 158,235 square miles, of which the three principal islands measure 115,801 square miles.

A better idea may be formed of the Japanese empire when compared with some other countries of the world. Its position is in that line of islands outlying the American continent on its eastern shore, stretching from Kamtschatka along through the islands of Karafto, Yeso, Nippon, Kiusiu, Formosa, Luzon, and thence down to New Holland. The Japanese empire includes all between Formosa and Karafto; and by a recent arrangement, either with the Chinese or Russians, its border passes so as to include the southern third of this last named island. There are four large islands in the kingdom, viz., Nippon, Kiusiu, Sikok, and Yeso, and, as the Japanese reckon, more than three thousand small ones and islets. The three first named are

inhabited entirely by the Japanese, but the Ainos still occupy a large part of Yeso.

The ports which have recently been, or are to be, opened to foreign residence and commerce, are Yeddo, Simoda, Ohosaka, Nagasaki, and Hakodadi. Yeddo (it should not be written Jeddo) lies at the south-eastern part of Nippon, nearly on the latitude of Naples, at the head of a fine large bay. The name means River's Door; and by those who have means of knowing, the city is reckoned to contain two and a half millions of inhabitants. Peking is estimated, on good authority too, to be equally as large and as populous. This will place Yeddo, Peking, and London, in point of population, far in advance of all other cities in the world. Yeddo is the centre of everything which is desirable in the eyes of a Japanese, far more than Peking is to a Chinese, or perhaps even than Paris is to a Frenchman, or Berlin to a Prussian. Luxury, arts, power, and amusements, all are found there in their highest degree.

Simoda, i.e. the Lower Field, is a town of about 7,000 inhabitants, lying near the entrance of the bay of Yeddo.

Ohosaka, i.e. Great Board, is situated nearly half way between Simoda and Nagasaki: it is one of the largest cities in the empire, and the entrepot of Miyako; but has not yet been much visited.

Nagasaki lies at the south-western extremity of the country in Kiusiu, and has long been associated in our minds with Japan, as Canton used to be with China,—a place where a few merchants were willing to submit to almost any indignity and privation for the sake of gain. It is nearly in the same latitude as Nanking or Malta, is beautifully situated in the interior of a safe harbour, and contains above 60,000 inhabitants. The name means Long Cape, given to it from the point of land stretching South from it.

Hakodadi is in the island of Yeso, and has been the resort of many whalers since it was opened to them in 1855. Its name means Box Shop, perhaps from its position as the entrepot of most of the trade of that island.

The surface of Japan is very uneven, and no contrast in scenery can be greater than is presented by leaving the flat region of Shanghai and crossing over to the bold headlands of Nagasaki. It is probable that the town may by and by become a sanitarium for the residents of Shanghai.

The most striking object in the whole country is the ancient volcano of Fusi, which rises in a regular cone to the height of nearly 17,000 feet, or about the same as Ararat, and is visible from the city and bay of Yeddo. Its top is bare in summer, but no eruption has occurred for ages. This magnificent mountain forms a favourite subject for embellishing the wares of the Japanese, and identifies articles with that country.

Another volcano, about 3,500 feet high, still in action, and well known in the annals of the nation as the scene of the sufferings of the Christians, is Unzen-daki, visible from Nagasaki. An eruption

of this volcano in 1792 desolated the country at its foot, and destroyed above 53,000 inhabitants. Nor should the beautiful cone of Kaimon-daki, at the entrance of the bay of Kagosima, S.E. of Nagasaki, be overlooked, for when once seen it is always remembered.

Siebold reckons the population of Japan at thirty-five millions; but, judging from comparisons with other countries, it would not be considered more than eighteen or twenty millions. The enumeration of the people is carefully made in each principality, but no one has the power to demand the census and combine these into one satisfactory table. The northern part of Nippon, in the principalities of Dewa and Mutsu, is rough and sterile, and cannot support half the number of people that the fertile valleys of Kiusiu easily maintain. By the help of these facts and comparisons we can form a reasonable conclusion respecting the total census.

The greatest part of the inhabitants of Japan are agriculturists, and a genial healthy climate encourages them in their tillage by developing the fertility of the soil. The extent to which terracing is carried, is almost unequalled in other parts of the world; and no one who visits the neighbourhood of Simoda or Nagasaki can restrain his admiration at the natural beauty of scenery, ornamented and improved by the careful culture of the farmer, or cease to wonder at the labour which he has expended in terracing the hill sides.

The rate of wages of the day labourer in the workshop or on the farm is about the same as in China,—twelve cents or sixpence per day,—and his condition in the two countries does not materially differ. As an index of the security of these labourers, it may be remarked that their farmsteads and hamlets are scattered over the country, not always clustered in large villages.

The government of such a people as the Japanese presents a very interesting topic of inquiry, owing in a great measure to their insulation, and the persuasion that every feature is of native growth, modified slightly, if at all, by the institutions of other countries. Like that of the early Chinese dynasties, it took the form of a feudal monarchy, there being an Emperor, supposed to be of divine origin, and sixty-six princes, each acknowledging him as their sovereign, but retaining the power over their own domains. Of these sixty-six principalities, five were the peculiar possession of the Emperor, the remainder were grouped into seven *do* or circuits, but no general authority over them seems ever to have existed. In process of time, and in consequence of the decay of imperial power and the course of revolutions, the pure feudal form of government became modified, and the authority centralized at Yeddo in the person of a Lieutenant-General or Lord High Constable. From him it has since gradually passed into the hands of a Council. The government might be called now a Federal Monarchy or Federal Oligarchy, according as we ascribe the real power to the Siogoun or to the Council, though it still retains so many of its characteristics that it is undoubtedly the most feudal government on earth. The semi-independent princes retain much power in their own fiefs, while the interest of each in the politics of the whole empire is

made safe by the sense of security from attacks by his neighbours or of absorption by the State.

The earliest monarch dates B.C. 667, and there have been one hundred and twenty-six sovereigns up to the present one, who began to reign in 1853; some of them have been females. His court is at Miyako, (a word which means the capital, like *king* or *tü* in Chinese,) a large city near the centre of Nippon, about forty miles from Ohosaka. He is regarded as the descendant of the Sun-Goddess, though he does not arrogate such idolatrous titles as his compeer at Peking. His common titles are *Mikado*, a term analogous to the "Lord of the World," and *Dairi*, which corresponds to our word "Court." He is often called the Spiritual Emperor, in distinction from the Siogoun, who has been styled the Temporal Emperor; but both these terms convey erroneous ideas when used in this connection.

In the eyes of the Japanese, though his power is reduced to a cypher, he is still their Emperor *de jure*, and his sanction is necessary to legalise certain acts in religion, etiquette, and succession. His court is now the abode of a large number of titular officers, whose pursuits are of a literary character, and give an air of refinement to their society. The arts and manufactures are carried to a high degree of excellence in this region, and many articles are described as of Miyako work, to show their superiority, even though they may not have been actually made there. The Siogoun has his agent at the city, and the Mikado also sends a yearly envoy to Yeddo, in return for the same compliment paid to him.

The office of *Siogoun* (in Chinese *Tsiang hiun* or Commander-in-Chief) was known in ancient times, and in its duties corresponded to the *Maire de Palais* of the early French Kings; but it was in A.D. 1286 that Yoritomo, then holding the office, made himself independent of the Emperor, as Pepin l'Heristel had done in Paris six centuries previously, and established his court at Yeddo. This title is still retained, but the more common appellations are *Cubo-sama*, which means "Lord of the Palace," and *Tenha-sama*, or "Lord of Empire." In the treaties lately negotiated he is called *Tai-goon* or *Tycoon*, i.e., Great Ruler, an appellation which may be of recent origin.

The power and titles of the Siogoun became hereditary in the family of Yoritomo, and the influence of the Mikado gradually diminished during the next three hundred years. In the latter part of the 16th century, a man known afterwards as Taiko-sama, arose, who, by his talents and prowess, overthrew the family of Yoritomo, completely subduing all opposition of the Emperor and the princes, and engrossed the sovereignty in his own person, though he allowed them to retain their titles and fiefs. He consolidated his power in 1603, but was unable to bequeath it to his son, for his coadjutor and intimate friend, Iyeyasu, whom he made guardian of the youth, usurped the station, and founded the present family of the Siogoun, taking the title of Gongin. With him the present system of government commenced, and in its prominent features has been maintained to the present day; though by reason of the inherent weakness of hereditary power, de-

pendent entirely on personal character, much of the real authority has slipped away from the hands of the Siogoun into the grasp of his Council, and he is now little more than a function in the State, like the Mikado, an effigy rather than a reality.

This Council is composed of thirteen members, five of whom are chief ministers, and eight of secondary rank. At the formation of the Council, in 1603, they consisted of the friends of Taikosama, and the dignity has since remained in their families. In this we see a resemblance to the Council which Darius Hystaspes formed of his friends; but in the functions and power of the Japanese Council, there is perhaps more similarity to the Venetian Senate. It has a President, who carries on the government while he holds that post; he is responsible to the Council for his acts, and for carrying out its orders. It perpetuates itself,—a feature in its organization which accounts for the energy and partly for the equity of its course during the last two centuries. The members have each a department, and duties are performed according to a prescribed code.

Laws are enacted or changed by the Council, and the result submitted to the Siogoun, who, like the King or Queen of England, in most cases ratifies the decisions of the councillors. If, however, he vetoes their enactments, the question is not sent back to them nor is it dropped, but is referred to his three nearest relations, one of whom is the heir apparent. If they sustain him, the councillors must resign in disgrace or commit suicide, which is supposed to save their characters from disgrace: if they disagree with him, he abdicates his seat, and, report says, sometimes puts an end to himself.

The princes, commonly called *Tono-sama*, differ in their rank and power, and have little authority out of their own principalities. Those of Kaga and Satsuma are now among the most powerful; but all of them were so reduced in 1600 by Taikosama, that they have never since attempted to throw off the control of the Siogoun, nor is mention made of any internal broils resulting in actual hostilities. They were then obliged to conform to an order to spend half the year at Yeddo, and the periods were so arranged that adjacent principalities seldom enjoyed the presence of their own rulers at the same time. The same system of surveillance is in force in all these petty palatinates, (as they might also be called,) and the Siogoun has also his own spies, who in some of them are exposed to risk in exercising their functions. In Satsuma it is said to be not very safe to be an imperial spy.

There are eight hereditary classes recognised in Japanese society, three of which can wear swords, viz.: the *dai-mio* and *sai-mio*, who are the princes; the *hi-nin*, or the noblemen; and the *samurai*, or military men. Those who are called princes in the treaties, are merely *kami*, or titular noblemen, raised to that honour by the Siogoun, or entitled to it by birth, and having no territory. Judging by the characters used for their titles, the term *marquis*, i.e., a guardian of the marches, is much nearer to the rank than *prince*, which last appellation corresponds better to the meaning of *sama*.

The priests, gentry, merchants, artisans, and serfs, constitute the remaining classes, except tanners, who are regarded as outcasts, and obliged to live on the outskirts of towns. The principle of hereditary descent runs through Japanese society more completely perhaps than in any other country; though not to the extent, probably, which has been stated, viz., that no man can ever follow any other occupation than that of his ancestors.

The dress of the Japanese of both sexes is very simple, consisting chiefly of long robes like nightgowns, worn one over the other. In summer the labouring men go as nearly naked as decency permits, and the women generally uncovered down to the waist. The material of apparel is usually cotton, the rich wear crape and silk, some of them of very fine texture. The men shave the top of their heads almost daily, tying the hair on the crown into a queue, an inch or two long. The socks of both sexes have a separate place for the great toe, in order to allow it to close upon the clasp which retains the straw sandal on the feet. Leggings are worn, but no trousers. Large girdles confine the gowns, and a capacious bosom is thus made, in which the wearer carries a variety of articles. In other cases the mouths of the wide sleeves are sewed half way, so as to form a pocket, in which light things are placed, and a reservoir for the nose-papers which are used instead of handkerchiefs.

The common official dress, which is worn over the other, consists of two parts. The upper garment is shaped somewhat like a large old-fashioned lady's cape, wide and stiff on the shoulders, where it projects two or three inches, and is fastened at the waist; the lower garment resembles loose trousers or overalls, open at the sides. The cape has the wearer's coat of arms stamped on the right and left breasts and on the back, and his two swords are thrust through the girdle underneath it. These swords are worn in the most inconvenient manner, and are very seldom laid aside in public.

The dress of females is confined by a broad girdle on the outside, which is tied behind in an immense knot. Their hair is bound up in a tuft on the back of the head, somewhat like that of Chinese women. In front its jet black colour is relieved by gay hair-pins of silver or glass, by a flower, or by a bow of crimson or blue crape. A dozen or more of these hair pins are sometimes stuck in sideways, giving the head a strange bristling aspect. On the birth of a child, a married woman shaves her eyebrows and blackens her teeth,—a custom, though not so painful and discommoding as the Chinese fashion of crippling the feet, is more repulsive to a stranger, and disfigures their faces in a way that must be seen to be appreciated.

Their marriage ceremonies resemble those of China in many particulars, such as the employment of a go-between to arrange the match, the worship of the ancestral tablets, &c. The sexes are not separated to the degree known in China, but the relative position or influence of females does not seem higher than it is among the Chinese. Polygamy is legal in both countries, and its consequences are the same. Instruction in embroidery and other kinds of needlework, skill in play-

ing on the *samishen* or guitar, and singing, with book learning enough to enable them to write a letter or cast up an account, seem to be their principal accomplishments. The most educated women of the common people are said to be courtesans, who are, however, often honourably married.

At the marriage ceremony a singular contrast to our own ideas as to the meaning of the same dress is noticeable. The bride is nearly concealed in a white robe, which is among these islanders emblematical of her shroud, meaning that she thenceforth is dead to her own ancestors, and has become incorporated with the family of her husband.

The Japanese are a social people, and contrive to have many public festivals and holidays, as well as private feasts and merry-makings. Every town has its annual *matsuri* or patron saint's day, at which the whole population assists. The day for the worship of the graves is a grand occasion; and if the night be pleasant a beautiful sight is exhibited at such a place as Nagasaki, in the various fireworks and illuminated boats which are sent out to float away on the water.

It is an important part of polite education to learn how to send presents properly to different grades of people. Every present should be accompanied by a strip of dried fish or seaweed, enclosed in a piece of paper and tied loosely with a red and white string. The meaning of this has been explained by some that the giver hopes that his friend is in good health and able to eat as usual; while others, with perhaps more reason, say it refers to the humble origin of the Japanese, whose ancestors were simple fishermen. To omit this accompaniment on any occasion would be highly indecorous, as an incident will illustrate. The day before leaving Hakodadi, a person was conversing with Yendo, the deputy bungio, while waiting for a shopman to bring in some pictures on silk engaged of him. Yendo looked at them as he turned the parcel over to see if all was right, and seeing him about to pay for them, insisted on giving them to him as a parting remembrance. Their cost being a mere trifle, he agreed to the proposition; but before Yendo could or would hand them to him, he sent a servant to buy the usual seaweed to accompany them.

Rice and fish form the staple articles of food with all classes. The former grows throughout the southern parts of the country, some of it upland rice, which does not need much water. Wheat, barley, buckwheat, and millet are also largely cultivated. Broccoli, sweet-potatoes, eggplant, rape-cabbage, and other culinary vegetables increase the list of plants used as food. Everything from the sea or river—fish, shellfish, seaweed, muscles, &c.,—all are eaten; indeed, fish is to a Japanese what roast beef is to an Englishman or sauerkraut to a German,—he regards it as necessary to a meal, and the seas around him bring it forth abundantly.

Tea and *saki* are their only beverages. The finer sorts of the former are described as equalling the best descriptions of Chinese leaf, and the plant grows in most parts of the southern islands; near Simoda and Kanagawa it is a common hedge shrub. *Saki* is the native name for the spirit distilled from rice, and is like arrack or *sam-*

shoo, its taste not being very agreeable to those who are uninitiated. The best comes from Lewchew.

The dwellings of the Japanese are chiefly constructed of wood, unpainted, and without chimneys or windows. They are built so that, in case of an earthquake, the outer frame-work and the inner partitions and moveable panels will fall as one mass, and not crumble in beneath the roof; for in such a case the inmates could better escape from under the ruins than from a mass of brick. The roofs of dwellings generally project beyond the walls, increasing the darkness of the rooms. They are of brick tiling, neatly laid in mortar and guttered; the eaves are furnished with troughs to collect the rain. Sliding panels, covered with thin paper, form the substitute for windows. Poor houses are covered with a turf or straw thatch, about a foot in thickness, which renders them dangerous in case of fires; and this is a calamity which very often occurs in Japan. While one of the Dutch embassies was in Yeddo, a fire occurred which destroyed more than half the city, and owed its ravages in a great measure to the number of these thick inflammable thatches.

The floors are raised about two feet above the ground in common houses and shops, and are covered with mats, on which the family sleep, and by day carry on the business of the shop. No chairs, tables, bedsteads, couches, or any of the numerous articles of furniture which fill up apartments in western lands are seen in them. They are warmed by braziers, placed in the middle of the room, filled with burning coal or charcoal.

When Commodore Perry gave to the Japanese Commissioners at Yokohama the various presents which had been entrusted to him by the American Government, he told them that among the return presents he would be happy to receive the entire furniture of a room, in order that he might fit up an apartment in the White House in good Japanese style. They assented, and when their articles in exchange were brought in, showed him a pile of a hundred fine mats as the fulfilment of his wish.

These mats are kept scrupulously clean and, being cheap, are easily renewed when worn out. The remarkable cleanliness of the Japanese is somewhat to be ascribed to their usage of sitting on the floor, for it must be kept tidy if it is to serve successively for table, bed, and parlour during every twenty-four hours, or else the house would soon become intolerable. The habit of leaving the sandals at the door, and shaking the feet clean before stepping on the mats, promotes general cleanliness. The contrast between the appearance of Nagasaki and Shanghai in this respect must be seen to be fully understood.

In the rear of the house there is usually a courtyard, where a few plants in pots, a pond for gold fish, a tree or two, and sometimes a shrine for an idol, are all neatly arranged, pleasantly exhibiting the tastes of the householders. Near the house in which the headman of Yokohama lived there was a pretty ornament of a grafted fir and pine tree, which had been dwarfed and trained to spread over the ground for a rod or more, a few feet above it, and covering a little

fish pond. Many years careful culture had been expended to bring it to that condition. A mile or two from it was another larger tree, a pine, which had been trained to form an umbrella-like arbour on the bank of a rivulet. It was near a hamlet, whose inhabitants could thus refresh themselves in the heat of the day, and evidently did so from the seats placed underneath its shade. The top of this tree was as nearly level as possible, and measured over 200 square feet!

The streets in Japanese towns are wider than in Chinese. In Nagasaki the gutters run underneath a granite pavement in the centre, each side being made of a composition exceedingly hard and smooth. Other streets are made like macadamized roads, but not so hard. In Hakodadi the streets are nearly all made in this way. Many of them in both places are swept and watered almost daily. In all towns substantial wooden gates divide the streets into neighbourhoods and from each other, and near them are the police-stations. These gates, among other uses, prevent the rush or the assemblage of crowds and mobs, and thus assist the authorities in maintaining order. Near them are to be seen charms and prayers of various sorts, exhibiting the superstition of the people. It was remarked that in Simoda the things which we did *not* see made a curious catalogue, as showing its contrast with American towns. There were no bricks, no window-glass, no fire-places, no pigs, no sheep, and no beggars,—the last item being the most surprising of all after seeing their numbers wherever one goes in China.

THE LATE ECLIPSE.

The event of the month, nay of years, among astronomers, owing to its rarity, came off with as much success as might have been anticipated. The Government having placed a steam-vessel at the service of science, we avail ourselves of the report of her Master for a brief general account of the event. To this we have added a report from Algeria of a different kind, coming as it does from different eyes.

H.M.S. *Himalaya* having been placed by the Admiralty at the service of the Astronomer Royal and other learned gentlemen, we embarked the expedition at Plymouth Sound on Friday, the 6th of July, consisting of some fifty or sixty gentlemen and ladies. On Saturday, at 10h. 30m. a.m., we slipped from our moorings and proceeded to sea; at 11h. 15m. passed the Eddystone; and at 8h. p.m. of the same night sighted Ushant Lights. At 3h. 45m. on Monday observed a light on Cape Machichaco, a few miles East of Bilbao; and at 7h. 30m. anchored in that bay.

The Astronomer Royal and a portion of the expedition landed with their instruments in a steamer which had been waiting for us, and proceeded at once to their several posts, as previously settled. At

noon we proceeded for Santander, some thirty-nine miles West of Bilbao, where we arrived at 4h. p.m.; but from its contracted harbour for a vessel of our size, and some others being in the way, did not go into the proper anchorage, but remained for the night outside.

Next morning we entered the harbour. We were moored about a mile East of the town, and landed the remainder of the expedition. Several of the gentlemen of the expedition having given us directions as to what might be done on our part with the instruments in our possession, the old adage of "where there is a will there is a way" was now well exemplified. Telescopes were bisected, stands made, a tide-gauge constructed from a boiler-tube, bearings taken for magnetic observation, coloured glasses made, and diagrams drawn in readiness for the coming event. Several days previous to the 18th the weather was cloudy, with rain and as the great day approached fears were entertained that our trouble would be thrown away, for on the 17th it rained more and grew more cloudy than on any previous day.

As the morning of the eventful day broke we were early astir, and scanned the sky with intense interest in the hope that we might yet be fortunate. The sky, however, was heavy with clouds; but as the day advanced the sun shone out, after having been absent for nearly a week. At noon, though the weather was still cloudy, the sun was out, and we all began to feel that there would be a chance of seeing the eclipse. Unfortunately we were late in getting on shore, and the first contact had taken place before we landed; but as that could not be helped we set to work with a will, and soon had our instruments set up, tide-gauge in its place, thermometer hung up and registered, and a candle lit in a lantern. The moon was now distinctly seen with the naked eye on the sun.

About this time clouds came up in masses and threatened to hide everything from us; but fortunately they broke up and permitted us to see the sun at intervals, and ultimately the whole eclipse, although clouds still continued to pass over. At 1h. 45m. the moon's edge came into contact with the black spot on the West side of the sun. This spot, with the two on the East side, appeared very plain and distinct. As the moon moved on darkness began to creep over the earth, and the light in the lantern now began to show out. At 2h. 35m. 8s. the rough edges of the moon came strongly out, and, as she advanced over the sun, showed ragged and uneven. As totality approached darkness visibly increased, and the outlines of mountains in our vicinity were well defined in the purple hue that had now come over the surface of the earth. Birds and butterflies were observed to be taking shelter; and, although at intervals a more restless individual than his neighbours would dart out as if not quite satisfied, he would as quickly return, evidently not much wiser than before his short and hurried cruise. Previous to and after totality the sun's cusps or edges became rounded, and at 2h. 43m. 23s. the totality commenced, the prominences came into view of a beautiful soft colour, between vermilion and lake. Simultaneously with the appearance of the prominence the corona burst into view on the East side of the

moon. It was deeper on the upper part of the moon and extending downwards at irregular distances from the moon's limb, and of a colour between white and slightly yellow. I can only compare the movements of the corona to those of the Northern Lights, flickering, shooting in all directions from the bodies, and uncertain, but of course much smaller. Just previous to the end of totality the prominence on the East side appeared, and then the corona on the West side, which, extending upwards and downward, met and mixed with that on the East side. This had scarcely taken place when a most beautiful row of golden-coloured prominences, linked as it were together, came into sight.

The whole glorious sight was now one never to be forgotten, and the whole party on shore looked round in wonder and awe. Silence of the deepest kind reigned around; all animal nature ceased to show or be heard; even the ripple of the tide against the rocks at our feet ceased; and the impressions so vividly made on us were those that a lifetime can never efface, and deep reverence and awe at the mighty power of the Creator. The darkness during totality was considerable, so much so as to call into requisition the use of our candle for observing time; but different to that of night, being of a deep purple hue.

The clouds to the S.E., South, and S.W. were dark and gloomy, but to the North of us the sky was clearer, and in some places had no clouds at all; but all was deeply tinged with purple. The outlines of the nearest mountain stood out in bold relief, whilst those behind, being covered with clouds thick and heavy, were not to be seen, but added to the solemnity of the scene; and, altogether, the whole sight was unearthly and magnificent. At 2h. 46m. 39s. the sun appeared outside the moon's West edge, and the change from deep gloom and awe was rapid and magical.

The corona and prominences melted away—the deathlike silence and gloom were dispelled by sunshine, and the twittering of birds and crickets told us that Nature was herself again. Old Father Neptune commenced his play on the rocks with increased vigour, as if indignant at having been stayed so long. A sense of relief, as if from some vague fears, was experienced by all; and each declared his pleasure and great satisfaction at having witnessed what we had seen, and thought that no trouble or distance could be put in the balance against so magnificent a spectacle.

The tides were much affected by the eclipse, it being by a chance coincidence high water spring tide (or the highest tide). At the time of totality, the tide only rose three inches above the level of the previous day, the tide before and after the eclipse having risen thirteen inches. The thermometers, six in number, were registered every five minutes, and in the sun fell seventeen degrees, whilst those which were kept in the shade fell only five or six degrees. The time of totality was a perfect calm—the wind previously had been light and unsettled from the N.W. The excitement experienced during the whole time, and especially when the clouds appeared determined to beat us, was

intense. Hope and fear combined were visible in every face; the eager countenance, the bated breath during the time of totality, and the long sigh of relief when all was over, testified how deeply each and all felt, and the gratification all experienced.

The report from Algeria says,—Towards noon carriages of various kinds might be seen taking the road from Bouzaria by El Bior or by the gorge of the Oued-Meracel, with amateur visitors, besides pedestrians. Some hundreds of persons were thus collected at the Vigia at the summit of Sidi Messouad in front of the native village, and the following observations being all made from this neighbourhood, it is right to observe that Sidi Messouad is a little above the Vigia, and 1,263 feet above the level of the sea.

The sky was perfectly clear, but a thick fog covered the plain of the Sahel, so that looking westward from the mountain, where the limit of total darkness would pass, the eye could scarcely penetrate beyond Sidi Feruch and Masfran, which would be on the western limit of the same, was entirely concealed by it. This circumstance was the means of nearly losing us one of the most curious phenomena, but fortunately a portion of the country to the S.W. remained clear. Up to the time of the very middle of the eclipse, the gradual diminution of light and the fall of the temperature was observed. The surrounding country assumed the diminished distinctness of objects as the light was subdued, but with this difference that the light left imparted to it a pale yellow hue.

A short time before the eclipse, a thermometer was suspended in the open air and exposed to the sun on the western wall of the Koubla of Sidi Messouad. A cold strong wind was then blowing and sensibly cooled the midday heat. At 3h. 7m. from 91° the thermometer had descended to 75° at 3h. 29m., and continued so till 3h. 33m., when it commenced rising in the same manner. It is said that on the coast the thermometer fell but two degrees, and in other parts seven. The difference of elevation will account for the above difference of observations. An elevation of 1,263 feet above the sea will account for the change being so much greater than at Algiers. But the effect of the change of temperature on those who were assembled at Bouzarea, was altogether in keeping with that change. It was certainly cold, and we observed several of the company button their coats with much care, as might be expected from a change of temperature of fourteen degrees: besides, the clothes had become damp, no doubt increased by the general effect of the surrounding verdure.

We must not attempt to describe the sublime scene presented when the eclipse became total on the disappearance of the last of the sun's rays. Suddenly we had the darkness of night when it is faintly illumined by the pale moon. The only difference was that the light was of that yellow character as abovementioned, which imparted to objects its own peculiar hue, and which must be seen to be duly estimated, but which gave a cadaverous aspect to natural objects, and which seemed to linger over light coloured objects even after the light of the sun had returned.

At Algiers the darkness was more complete, and in some of the houses candles were lighted.

The effect produced by the complete obscuration of the sun, by the sudden appearance of the corona and some stars, was very impressive and was manifested by the spectators in different ways. While some were led away by their enthusiasm, expressing their admiration by clapping their hands at the wonderful sight before them, others were overcome by a deep religious feeling, and others again struck speechless with terror. In fact, it was highly interesting to contemplate the different effects produced on the features of the observers by the wonderful phenomenon before them.

From our observatory on Sidi Messouad we overlooked the native town of Bouzarea, at about forty feet below us. The Mussulmans seeing so many Europeans collected on the summits of the mountains, desired to know the reason of it all, and on being informed smiled with a look of pity. To pretend to know beforehand the day and hour of the eclipse, that phenomenon which the Almighty pleased to show in the heavens, was nothing short of presumption and impertinence in their estimation. Even after they had seen in the telescope the moon's disc on that of the sun, they even disbelieved that it would continue to increase in the total eclipse that would follow. Therefore, when the eclipse became complete, what terror and lamentation prevailed in their miserable hamlet: the women were crying and tearing their hair, and those were praying fervently whose religious feeling prevailed over their bodily fear. Those who were attending their duties scattered as shepherds about the country, were hastening all they could homewards, driving their herds before them with their long sticks, which they applied most unmercifully to the bullocks and goats, a means of persuasion which the poor animals had never before required to find their way home, for we have seen them returning by themselves as they are accustomed to do every evening.

As soon as the eclipse became total, Venus was seen, and soon after Jupiter for a few moments while it lasted, and some other stars were seen by the naked eye by those who were in favourable positions for seeing them.

Among the natives there was considerable alarm, and especially with the Jews. Those in the terraces of the town above us, set to work beating their copper articles as though they were using a pestle and mortar; others lighted little candles in their houses, only used on the occasion of the feast of Muloud, (the birth of Mahomet,) frightened by the remembrance that Algiers was nearly destroyed on a similar occasion, when the sea rose as high as Sidi Ben-Nour, which is on one of the adjacent heights of Bouzarea. In fact, they were horrified by the idea of future navigators on their voyages pointing to their present homes that would then be beneath the waves, with the exclamation,—“There lies Algiers.”

M. Petit, Director of the Observatory of Toulouse, says, “Nothing could be more imposing. I have observed and measured the bright peaks, the dimensions of which on this occasion were very great, and

which from their form prove incontestably that they are immense floating masses in the sun's atmosphere. Two of them were 20,000 leagues in depth and 80,000 leagues in length. A considerable portion was separated from the sun's disc 6,000 leagues, which proves incontestably that they are not mountains. They were less on the side to which the moon was approaching, while they increased on the side she was leaving. I was enabled during the short interval of the phenomenon to follow and measure their dimensions, which proves that the peaks belong to the sun, and I have determined with profound astonishment the extent of the sun's atmosphere, which, at its smallest depth, is forty-five minutes of a degree, or about 500,000 leagues. As to the portion of this atmosphere which forms the veritable corona, it is evidently composed by rays crossing each other, and extending 180,000 leagues from the sun's disc.

"Such are nearly the principal results of my observations. I say nearly, because I have not yet had time to go into their calculations. I am yet in ignorance of what other astronomers have observed at the same station as myself, but I have good reason for believing that they will each supply some contingent testimony towards the solution of those important questions which occur at a total eclipse. * * I have not the power of giving you an idea of the imposing spectacle which this presented. As to myself, I have not yet regained my composure from that deep emotion which came over me for some minutes preceding the principal phenomena, increased perhaps by the apprehension of losing the whole by some more of those heavy clouds which all the morning had concealed the sun from us."

LUNAR EQUINOCTIALS.—*The Barometer at Fault.*

Mr. Saxby appears to be in a fair way to establish a claim to the grateful thanks of all who are interested in a foreknowledge of the weather (and who is not?) by the success which has hitherto attended his warnings on this subject. He has (as he says) in our July number (p. 357) foretold the days on which dirty weather may be expected in the remaining months of this year. Our seamen and fishermen ought to look to it,—Mr. Saxby knows what he is about.—ED.

Monday, 20th August, 1860.

Sir,—In your number for July I gave a list of the days throughout this year on which I warned fishermen and seamen to prepare for wind (perhaps gales) or sudden changes of weather, &c.

Will you allow me the pleasure of again assuring the nautical public that increased experience has given me additional confidence in the accuracy of my views as to lunar equinoctials. I do so not to gratify vanity (although I confess to some satisfaction at the prospect

of being able to refer the weather at certain periods to a system), but I wish to set useful example to those who, having the power to promulgate important warnings, permit the fear of responsibility to sacrifice important interests. Perhaps, however, in them a generous consideration of what would result to me, should my views prove to be fallacious, kindly withholds their cooperation; but I cannot for a moment shrink from any consequences attending a conscientious discharge of a public duty, and I would again, and even more strongly, urge your readers to beware of the weather on the days in each month which I have already in your publication denounced as "black" days in the seaman's calendar. Desirous, however, of correcting one erroneous conclusion which is beginning to prevail among those whose attention, far and wide, has been earnestly given to my statements, I beg to explain that I do not predict "gales" at every period of lunar equinox. I only warn as to either high winds (probably gales) or changes of weather or temperature as being more likely to occur at those times than at any other, and when such changes do not occur precisely on the day of the moon's crossing, they may confidently be expected in one or two days after.

The moon crossed the equator on Saturday afternoon last. A gale set in in the forenoon, when the steam guard-ship at Sheerness hoisted the foul weather flag; but soon after the time of the moon's crossing, viz., in the evening, the gale raged with fearful violence, continuing all night. From the moon being in perigee on Friday, and from other circumstances, I did not hesitate, during the previous days, with a feeling of moral certainty to warn all about me of the chance of a "regular sniffer" on Saturday,—and such we had. Surely such oft repeated verifications are enough to excite our active curiosity, and ought to insure precautions along the coast; and the more especially as neither the barometer nor the heavens had given any indications of so great a blow. But, indeed, the barometer was calculated rather to mislead than to warn, as the following will show. It blew fresh on Friday (17th) from S.W., with a *rising* barometer; indicating, therefore, (according to official printed advices) a change of wind,—which *did not occur*. The *Barometer Manual* published by the Board of Trade distinctly says that the "barometer rises for N.E. wind, for dry or *less wet* weather, for *less wind*, &c." It also plainly says,—“The barometer falls for south-westerly wind, for wet weather, for *stronger wind*,” &c.; and, again, at page 6, the same generally useful little work says,—“When the barometer is rather below its ordinary height, say near 29½ inches, a *rise* foretells *less wind*, or a change in its direction towards the northward.” And, again,—“A considerable and rapid fall is a sign of stormy weather and rain.” And, further,—“The greatest depressions of the barometer are with gales from S.E., South, or S.W.” Hence, we see the printed guide for seamen, admirable as it may be in intention and execution, is *imperfect*, inasmuch as, *at times*, it misleads those who consult it. For on Friday, 17th, at 9h. a.m. the barometer stood at 29.48 in.; at 10h. 30m. p.m. it had risen to 29.73 in. On Saturday, 18th, at

9h. a.m. it stood at 29·68 in.; descended gradually *after the gale had set in*, until at 6h. p.m. it stood at 29·62 in. Thus, in twenty-four hours, including the period of the gale, there was a fall of only about a tenth of an inch, while the rise the day previous to the gale amounted to about three-tenths. Therefore, I repeat, that attention to the barometer alone was in this case calculated rather to mislead than to warn.

Who can deny that my yet imperfect theory as to lunar equinoxes was the *only* means known to us by which one could be reasonably induced to expect a gale on Saturday last?

S. M. SAKBY, R.N.

To the Editor of the Nautical Magazine.

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

In opening their present meeting, the Chairman said that he thought he could not have a more appropriate subject for that purpose than one of those which was occupying the attention of the whole country, from prince to peasant. He meant the subject of its defence, and that to which he would now principally refer was that part of it connected with our mercantile shipping. He would not allude to the connection between the Mercantile Marine generally and the Royal Navy, although he could wish that connection was obliged to be more decided than it really is. But it was very well known that for that defence the Government was very anxious to raise a large body of men to serve in that branch of the Royal Navy confined to our own shores, designated the *Reserve*. Nothing could be more liberal than the offers of the Government to obtain merchant seamen for this purpose; but still they had been holding back, as if they were afraid of anything that bore the appearance of contact with the Royal Navy. This was a state of things very much to be regretted, arising from a feeling which he hoped would be eradicated; although, he regretted to say, it had long appeared to him that such condition arose more from that inability, common among naval officers, to govern large bodies of men under their command, than from those from whom they derived their authority. They were more prone to adopt the *fortiter in modo* than the *suaviter in ré*. Happily, however, there was a good check over them, and he ventured to believe that the impression of the iron rule of former days in the Royal Navy would gradually be effaced by time, when the more genial influence of good treatment, comforts, and advantages of these days were known, and when confidence and good faith were maintained.

But, referring to the Reserve, which was the subject to which he was alluding, he was sure the Club would have seen with pleasure that the Mercantile Marine Association of Liverpool had taken it up in earnest,—in a manner highly creditable to that valuable institution,

and as gallant, honourable men would do. There was *Captain Ward* expressing himself thus at their Board. In alluding to their annual report he said—

“That portion which referred to the Naval Reserve was one of very great importance to them as shipmasters, and not only to them but also to the country. Most of the meeting would know that the Naval Volunteer movement, so far as the Government were concerned, had been a most thorough and complete failure; and for this reason a want of confidence had manifested itself amongst the merchant seamen of Great Britain. Those hardy sons of toil would not join the movement because they thought it was so near an approach to joining the navy that they objected to it. Now, the captains of the Mercantile Service knew that that was not so, but that it was essentially a great volunteer movement to secure the safety of our common country in case of an actual invasion, and not for any other purpose whatever. The captains of the Merchant Service were convinced that the only way in which confidence could be restored amongst the merchant seamen, and which they required before joining in any movement, was by the captains, particularly those resident on shore, being commissioned as officers of the Royal Naval Reserve of the country. When that was the case the seamen would voluntarily join the Reserve, and would then become a great protection to the country in case of need. They all knew the extent to which the volunteer movement on land had been carried, and he hoped that it would remain a permanent institution of the country.

“The Naval Reserve was a move in the right direction, and not less important than the military volunteer movement. He thought the plan that had been suggested in the report would conduce to the elevation of the Merchant Service in the estimation of the country. He really considered the matter was one of paramount and pressing importance in every point of view, feeling, as he did, that the time of trial for his country was at hand,—the time when the heart of every Briton would beat, and every chord of it vibrate to the call of our gracious Sovereign to do what they could for our fatherland. The time was surely coming when, no doubt, every one who was capable of doing anything would be called upon to support the defence of his country. He had been laughed at for years, and called an alarmist, but he was thankful to find that even in the Government there were men—even Lord Palmerston himself—who shared his “alarmist” feelings, and he had no doubt ere long there would be multitudes who hold the same opinion as himself. He did hope the service would think very seriously of this matter relating to the Naval Reserve, and he did trust that all those retired captains resident on shore—of course those who were continually at sea could only lend a moral support and countenance to the movement—would feel it their duty to make themselves instrumental in some way or other in supporting and protecting the safety and institutions of our country. He might observe that he had now the honour to hold her Majesty’s

commission, not as a sailor, but as a soldier. That was the case, however, because there was no Naval Reserve when he was appointed to the Birkenhead Rifle Corps, or he should never have left the naval for the military service."

Such sentiments could not but be welcomed by a body of loyal Englishmen, such as British captains were in the Mercantile Marine of this country; and however ill-inclined he was to believe that the time was at hand when their active services would be called for, he was quite agreed in the soundness of that great principle embodied in the reply which the Liverpool merchants had received on the subject of war, when they so absurdly stepped aside from their vocation to ask the Emperor of France his intentions about peace and war! We all remember this at one of our early meetings. However, continued the Chairman, nothing could be more to the purpose than the present step of the Liverpool captains, and he was glad to see it stated that—

Captain Morton seconded the adoption of the report, and expressed his conviction that every one in the meeting would heartily endorse every word that had fallen from the Chairman. He knew that they all felt a deep interest in the service, and that every Master and officer in the Merchant Service was ready at any moment to do his best for his Queen and country whenever the Admiralty might call them into active service.

The Chairman of the Liverpool Board said he might tell them that the captain of one of Green's (of London) ships went the other day to the Admiralty. What transpired at the Admiralty he (the Chairman) did not know, but the very next day he went down of his own accord and proceeded on board the *Excellent*, gunnery ship, for a month's drill; so that the meeting might depend upon it that the captain heard something good from the Admiralty which led him to go on board the *Excellent*, or he would not have gone there. The Council would, however, put themselves into direct communication with the Admiralty, and see what could be done in the matter.

Now, continued the Chairman, all this was very satisfactory; but there was one thing still wanted, and he should have been better pleased had Nelson's motto not been completely lost sight of by these Liverpool captains. *Liverpool*, indeed! there is something self appreciating (truly business like, perhaps,) in that ominous word. The very atmosphere of *Liverpool* must be selfish! there must be something in it that inculcates the selfish principle! He would ask, why was Nelson's motto to be neglected? There was the virtue of generosity at least in the words, *Palmas qui meruit ferat!* Whence did the whole principle of the establishing a Reserve of Merchant Seamen come from? Where did these gallant captains find the matured plan of organizing the servitude of mercantile seamen as a Naval Reserve? He would answer for them! In the pages of the *Nautical Magazine*, to be found in the library of their Institution!

Here it is, continued the Chairman, in the volumes for 1852 and 1858, fully set forth and wanting only to be carried out on a clear intelligible plan, proposed and originated by Captain W. L. Sheringham, R.N.! In the former he observes, at page 235,—“No fact is more conclusive to my mind than that it is to the Merchant Service we must look for a useful and hardy race of sailors,” &c. Again, this gentleman, in his paper on the subject of a Naval Reserve, asks, (as you will find in page 467 of the *Nautical Magazine* for 1858,) “Why are we still without a Naval Reserve?” Because, he replies in the next words, “We have no well matured and well organized system!” There stand the words in Italics! and they are there accompanied with his views on that, as well as the establishment of Coast Volunteers for home defence, also in the volume of that useful work for 1852 (pp. 239 and 242). But Captain Sheringham’s name no where appears in connection with that important subject the Reserve proposed by the Liverpool captains: a plan that has been only taken up since the improvement of naval ordnance, the Volunteer Rifle Corps, and the fortification of our coasts have come into fashion. But these important subjects of Reserved Seamen for our fleet and Coast Volunteers as a naval militia for our shores, have been occupying the attention of Capt. Sheringham as long as some ten or twelve years ago, as will be seen by that paper of his to which he (the Chairman) alluded to in the *Nautical Magazine* for May, 1852. Therefore it was that he said justice was no where done to this officer, who, on the principle he had mentioned, “honour to whom honour is due,” was in fact the originator of these wholesome measures, knowing well as he had learnt from professional experience the full value of that excellent motto, *cara quietem*. He should therefore as an addenda to the Liverpool proposal annex to it the words, “as long since suggested by Captain W. L. Sheringham, R.N.”

There was another branch of the subject on which he would take the present opportunity of adding a remark, and he could have wished too in this that the above principle of putting the saddle on the right horse was more evident than it really is. He had received two pamphlets, one entitled “Suggestions for the Establishment of a Permanent Reserve of Seamen for the Royal Navy,” by a “Rear-Admiral,” and the other, on “The Command of the Channel,” by Lieut.-Colonel Alexander, of the Royal Marine Artillery. The former founds his plan for his “Permanent Reserve of Seamen” on a continuous and partly rotatory service system. But while he advances his retaining permanent system by additional pension to induce men to serve in the navy when required, he has altogether ignored the plan of Captain Sheringham that appeared in the same volume of the *Nautical Magazine* abovementioned. Had the Admiral consulted Captain Sheringham’s complete plan, he would have seen that the captain works on the system of not paying the pension till he has the men in hand, on the principle that a bird in the hand is worth two (and more too) in the bush! On the whole, he considered this plan of the Rear-Admiral an expensive scheme for obtaining his reserve of seamen without

effectually securing the object at which it aims; but which Captain Sheringham's would do when carried out.

Then as to the other: Colonel Alexander, observing on the safety of our shores in the absence of a Channel fleet, looks on the whole subject of steam as being more favourable in war to this country than it would be to our enemies (Query). He would have a steam flotilla manned with a maritime militia. He considers that our three deckers cut down to the lower deck would be a good "conversion" into a "makeshift" for one class of these vessels with the addition of steam; and would provide for the other a smaller vessel on a different plan, but both to be shot proof. Now he (the Chairman) would give the Colonel all credit for his *razéed* three decker, with all her huge bottom and draft of water: although even as temporary vessels he feared they would be found an inconvenient kind of vessel for shoal water. But as to his small flotilla, the Colonel would find that Captain Sheringham, in 1852, says that "every creek in a war ought and must be the asylum for a gunboat" (p. 241), and in his papers in 1858 he returns to the conclusion of his remarks on the subject of Manning the Navy by the addition of a few words on "the *Royal Naval Coast Volunteers* considered as a *Naval Militia*." The Colonel admits that Captain Sheringham has ably advocated this subject in the pages of the *Nautical Magazine*, although he joins on his own account in the false alarm which pronounced the Coast Volunteers a failure, and proceeds to show how they may be saved from that fate by the system of companionship in *neighbourhood* as well as in arms between officers and men "similarly engaged when on shore in home pursuits," thus proclaiming a principle insisted on originally by Captain Sheringham himself in the above volume, almost in his very words, as the very essence of life to that service. Yet so it is, observed the Chairman, so slow is society to render tribute to whom tribute is due. And having said thus much, he would no longer occupy the attention of the Club from their usual business, from which he would not have detained them had he not considered it desirable that these sentiments should be preserved among their papers.

Since the subject of the Naval Reserve was referred to by their Chairman, Albert would put a question about it that he considered important. Up to the present time the prejudices of the merchant seaman to so close an alliance with the Royal Navy it is said have not been overcome. But let us suppose for argument sake that the men have discovered the great advantages of the Reserve to them, and lay aside their prejudices. What in this case will be the effect on that great question, the manning of the fleet?—that is, of obtaining able seamen for the ordinary demands of the Navy? Will this be facilitated by it, or will it prove to be rather detrimental and exhausting in its effects than otherwise? At present there are two modes of entering the Navy, viz., one for a short period, as on the old system,—and the other for what is called "continuous service;"—the difference in pay between the two being for an A.B. £1 10s. 5d.

per year in favour of the latter. The number of Royal Naval Volunteers proposed to be raised for the Reserve is 30,000, to consist only of able seamen; and it has been stated somewhere that 30,000 is the whole number of able seamen employed in the mercantile marine of this country. Now, the essence of the question is this,—When those men acquire confidence of faith being kept with them, and see their advantage in the offer held out to them, is there not some danger that they will reason thus: We will enter the Navy for the short period or usual one for which a ship is commissioned, return to the Merchant Service, and then enter for the Reserve, when we shall have £6 a year in addition to our high rate of wages,—rather than remain in the Navy with the increase of pay of £1 10s. 5d. only? Can there be any doubt which service would be the most attractive? He was sure the Club would see that this was a question worthy of being recorded.

Albert would next observe that he had seen a report in the daily prints, purporting to come from the Board of Trade, of a Board at the Mauritius, on the loss by wreck of the ship *Nussur Sultan* on the reef of Isle Rodriguez, in the Indian Ocean. He had not yet looked into it, but had seen sufficient to lead him to the belief that the ship was lost not on a detached reef twelve miles distant from the island, as stated by the Board formed there, composed of the Harbour Master and Lloyd's Surveyor, and some other landmen,—but who constituted that Board he could not say—most probably themselves,—and he did not believe there was a seaman among them. He believed this report was a kind of blind from beginning to end, got up by a set of persons on the island by whom the system of insurance was maintained, to the ruin or drowning of our unfortunate seamen. He should look further into the case and report his opinion to the Club.

But on this lamentable subject of loss of life by our continual and numerous wrecks, he had had a paper placed in his hands which had been the subject matter of a deputation to the Government, and which, with permission, he would now read, along with the observations which he considered it required:—

It has long been a subject of notoriety among nautical men that the immense loss of life and property which continually occurs in our merchant ships by wreck and disasters at sea, may be most materially mitigated by adopting safe and proper measures as to manning and outfit, together with practical legislation as to discipline. With this view a deputation, consisting of Lord Viscount Raynham, M.P., Lord Kinsale, Captain Hall, R.N., C.B., Captain King, R.N., Captain Bax, H.C.S., and Wolryche Bridgman, Esq., waited, by appointment, upon the President of the Board of Trade. The deputation were introduced by Lord Raynham to Mr. Milner Gibson, who received them with his usual urbanity and attention. His lordship explained that their object was to endeavour to get such legislative measures passed as would tend to give additional security to life and property at sea on board our merchant ships, and they were of opinion that if a commit-

tee could be formed of nautical men of high character, their suggestions, if adopted, would lead to that desirable end.

The nautical gentlemen of the deputation pointed out the immense loss of life and property which had occurred during this last year, amounting to about 1,400 casualties by wrecks and disasters at sea, which they considered had been caused, in many instances, by undermanning and overloading the ships, which were therefore often unable to take in sail in bad weather, and were consequently dismantled and disabled, thereby bringing on wreck and loss of life. The system of overloading was exemplified in two cases, viz., the *Scamander* and *John Sugars*, two large ships which foundered recently only two or three days after leaving Liverpool, when the weather was sufficiently moderate for the crew to be rescued by other vessels. These were but two among very many instances. The system of undermanning had also led to serious mutinies, the crew often refusing to proceed to sea after having signed the articles, on finding there were not sufficient hands on board to work the ships. This is of more frequent occurrence at Liverpool, though it often happens in the Downs, when the crew are generally sent to Sandwich Gaol by the magistrates, according to the terms of the Merchant Shipping Act, thus putting the owners to great expence in remanning the ships from London, and leaving the vessel unprepared in an unsafe anchorage. It was urged that a safe scale of manning, proportionate to tonnage, would obviate the evil and prevent these dangerous disputes.

It was also urged by the deputation that the articles in the Merchant Shipping Act on the subject of discipline were loosely drawn up, and wholly inadequate to the purpose; that the crimes and offences the most common and notorious at sea, such as barratry, theft, insolence, mutiny, and piracy, were omitted to be named therein, and drunkenness among seamen was only mentioned as it related to the loss of a ship occurring thereby; the consequence was that mutinies in foreign ports and in the distant colonies prevailed to a great extent, and met with impunity, causing much danger to life and property and immense losses and delays to owners and underwriters; that maritime courts abroad required to be reconstituted, in order that commanders of vessels might meet with immediate attention to their complaints; that the crimes and offences committed on board ships should be made special, so that owners might not be subject to the expences and delays of the civil courts, except in some extreme cases.

The fees exacted from seamen on their entries and discharges were also alluded to, as well as an extension of pilotage in certain cases when ships had troops and passengers on board; the *Blerioie Castle* and *Earl of Eglinton* having been totally lost in bearing up for the Downs without pilots, the former with the loss of every one on board. Captain Hall pointed out the evils which had arisen from the abolition of the compulsory apprentice system, which accounted at once for the difficulty of getting good seamen both in the navy and merchant service at the present time; having neglected to sow the seed, we were no longer enabled to reap the harvest.

The President of the Board of Trade paid every attention to the important subjects descanted upon; but, as to undermanning, seemed to think the case not made out, or, at all events, that it was incompatible with that free competition with foreign vessels which was the settled policy of the present time. It was attempted to be shown that the manning clause was sufficiently met by the following article, which informs seamen of the actual number of men the *owners choose to consider sufficient for the ship*. Art. 149, (clause 2,) *as to agreements*:—"the number and description of the crew, specifying how many are engaged as sailors." It was urged, in reply to the defective state of the disciplinary portion of the Act, that it was looked into at the time by the late Admiral Beechey, and by Captain Walker, who is now at the Board of Trade; but it was not denied that the crimes and offences named were omitted. With respect to the extension of compulsory pilotage in certain cases, it was argued that there was no proof of the *Blervie Castle* having struck upon a ridge, but that she might have been sunk by a collision. The deputation retired with the understanding that the matters complained of should be referred to the committee of the House of Commons which was then sitting upon the subject of the state of the merchant shipping generally.

From the manner in which the proposal of a fixed scale for manning was here received, it may be inferred that the wishes of the deputation are not likely to succeed; in fact, it being evident that we are committed to open competition with foreign shipping, and therefore the shipowners would resist any attempt of the kind while the Americans still continue to send their ships to sea even more short-handed than ours. But with respect to Article 149, that is no security as to any safe number of men being put on board. It merely provides that the seamen, on signing articles, should be acquainted with the number of the crew the *owner* chooses to consider sufficient. Now only a portion of the men can read the notices, they seldom attend to what is read to them, therefore how can they find out that the ship is shorthanded till she gets to sea or is in the act of getting under sail. In a legal point of view, however, it establishes the fact that seamen are liable to imprisonment for refusing to proceed after having signed, even if the ship really is undermanned; but it does not in any way remedy the evil.

With respect to providing against losses from overloading, no injury to the interests of shipowners can be brought forward in this case, all of whom are concerned in some way or other in the success of their vessels or as *underwriters*; the safety of the lives of those on board imperatively requires that this practice should be prevented at the docks or elsewhere. Ships are loaded with railway iron out of all proportion to their tonnage, so that they often founder with all their crews, and are no more heard of.

Adverting to the advantageous results of attending to these matters, it can be shown that an eminent shipowner of the port of London, who never insures, has met with but four losses in twenty-seven years, in an average fleet of thirty ships, and one of them was destroyed by

fire in the Bengal river. In reply to the *opinion* that the *Blerois Castle* was lost by a collision, it should be observed that although the report of part of her wreck being seen upon the Ridge cannot at present be authenticated, the authorities at Ramsgate know very well that a longitudinal section of that vessel, comprising nearly one half of her, was towed in and laid upon the beach near the bathing machines, and there was certainly *no appearance of collision*; the cargo also being picked up near Calais, corroborates the opinion held by the Deal and Dover people that, having missed the light of Dungeness, she struck upon the Ridge, where there is not above eight feet at low water.

With respect to the absence of discipline, it is too notorious in the merchant service; and if it can be shown that certain crimes and offences are omitted in the Act, it can injure no one to remedy the defect. It would be extraordinary indeed if two officers could turn out a code of laws, for the first time, which was to prove faultless after six years' trial.

The merchant service labours under great disadvantages by the legislature of this great maritime country being so deficient of nautical men. It will be found upon inspection that not more than nine members of the House of Commons belong to the profession of the sea, and six of those are naval officers, who, unless they have served in the merchant service, or have sailed in some of the ships, can know but little of their defects and requirements. To this cause may be attributed the non-attention to grievances, particularly as regards the petition from the seafaring portion of the mercantile marine, brought forward some time since by Mr. Crawford, the member for the City, who has had great experience as to the merits of the question. France, whose existence as a nation does not depend, as our does, on the encouragement and discipline of her seamen, has produced men of the highest station and talent who have turned their attention to the state of their merchant service; and in 1852, when that service was almost in as deplorable a state as ours is now, an efficient code of laws was established. A few sentences from the official letter of the Minister of Marine to the present Emperor of the French upon that subject, may not be out of place here. The French Minister said:—

“The reports of the commanders of our merchant ships daily prove their inability to repress the excesses of the seamen placed under their orders.

“The life of a seaman is a life of exception. Shut up within the narrow walls of a ship, which transports him from one part of the globe to another, across the solitudes of the ocean, in the midst of dangers of every kind, the mariner cannot surmount these incessant struggles unless he implicitly obeys the orders of his commander. Moral ascendancy is not always sufficient to obtain this necessary obedience; the law must assure to the chief the means of repression in proportion to the imperious exigencies of his difficult position.

“There is not a maritime nation but has understood this necessity,

and submitted to it; at all epochs, and with all peoples, maritime laws have had, as a common basis, special jurisdiction and exceptional penalties. So long as France acted upon this principle, discipline strictly maintained among the crews of merchant ships prevented the deplorable excesses of which those vessels are at the present time so frequently the theatre.

“And, moreover, on board merchant ships, as on board vessels of war, the lives of the crew and passengers depend on the harmony and precision of manœuvres, the punctual obedience to orders given, and absolute subjection to the person in charge of the ship.

“At sea the smallest faults are important, from the fatal consequences which result from them; if these faults are not repressed at once, the punishment is illusory; it amounts to impunity, which becomes an encouragement to insubordination; hence arises the inefficacy of tardy judicial proceedings before the ordinary tribunals for acts which often take place at remote distances in foreign roadsteads, and almost always without the possibility of producing witnesses on the return home—for acts, besides, which have not been provided for by the ordinary penal code, and which the commanders prefer to leave unpunished rather than enter upon an affair the tardiness of which is incompatible with their commercial pursuits.”

The truth and justness of these sentiments come home to every one of the most ordinary intelligence; but they can only be felt in their full force by those who have had the peculiar responsibilities of command. At all events, continued Albert, whether any good results from these exertions in this cause, the deputation will at least have the gratification of having made an effort to bring about such measures as would most assuredly not only create a more satisfactory feeling among seamen, but reduce, by at least thirty per cent., the wrecks and disasters at sea.

And, added Rodmond, the loss of our seamen also, while the merchant flourishes under the marine insurance system of England. But we are an accommodating race, suiting ourselves to pressure, and “what can't be cured must be endured.”

But we have another curious matter to look at in that Merchant Seaman's Act referred to by the deputation, although not alluded to by those gentlemen. Much as they had pointed out, and clear and explicit as the observations were which followed their statements, there was yet another portion of the Merchant Seaman's Act that deserved special attention,—an assertion, he might add, that was supported by no less an authority than the Chairman of the Trinity Board himself, who, being not only a sailor, but a BRITISH ADMIRAL, naturally had strong feelings on points of law sanctioned by the Government that, in his opinion, were calculated to work injuriously to his country. This subject was that of pilotage, so that the gallant Admiral was not floundering in the meshes of sea law, but holding up facts which were clearly of that nature. And what were they? On the occasion of the annual banquet in celebration of the establishment

of their charter, after alluding to the fact that a Royal Commission was sitting in judgment on the manner in which the duties entrusted to that corporation were performed, and naturally adding that the closer their affairs were investigated the better should they be satisfied,—the Deputy-Master observed that “under the present Act of Parliament ‘compulsory pilotage,’ in the proper sense of the term, no longer existed. It was now entirely optional with the master of *any vessel* whether he shall himself navigate her or take the services of a pilot, certified qualification being only necessary for doing so. So widely had this privilege been extended that certificates bearing the signature of the Deputy-Master of the Trinity-House might, in the event of a war, be availed of by a foreign Government as evidence of the competence of the holders to pilot a hostile fleet into British waters.” Such assertions are stated to have been thus made by the Deputy-Master of the Trinity-House on the subject of pilotage,—a naval officer presiding over the only constituted Board in this country the executive members of which are entirely nautical men. Now, on referring to the article alluded to by the Deputy-Master in the Merchant Shipping Act, it will be found that the real intentions of the legislature are in fact perverted by the mere omission of the word “British.” As it stands, a foreign commander may qualify and obtain the certificate of competency alluded to as well as an Englishman, a case which he could not suppose was really meant. But here it is in p. 972, art. 340, of that Act, on licensing masters and mates as pilots:—

“The master or mate of *any ship* may, upon giving due notice, and consenting to pay the usual expenses, apply to any pilotage authority to be examined as to his capacity to pilot the ship of which he is master or mate, or any one or more ships belonging to the same owner, within any part of the district over which such pilotage authority has jurisdiction, and such master or mate shall, if such authority thinks fit, thereupon be examined, and if found competent, a pilotage certificate shall be granted to him, containing his name, a specification of the ship or ships in respect of which he has been examined and a description of the limits within which he is to pilot the same, such limits to be within such jurisdiction as aforesaid; and such certificate shall enable the person therein named to pilot the ship or any of the ships therein specified of which he is acting master or mate at the time, but no other, within the limits therein described without incurring any penalties for the non-employment of a qualified pilot.”

So stands the Act of Parliament, continued Rodmond, and in point of law it clearly applied to all. Was that the intention of those who framed it? If so, as that would include foreigners, it behoved the authorities to provide examiners acquainted with their language in the first place, and obviously qualified as seamen in the next place, for, without disparagement to the members of the Trinity Board, foreign languages did not form a qualification for the execution of their duties; but still it is quite clear that foreigners might demand to be examined as the law stood. Any Frenchman or Dutchman who can

pass an examination for the Thames and its channels may hold a certificate as pilot from the Deputy-Master of the Trinity-House; or, again, if such was not intended by the law, as he had said, the word "British" would exclude them. But really this was as loosely put together as many other articles of the Merchant Shipping Act, and which they had seen were pointed out in the *Nautical Magazine*. But, in point of fact, like some other articles of the Act, it was wholly inoperative. There was no master of a foreign merchant ship who could learn all the names on our charts or those of the several marks for the channels; nor is it likely that any qualified examiner could be found if there was. It may be harmless and inoperative as it stands in its present meaning, and therefore not creditable to its authors; but if its present meaning be not intended, and it really is meant to apply to British subjects and no others, the mere introduction of that word would rectify it.

Such doubts and difficulties, however, should not be found in Acts of Parliament. But what else can be expected when laws affecting our merchant seamen, laws in fact by which our whole mercantile marine is regulated, are evidently constructed by men not conversant with nautical affairs. In fact, he was sure it was quite impossible, without a committee of well selected nautical men, that our merchant service would ever obtain a code of laws formed on the principle of good sound practical legislation for their management.

We will now turn, continued Rodmond, to our crack steamer the *Great Eastern*, which will soon be in England; and he found that our American cousins had made the annexed calculations about her as a speculating business, to say nothing of some scraps she has got into concerning patent rights and coasting:—

The *Great Eastern* having returned to New York from an excursion to Cape May with over 2,000 passengers, left on the 2nd inst. for Old Point, Comfort, and Annapolis, having about 100 passengers on board. She was expected back at New York on the 12th, and would leave for England *via* Halifax, the 16th, as advertised. The *New York Herald* makes a rough calculation of the financial result of the vessel's trip to New York:—"Let us see now how the profit and loss account of the voyage stands. The ship left Southampton on the 16th of June, and she will leave this country for England on the 16th of August, which, allowing ten days for her return trip, would make the period of the whole voyage just seventy days. Her expences average about 1,200 dollars a day, or probably not quite so much, at which rate the expences of the voyage would be 84,000 dollars; or we will say, in round numbers, 80,000 dollars. She will have received before the voyage is completed about the following sums from various sources:—From 150,000 visitors in New York, 75,000 dollars; from the trip to Cape May, including tickets and profits from the restaurant, about 15,000 dollars; from visitors at that point, say 5,000 dollars more; from her visit to Annapolis, 15,000 dollars in coal; from visi-

tors at Annapolis, Baltimore, Norfolk, &c., 15,000 dollars; her freight home to England will probably pay 15,000 dollars, and her passengers and other sources about 10,000 dollars, making her total receipts 150,000 dollars. Thus she will have made a clear profit of 70,000 dollars by her first Atlantic voyage."

But our American cousins have an eye to business. While they exclude their old friends from the coasting trade of their own country, they admit the Japanese to all its privileges. By their recent treaty with these people, the Japanese ports thrown open to American commerce are Simoda, Hakodadi, Kanagawa, Nagasaki, Nee-e-gata, and Hiogo. Commencing from the 1st of January, 1862, Americans are to be allowed the privilege of residing at Yeddo, and from the 1st of January, 1863, in the city of Osaka, for the purposes of trade only. Full liberty to purchase and sell, without official interference, is given. The shipment of wheat and rice from Japan in bulk is forbidden, and no opium is allowed to be imported; whilst the Japanese Government have wisely consented to allow all articles purchased in the various ports to be transmitted into the interior without the imposition of any additional tax. Foreign coins are to circulate freely in Japan, their value to be determined by weight. The first clause of the treaty states that bullion, coined and uncoined, wearing-apparel, furniture, and books, not intended for sale, are to be free of duty; but that all articles of Japanese production shipped as cargo will be liable to a duty of only 5 per cent. Gold, silver, and copper, in bars, to pay the same duty. Clause 2 is to the effect that shipbuilding materials, whaling gear, salted provisions, grain, flour, coals, rice, zinc, lead, tin, raw silk, and some minor articles, are to be admitted at a 5 per cent. duty. In clause 3 it is agreed that spirits shall be liable to an impost of 35 per cent. The 4th clause enacts that all other articles shall pay 20 per cent. *ad valorem*. The penalty for smuggling is 1,000 dollars for each offence.

So says that valuable paper *Mitchell's Maritime Register*, adding, that these are the main provisions of the treaty, which reflect the greatest credit upon the contracting parties, not only from their simple details, but from the low rates at which produce and manufactures are to be imported into, and exported from, one of the most fertile islands in the world. That Jonathan has "stolen a march" upon the nations of the West, is evident from the terms of the treaty, since not only do the Japanese grant additional privileges to American merchants as regards residence, but they admit the important principle that low duties are the soul of commerce. The United States, therefore, have now before them a new field for commercial enterprise, and who can doubt for a moment but that that field will command to their full extent the business habits of an industrious race on the vast American continent? Enterprise and perseverance, however, are sterling and striking features amongst the Japanese themselves; so that we have now two great trading nations brought into commercial relation, which,

if closely and wisely carried out by them, will tend to enrich the commerce of the world, increase the demand for shipping, and afford a profitable outlet for the surplus produce of each country.

But the Americans never asleep over their own interests, observed Albert, are speculating already on the commercial advantages they will derive from the projected measure of making Gaspé in the St. Lawrence a free port. A Boston paper says,—A Canadian Act of Parliament establishes a Free Port at Gaspé Basin, at the southern entrance of the River St. Lawrence, and as the Governor must define the exact limits of the port, it may be July or August before the Act comes into force. This Act will afford the same advantage to all nations. As a sequence of this free trade measure, the inland navigation *viâ* the St. Lawrence and the Lakes is also declared free of all charges, so that our vessels may find their way from this port to Chicago and back, with either the fish of the sea or the manufactured goods of Massachusetts or both, and return with flour or pork or other commodities. Then, again, our fishing vessels need not return with each “take,” but can carry them into this free port and sell them to other vessels from Europe or South America coming to that place for them, in return for the products of their respective nations, or for cash, as the case may be; or they may deposit them there till they return home at the close of the season, or till other vessels go after them from Stoneham, &c. Our fishing firms could make Gaspé their headquarters in the bay, and could send an agent there to furnish supplies, and receive the mackerel and forward them home, thus saving the time spent by the fishermen in returning home from their first trip.

But all this would be made coasting trade if it were American, and our vessels excluded from it, according to American exclusiveness.

Some remarks followed on the loss of the *Ganges*, a steamer intended for the navigation of that river, by foundering on her way out after leaving Lisbon,—being only intended for smooth water, it might have been anticipated that she must meet with bad weather, which her mode of construction and slight draft could not enable her to withstand. The Club were of opinion that it was not judicious to expose a vessel of such construction to the effect of a heavy sea, and were not surprised that she foundered after parting amidsthips!

The crew on abandoning her divided into three small boats, and steered for Madeira, but the sea running high they parted company during the night. Two of the boats made Madeira after being exposed to a tremendous sea for four days in charge of the first and second mates. The lifeboat, containing the captain and nine men arrived safely at Tenerife.

Some further observations were also made on Professor Ways' experiments with the electric light on a thread of mercury in motion, that although remarkably intense, was inapplicable to lighthouses. On which Rodmond took occasion to notice that the first class light recently erected at the Cape of Good Hope, and which had been so worthily extolled by their friend Albert, would evidently maintain its

high character. The Club would be glad to learn that Capt. Furber speaks in the highest terms of its efficient brilliancy; it was seen from the *Royal Arthur* bearing N.N.E. thirty-five miles distant, on Sunday evening, June 3rd, and Captain Furber considers that he reached Table Bay two days earlier than he could otherwise have done had the light been not seen. Captain Glendinning, of the brigantine *Walter Glendinning*, also saw the light thirty miles off, and corroborates Captain Furber's report of the excellency of the Cape Point Light. What then do we want with the electric light for our light-houses?

Rodmond stated at the conclusion of the meeting also in reference to his remarks on pilotage and the fact of foreigners obtaining certificates from the Deputy Master of the Trinity House, that there need be no longer any doubt as to the reading of the Act. He had just been informed, from authority on which they might rely, that a Dutchman has passed according to that Act, which came into force in 1853, but his English was as good as that of any British commander.

Secretary's Mems.

Dr. Hayes' Arctic expedition left Boston in the afternoon of July 7th in tow of the steamer *R. B. Forbes*, under a salute from the wharf. The name of the vessel was changed to the *United States*.

The *Great Eastern* is announced to leave New York for England on the 16th of August, touching at Halifax on the way. It is anticipated that she will come back a full ship. The directors are said to be quite satisfied with the reception the vessel has met with.

From a parliamentary return it appears that the total number of steam vessels registered in the United Kingdom on the 1st of January, 1860, was 1,863. The return contains detailed information as to the length, breadth, depth of hold, tonnage, and horse power of each of these vessels, the aggregate tonnage of which is 666,513.

The British and French authorities have assured the merchants and inhabitants of Shanghai that they will remain unmolested in the present troubles, and measures will be taken to prevent them from being exposed to massacre and pillage, and to protect the city against any attack.

A little plant is found upon the prairies of Texas called the "compass flower," which, under all circumstances, changes of weather, rain, frost, or sunshine, invariably turns its leaves and flower towards the North, thus affording an unerring guide to the traveller who, unaided by the needle, seeks to explore those vast plains alone.

The *Great Eastern* arrived at Milford on Sunday afternoon, the 26th August, after a voyage of ten days from New York.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 443.)

Name.	Position.	Where.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
19. Port Aguilas, Spain, Med.	Point Negra	37° 28' 5" N., 1° 39' 4" W.	F.	48	5	Est. 30th Aug., '60.
20. Ascension	Time Ball	.....	..	..	..	Est. July, '60. (a.)
21. Ancona, Adriatic	Monte Cap- puccini	43° 37' 0" N., 13° 31' 1" E	Ffl.	400	21	Est. 10th July, '60. East of port 0-5'

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

(a.) 20.—*Time Signal Ball at Ascension.*—In order that vessels calling at Ascension may readily find the errors and rates of their chronometers, a Time Ball is dropped daily (Sundays excepted) from a flagstaff at the Master's cottage, precisely at one o'clock of Greenwich mean time.

The Master's cottage is to the southward of Hayes Hill, and is the only one near it bearing a flagstaff. The ball when hoisted ready to be dropped is at a height of ninety feet above the level of the sea, and may be readily seen from the anchorage.

Considering the longitude of the flagstaff to be 14° 25' 30" W. or, in time, 0h. 57m. 42s.; the ball falls at 2m. 18s. after noon of Ascension mean time, the first instant of falling being that which is to be noted by the chronometer.

Vessels not intending to remain for the usual signal hour may have the ball dropped at any convenient period of the day for Greenwich time by applying for it to be done at the cottage.

ISLANDS AND REEFS *West-North-West of the Sandwich Islands,* *Pacific,—By Captain N. C. Brooks.*

For the following remarks on the islands and reefs westward of the Sandwich Islands we are indebted to extracts from the journal of the American barque *Gambia*, Captain N. C. Brooks. They contain some new and useful information both as to the positions, limits, and character of the islands and the reefs around them. We should have been glad to have had the position of the new islands which he calls Middlebrook, but which perhaps he had good reasons for withholding.

The *Gambia* sailed from Honolulu April 26th, and arrived off Necker Island April 29th. This island is in lat. 23° 35' N., long. 164° 40' W. It is rocky, and about 1½ to 2 miles long, surrounded by a bank making off to the southward about fifty miles, according to Captain Long's statement. Captain Brooks crossed in lat. 23° 14', and found it to be about fifteen miles across from East to West. The western edge is very abrupt; the discoloration of the water may be seen at a distance of three miles from the mast-head. Soundings are

from deep sea to fourteen fathoms, which deepen to the eastward gradually to about thirty-five fathoms. *A vessel crossing this reef by heaving to can take any quantity of fish of very fine quality.* There is a ravine makes down from the S.E. end of the rock, where at some seasons there is water. A boat may land in good water at the foot of this gulch.

Next visited French Frigate Shoal, situated in lat. $28^{\circ} 46' N.$, long. $166^{\circ} 14' W.$, or rather this is the position of the principal rock, on which is the very large and extensive deposit of guano reported to exist there. The reef is crescent-shaped, about forty-five miles in circumference. The position as given by Captain Brooks, of the *Gambia*, differs from Lieutenant Brooke, of the U.S. surveying schooner *Fenimore Cooper*. Captain Brooks is of opinion that his position is the correct one, as he has taken observations on both voyages to the place. He also landed on sixteen small islands or sand spits which surrounded the rock. The *Fenimore Cooper* gives the position of six only, and some of these are laid down incorrectly. One point of the crescent is to the N.W. and the other bears S.S.E. The shoal is protected on the N.E. and S.E. by a reef on which the surf breaks heavily. The guano rock is about 180 feet long and 40 feet wide at the base, and rises very abruptly to the height of 125 feet, forming a ridge, at each end of which there is a space of about twelve square feet. This rock is situated in about the centre of the shoal, and can be seen at a distance of some eight miles, and closely resembles a full-rigged brig. These shoals open to the West. There is no danger outside of the line of breakers. There is good anchorage inside in from five to fourteen fathoms water. The largest sand spit of the group bears about N.E.b.E. from the rock, about four miles distant. Inside of this spit there is a good harbour, where a vessel of any draft of water may enter and lie in safety from the sea with good anchorage. Water may be obtained on the largest of these spits at about eight feet below the surface. It is very brackish and strongly impregnated with lime. The shoals abound with fish and turtle.

After running about thirty miles W.b.N. from French Frigate Shoal, crossed another shoal, on which I found fourteen fathoms water, and saw bottom distinctly. I passed over the position given of an island in lat. $24^{\circ} 6' N.$, long. $167^{\circ} 55' W.$, but found no island, although there was every indication of land in the vicinity.

We next ran for Maro Shoals, in lat. $25^{\circ} 30' N.$, long. $170^{\circ} 31' W.$ These shoals cover an area of about thirty-five miles in circumference, are low, and covered with breakers. They may be seen on a clear day from aloft at five miles distance; the discoloration of water may be noticed as soon as the breakers are seen. The shoals are enclosed by a line of detached breakers, and have a sandy bottom, with one fathom of water,—no rock or land above the surface, nor any lagoon inside. I consider these shoals very dangerous, as the breakers are low and scarcely to be distinguished from sea caps.

Laysan Island.—Laysan Island is in lat. $25^{\circ} 46' N.$, long. $171^{\circ} 49' W.$, is 3 miles long and $2\frac{1}{2}$ broad, and covered with a luxuriant

growth of shrubs. It is surrounded by a reef about half a mile from the land. Outside of this reef there is a bank five miles wide, on which I found from fourteen to nineteen fathoms water. There is a boat passage inside the reef nearly the whole way round the island. Good landing can be found anywhere, excepting on the South and S.E. sides; good anchorage anywhere on the West side,—the best, however, is about half a mile from the S.W. point, in from eight to twelve fathoms water. It can be approached from any point of the compass, no dangers existing within half a mile of the reef. On the east end of the island I found the remains of a wreck, but saw no signs of a camp.

There is a lagoon on the island about one mile long and half a mile wide, with five fathoms water in the centre, and coral bottom. On the shores of this lagoon I found salt of good quality.

There are five palm-trees on the island, and I collected twenty-five varieties of plants, some of them splendid flowering shrubs, very fragrant, resembling plants I have seen in gardens in Honolulu. I saw on the beach trunks of immense trees. The island contains about fifty acres of good soil. It is covered with a variety of land and sea birds; some of the land varieties are small and of beautiful plumage. Bird's eggs were abundant.

Near the N.W. point of the island I found a stick about two feet long, and at the foot of it a bottle containing a paper, but could not decipher the writing. From the East point, where the wreck lies, to a decayed palm-tree on the shore of the lagoon, in a direct line, I planted potatoes, onions, and pumpkins. The soil on which I planted them embraces every variety, and appears to be adapted to vegetation. There is a very small deposit of guano on this island, but not of sufficient quantity to warrant any attempts to get it. Dug a well and found very good water. The reefs here abound in fish and turtle.

Lisiansky Island.—Lisiansky, Lassion, and Pell are one and the same island. On most charts quite a group is laid down, but there is only one island, situated in lat. 26° N., long. $173^{\circ} 57'$ W. It is three miles long and two miles wide, and is surrounded by a reef, on which the sea breaks heavily. A bank makes off several miles, on which there is nineteen fathoms water, shoaling to eight fathoms near the reef. This reef is about half a mile from the island on the East and North sides; on the West side it extends in a circular form at a distance of $2\frac{1}{2}$ miles, the inside forming a lagoon. This island should not be approached from the South, as a line of detached breakers makes off for many miles, and can scarcely be distinguished from sea caps. Upon this line the *Holder Borden* and *Conahassett* were lost. The island should be approached from the North and by standing round to the westward, the island bearing due East. Good anchorage may be found anywhere outside the lagoon, in from ten to fourteen fathoms. In entering the lagoon on a line with the reef, there are two very large breakers about three-quarters of a mile apart, being North and South of each other. Between these, on the same line, are

lesser breakers, through which a vessel may enter in a channel about a quarter of a mile wide, with four fathoms water. Just inside the reef I found twelve fathoms, gradually shoaling towards the land. A vessel may anchor within half a mile of land in four fathoms water, with good anchorage. There are rocks under water in this lagoon, which may easily be avoided by keeping a good look-out at the mast-head. I found about a two knot current setting North and South. Tide rises and falls twenty-four inches. Good water may be obtained here with very little trouble. The shoals abound with fish and turtle. Landing can be effected anywhere on the island. On the South end, near the centre, there has been a lagoon, but it is now partially overgrown with shrubs.

I found the camp and well of the *Holder Borden* party. On the East point, about half-way, is a hill about forty feet high, with a look-out pole and cask. On the South end I found a ship's house, which had been used to sleep in. Here is also the head-board of the *Holder Borden*, with the *Conahasset's* name cut on it with a knife. I have portions of the wrecks on board. On the North end I saw the trunk of a redwood tree, twelve feet in circumference. On the West side found a notice left by the *San Diego*, taking possession for parties in San Francisco, dated April 27th, 1859. I consider the lead the safest guide at night among these islands, as they are all surrounded by a bank for some distance off shore. Passed over the position of Neva Island, but saw no land.

Pearl and Hermes Group.—This group is in lat. $27^{\circ} 42' N.$, long. $175^{\circ} 48' W.$ They derive their name from the ships *Pearl* and *Hermes*, which were wrecked there in 1822. Our fellow townsmen, J. Robinson and R. Lawrence, were on board one of the ships at the time. A reef is laid down on most charts, sixty miles to the N.E. and S.W., which does not exist. The group consists of twelve islands, surrounded by a reef fifty miles in circumference, on which the sea breaks heavily. It is open from the West. There is a lagoon inside, where I found from five to fifteen fathoms within two miles of the land. A vessel may approach from any point. The largest island, which bears E.b.S. $\frac{1}{2}$ S. from the entrance, may be approached within two miles safely. There is good anchorage outside, in from eight to twelve fathoms, on the N.W. side. Current sets to the North and South at the rate of two knots. Tide rises twenty-four inches,—the prevailing winds being from the E.S.E.

The largest islands are covered with coarse grass and trees. I saw the remains of the two wrecks, the keel, stem, and stern-post, with three iron tanks, still standing. I brought away a wooden mortar used by the party on shore. The remains of the camp still exist on the large island. I took possession of this group. A bank makes off to the East and North for about a mile, and to the West for several miles, with from eight to sixteen fathoms, and no dangers outside the breakers. Plenty of fish and turtle.

We passed over a shoal about forty miles W.b.N. from Pearl and Hermes Group and Shoal, running North and South, with fourteen

fathoms water. Could see bottom clear and distinctly. Also passed over the position of an island laid down in lat. $28^{\circ} 12' N.$, long. $176^{\circ} 50' W.$, but saw no land.

Ocean Island or Group.—Ocean, Cure, and Staves Island are the same, in lat. $28^{\circ} 24' N.$, long. $178^{\circ} 24' W.$, consisting of three small islands or rocks, surrounded by a reef thirty miles in circumference. This is the island on which Captains King and Molteno were wrecked in the *Gledstone*. The American whale ship *Parker* was also lost here. A bank makes off round this reef at a distance of a mile with twenty-five to thirty fathoms water. The three islands are on a line East and West. The surf makes off to the East a quarter of a mile, and to the N.W. twelve miles. The reef opens to the S.W. for about three miles. The best anchorage is found by bringing the N.W. point of the breakers North, in water from seven to twelve fathoms, one mile from the reef. Current sets North and South about two knots. Tide rises twenty-two inches. They can be approached from any point, and can be seen from the mast-head eight miles, being about twenty feet high and covered with bushes. On the North end of the large island, which is $3\frac{1}{2}$ miles long by $1\frac{1}{2}$ wide, there has been a lagoon, but it is now overgrown. On this island I found the remains of the wreck of a merchantman, which had evidently been recently lost. She was not an American vessel. I found the beach strewn with remains of the cargo and wreck, consisting of bamboos, China mats, and tubs. The vessel was undoubtedly from China or Manila. On the North end I found washed ashore the broadside of the vessel, that had the fore and main channels on from plankshear to below six sheets copper. I brought away copper and door locks, which I found on her cabin doors on the beach. On the stern of a jolly-boat I found the name Isaac Holder branded, probably the builder's name. Good water may be obtained on this island. The second island in size is about two miles long and half a mile wide, with little vegetation, few fowls, and plenty of turtle. The third is a mere sand spit.

On the 5th July I fell in with an extensive reef about thirty-five or forty miles in circumference not laid down on any of my charts. Inside the reef are two islands, which I called Middlebrook Islands. They are from $4\frac{1}{2}$ to 5 miles in length, and 2 to $2\frac{1}{2}$ miles in breadth. The reef can be approached from any point. No dangers exist outside the line of breakers. The reef is open for three miles on the West side. There is good anchorage outside, in from nine to thirteen fathoms water. Inside the reef is a beautiful lagoon, with from four to fourteen fathoms water to within half a mile of the S.W. bight of the eastern island. The islands are three miles apart, and can be seen on a clear day from the mast-head ten miles, one being about forty feet high. They are covered with myriads of fowls and eggs, and have but little vegetation. I dug a well on the largest, erected a flag-staff, and left notice of possession. Also left a party in possession, consisting of a Kamschatka dog. On the N.W. and S.W. sides, inside the breakers, is a natural sea wall four feet high, perfectly level, and extending for five miles. The reef on the East side makes within quar-

ter of a mile of the land; five miles to the North; and eight miles to the West. On the small island I found timbers which had formed a raft.

PHOENIX GROUP,—*Pacific*.—*Swallow Island*.

The following account of an island on the N.E. end of the Phoenix Group appears to be also a new addition to the chart. We see a small doubtful island, named Mary, about twenty miles W.S.W. of the position indicated, showing our want of correct information concerning these little numerous groups of islands in the Pacific, among which, as we have observed in former volumes, those of the Ralick and Radack chains are perhaps the most conspicuous.

The brig *Agate*, Green, reports having discovered a long low island situated in lat. $2^{\circ} 41' S.$ and long. $171^{\circ} 40' W.$ Sighted it at noon; landed and took possession of it in the name of the Phoenix Guano Company.

There was a spacious lagoon inside, and some appearances of the island having been inhabited, though at a distant period. On the East side of the entrance to the lagoon there was a large pyramid, built of stone, and apparently of long standing, but there were no signs of recent habitation. On the West side there was a large square inclosure, built also of stone. The guano found appeared to be a good quality.

It would seem that the guano trade carried on by the Americans is very considerable. The supply from Jarvis Island appears almost inexhaustible. The American company owns several vessels and have made a contract for 100,000 tons of the guano. The company also send out a person to test and locate the different qualities of the article on Jarvis, Baker, and Howland Islands. The company are stated to have placed men on all their islands.

AWFUL DEATH BY SHARKS.—There is not the smallest chance for any luckless individuals cast out on the bar off Lagos, for, in addition to the impossibility of their escaping death by drowning, they are constantly swallowed up by swarms of huge ferocious "tiger" sharks. One of the principal merchants, Mr. Hutton, with his wife and child, who were about to return to England by the last packet, were upset in a canoe on the bar, and immediately devoured alive by the sharks. A dingy belonging to the *Plumper*, with four kroomen, in attempting to go into the river, was capsized on the same bar, and turned bottom up; three of the kroomen were "gobbled" up at once, and the fourth clung on to the boat for two hours, and only saved his life by "dodging" the sharks round the boat.

TO CORRESPONDENTS.

The continuation of the *Havand's* voyage is unavoidably deferred to our next. Want of space obliges us also to defer our book notices. The letter from "Forest Hill" too late for insertion or consideration.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle

OCTOBER, 1860.

A PARTING WORD WITH THE ATLANTIC CABLE.

Then, the Atlantic Cable is no more! Its doom is sealed! the sentence passed, and history claims its brief and melancholy tale! Surely no mortal infant, frail and fragile as might be its thread of life, was ever more tormented to an untimely end by doctors learned and unlearned than was this unhappy child of science, from whose precocious qualities there was so much promise and so much justly expected! But it has passed away. Its parents, the Company, have spoken the word through their Secretary,—it is gone! The spell of those last flickering rays of hope is broken, and, like other less costly works of human hands, it may be said of this learned gentleman's decree, *Finis coronat opus!*

If we mortals have evils to contend with even from our birth, so had this child of our ingenuity—the Atlantic Cable. Wisely enough devised on the principles of science that were extant in its day, and as well prepared as perhaps it might be to contend with unavoidable evils, there were yet others to which it was doomed, and which had (it may well be feared) a very considerable share in effecting its destruction. However that substance which may be moulded into any shape, and which formed the insulating medium, may now be condemned as unfit for this purpose; and however ingenious as was the idea of the several small strands of wire by which it was coated, so as to combine the important qualities of lightness and flexibility along with strength; still there was the repeated coiling, the uncoiling and

recoiling, and that severely torturing instrument which regulated the application of a strain too often amounting to tons (for this child, it was said, *could sustain four*) that kept continually exercising its baneful influence on all these things, stretching out the yielding lay of the wires as they would straighten on the gutta percha, which would then have to bear that strain, and which in doing so would crack in numerous places, in all of which that enemy, the sea water, would find its way to the copper core of delicate wires, and ruthlessly devour them! Can we wonder at the fate of the cable when we know that that regulating machine was mercilessly applied, that such must be its certain effect, and that it was thus actually preparing those inroads to the very heart of the cable just such as its worst enemy could desire?

But this, bad as it was, was not all the evil inflicted by mortal hand on the child of its hope. We all know that the cable being committed to the sea as fast as the ship containing it was sailing, would only fill up the track she left, this being considered as even; and to make up for the unevenness of that bottom of the ocean on which it was to lie, that somewhere about one mile in ten was allowed. Was this done? and, even if done, was it sufficient? Both near our own shores and near those of Newfoundland we much fear that it was not. But let us now refer to that gloomy document containing the words of the Secretary to which we have alluded, and see, after our own treatment of the poor cable, how it has been treated in the bed to which it was consigned. The daily prints have stated that—

The following report on the state of the Atlantic Cable in Trinity Bay, dated St. John, Newfoundland, July 3rd, 1860, has been received:—

After repeated attempts to raise the cable by grapneling, in order to test its electrical condition, and with a view to land it at New Perlican, as instructed by the Board, we regret having to report that, although we have on many occasions been able to raise the bight, and so get on board at different times pieces of cable, in all amounting to about seven miles, we have invariably found it broken again a few miles off. The log, which Captain Kell will furnish, will give the details of the proceedings in full.

The weather up to the 12th of June had been so bad that grapneling operations were impracticable, and even while writing is cold and unsettled, the season here having been unusually late and boisterous. On the 17th of June water was frozen in the pails during the night; the noon following, however, was oppressively hot. Cold dense fogs and strong winds have been frequent ever since. The plan of operations was as follows:—

On the 12th of June Captain Kell succeeded in fishing up and buoying the end after recovering three-quarters of a mile of cable.

On the 14th operations were resumed, and three miles and a half of cable recovered, when the old fault, the fracture already reported

to you by Captain Kell, came on board; a flag buoy was anchored at the spot where the same came up.

On the 20th Mr. Varley arrived at New Perlican, and Captain Kell also. A consultation was immediately held on this and the following day, when it was unanimously agreed that the assistance of a steamer and extra men should be obtained. Captain Kell, having refitted, started for Bull's Arm, and Mr. Varley left for St John on the 21st.

On the 23rd the cable was hooked in ninety fathoms, and parted both ways, the bight and a short piece of cable coming on board.

25th.—The cable was hooked again, but parted when within fifteen fathoms of the surface, as it had done on several previous occasions.

26th.—Mr. Varley arrived in a steam tug, having during the previous night, on his passage from St. John, encountered such a heavy gale that they had to take shelter.

27th.—The steamer left Rix Harbour, in a dense fog and stiff breeze, to examine buoys in position. While out, the weather suddenly cleared and moderated, and the sea calmed by the drenching rain. Grapnelling was resumed in 114 fathoms; the cable was hooked several times, and, with one exception, parted before reaching the surface. Care was taken to buoy the spot the moment the cable broke, and by grapnelling from a quarter to half a mile East of the buoy we hoped to succeed in raising the bight, and did at last get it on board. On testing the cable towards Ireland it was found to be broken a very short distance from the vessel, three-quarters of a mile of cable being recovered before it parted again at a weak place.

28th.—The wind and sea too high for working. A fresh consultation was held as to the best mode of proceeding, and it was resolved to go further out at once, hoping thereby to avoid the rocky ground and the bad state of the cable.

29th.—Grapnelling was resumed three miles further East. Soon after getting to work the weather suddenly changed, and the sea ran so high that we had to run into harbour.

30th.—Recommenced operations with steamer and boats in calm but densely foggy weather. The fog just cleared up long enough to determine our position. The *Industry* was accordingly anchored in 130 fathoms as a beacon, and grapnelling performed by the steamer. The cable was hooked at least three times, and probably more, during the day, but broke before reaching the surface. At last a bight came on board, the cable at this spot being unusually good for about thirty yards: the outer end was found to be broken about 200 yards off. About two miles of the inner end were recovered, when it parted again at a weak place, where there was nothing but the gutta percha covered wire left; this, however, was just able to bring the cable to the surface, when it snapped before it could be secured by a stopper. The point where we last grapnelled this day was a little East of a straight line joining Tickle Point and Copper Island, in 140 fathoms water.

Although mud is shown on the charts, there are most unquestionably rocks also, as was too plainly indicated by the state of the cable,

rock weed and sea animalcules adhering to and surrounding it in many places, showing that it had been suspended clear of the bottom. The cable was invariably hauled in by hand to avoid unnecessary strain. The recovered cable varied in condition very much, and what is most important is, that even those portions which came out of the black mud were so perished in numerous patches that the outer covering parted on board during the process of hauling in, and but for the dexterity and courage of the men in seizing hold of it beyond the break, where the iron wires stuck out like bunches of highly-sharpened needle points, we should not have known so much of its condition. In a word, it was evidently sometimes embedded in mud, sometimes on small stones, sometimes half embedded, and sometimes wholly exposed over rocks, as was apparent from the condition of the outer covering. The iron wires in many places often appeared sound; but, on minute inspection, were found eaten away and rotten: the sewing was also decayed. In some places the iron wires were coated with metallic copper and much eaten, they having most probably rested upon copper ore, for there are veins of it in Trinity Bay. The gutta percha and copper wire are, however, in as good condition as when laid down.

The general ragged, precipitous, and rocky character of the surrounding land evidently extends below the surface of the water: the unevenness of our soundings and condition of the cable indicate this most plainly. We accordingly decided upon leaving the neighbourhood of Bull Island altogether, as the cable in its present state at that part of the bay will not repay the cost of recovery. We agreed simultaneously to attempt to raise the cable off Heart's Content, and ascertain its condition there, this being the most promising part of the bay from the information we have been able to collect. Accordingly, on the 1st of July, we sailed to New Perlican, and made preparations to start at 3h. a.m. on Monday morning.

On the 2nd of July sailed from New Perlican at 3h. a.m., and grapnelled for the cable in a smooth sea. At 7h. a.m. we hooked in 143 fathoms water in a straight line joining the North point of St. John Harbour and the South point of New Perlican, at a distance from the latter of about six miles. Having taken bearings, grapnelling was resumed half a mile nearer to the entrance of Trinity Bay, and the cable again and again hooked, each time about half a mile North of the previous run. The cable was during the day hooked at least four times, we believe more. It sometimes lifted off the ground before parting as much as forty fathoms, sometimes only fifteen; in no instance did it come near the surface of the water. On two occasions the iron strands of the cable left most unmistakeable impressions on the grapnel, and iron rust, resembling that usually found on the cable, adhered to its claws. The bottom consisted of green mud and light-coloured clay, the latter very compact, and in consistency not much unlike the blue clay of London; some parts of the bottom were of stone.

Having found it quite impossible to raise the cable, we concluded,

after careful consideration, to make a last but hopeless trial off Break Heart Point, at the mouth of Trinity Bay, and if unsuccessful to take the steamer and men to St. John, to avoid further expense. On July 3rd, the steamer sailed from New Perlican at 6h. 6m. a.m., and reached Break Heart Point a little before 4h. a.m. We grapnelled for the cable from about $6\frac{1}{2}$ miles off, in 165 fathoms water, to within $1\frac{1}{2}$ miles of the point, where the water was still over 100 fathoms. We did not succeed in finding it; and had we done so the Atlantic roll setting into the bay was so heavy and the current running out so strong, that we could not possibly have raised it to the surface, but only have determined its position. It is quite possible that the cable was hooked without being perceived by us, owing to the depth of water and to the fact that the cable, especially where laid over stone, is very rotten. At six miles out the bottom consisted of clay, covered by a thin stratum of mud, the same as that off New Perlican. At about four and a half or five miles off, the bottom appeared to consist of stones, and this continued to within a mile and a half of the point, where the water was very deep.

Those portions of the recovered cable that were wrapped with tarred yarn were sound, the tar and hemp having preserved the iron wires bright and free from rust. This will be further reported on when the pieces of recovered cable have been more closely examined.

It is with deep regret that we have to inform you that it has been necessary to abandon the cable.

CROMWELL F. VARLEY,
*Electrician to the Electric and International and the
Atlantic Telegraph Company.*

JOHN KELL.

*To the Chairman and Directors of the
Atlantic Telegraph Company.*

The foregoing is but a sad picture of the result of that great enterprise promoted by the shareholders of the Atlantic Telegraph Company, and of which the fondest hopes were cherished not only by them, but by the lovers and friends of scientific enterprise both in this country and America. But if it has proved the total failure of the Atlantic Cable, it abounds with the causes of that failure, from each of which a dear lesson of experience will have been learned.

And to what result shall we look as most probable to attend any future effort of the same kind? Shall we look to its unavoidable exposure to being covered with "rock weed," springing from between the protecting covering wires and affording so many strongholds for the devouring worm?—those destructive "sea animalcules" which will there commence their boring but fatal operations. Shall we look to its unavoidable (aye, alas! "unavoidable" be it repeated) suspension over the bottom between many an unseen ridge of rock, a condition which does not even there protect it from those rapacious inhabitants of the deep sea? Shall we hope for success when it is

calmly reposing in the "black mud?"—even the perished parts found there forbid this hope, blackened, perhaps, as they were by the effects of submarine volcanic action, and imparting a filthy odour to it from its carbonated condition, too true an indication of volcanic fire! Alas, those "iron wires stuck out like bunches of highly sharpened needle points" seem enough to annihilate every hope even from the enticing soft "black mud." Even "rocks" or "small stones" all seem hostile to the poor cable, and when we learn that the sewing (*Query*, serving by yarn) was "*decayed*," and that the iron wires were here and there "coated with metallic copper, and much eaten," and that even where "the wires in many places often appeared sound, but on *minute inspection* were found eaten away and rotten,"—where are we to turn for a glimmering of success? Not even that small ray of hope seen where the gutta percha and copper wire are found in as good condition as when first "laid down," will serve to restore that confidence which has been destroyed by the host of enemies above enumerated as arrayed against the poor cable in its Atlantic bed of sorrows, to say nothing of its unkind treatment by its nurses before it was finally consigned unto them. Despair meets us on every hand.

Will the talented author of that able work on the Silurian System—Sir Roderick Murchison—with all his store of geological lore, relieve our unfortunate electric baby from its dilemma, between those sharp pointed needles and those restless mischievous animalculæ?

Those rocks, too, with veins of copper, the green and black mud off "Heart's Content," and those disheartening evils found "in the hopeless trial off Break Heart Point!"

Where can the learned President of the Geographical Society, with all his resources of geological science into the bargain, tell us to look for a place of complete repose for the Atlantic Cable? Will Maury's "plateau" afford security for "the gutta percha cord," even when deprived of its "wrappings of iron wire?" We once, even lately, had hopes for another, from the dogged perseverance of our countrymen; but, alas, we turn from all these, like the shipwrecked mariner when he sees the last ray of hope becoming more and more dim, and exclaim with him, "Deep, deep is our despair!"

Wonderful are the ways of Providence! From His work the electric fluid encircles the globe: with the rapidity of the lightning's flash it crosses miles of space. The same fire has been pressed into the service of presumptuous man. Will he ever overcome the difficulties to be found in old Ocean's bed,—even the obstacle of distance between Europe and America,—and thus forge the last link in the chain of electric communication which shall bring the remotest ends of the world together? The answer from experience is as yet unfavourable! That of the Atlantic is bad enough. Did we know as much of the Mediterranean, the Red Sea, and some Indian lines, we fear the tale would prove as barren of hope for lines of great length, especially where the effects are found of submarine volcanic action

that reaches *above the surface of the sea*, besides that which does not reach it, to say nothing of other antagonistic principles arising from chemical operation, as well as that of the tiresome, persevering animalculæ. But until some learned geologist, as Sir R. Murchison, shall mark out the course of a path in the Atlantic free from all these ruthless enemies to the progress of ocean telegraphy (for even one of them would bring destruction to the attempt) farewell to all hope for the success of an Atlantic Cable.

Since the foregoing was committed to paper we have met with the following remarks on this subject, containing information which we regret to say confirms our worst fears for distant ocean telegraphy.

Lord Wodehouse regretted that the efforts hitherto made to establish an efficient line of telegraphic communication with India had not been successful. As regarded the Red Sea line, he regretted that after the cable had been laid down from Suez to Aden on the one side, and to Broussa on the other, it would not work, and notwithstanding all the efforts that had been made there was no probability of this line ever being carried out as an effective means of communication. As to the alternative line through Asia Minor, that was in a more favourable position. The Turkish Government had undertaken it by the aid of English engineers engaged for the purpose, and had succeeded in establishing it a great part of the way; and the Turkish Government were now in communication with her Majesty's Government for continuing that line to India. The Indian Government, on its part, was ready to undertake the submarine portion of the line, and there was reason to believe, therefore, that the result of the negotiations between the two governments would be that that line would be carried out. It was not stated whether this would be carried out as a sea line across to India or by land, but, from the unsuccessful issue in the case of the Atlantic, the Red Sea, and other submarine telegraphs, he imagined it would be a land line, though they were not at all ignorant of the immense difficulties of carrying a land line through Turkey in consequence of the disturbed state of the country.

With regard to the Mediterranean telegraph, it was true that the only means of communication with Malta at present was through Sicily. The state of that line was this. A subsidy of £200 a year had been granted for a cable to be laid down between Cagliari and Malta on the one side, and from Malta and Corfu on failing. This had continued to work for a time. The cable had, however, continually failed, and as the company were not in funds to supply a new cable, application for permission to establish a line through Sicily to Malta, and through Italy to Corfu, and a subsidy, was asked for while the line continued to work. It being thought necessary that there should be some line of communication, the Government thought it right to afford some encouragement to this proposal by granting the subsidy. The other part of the line was by Ragusa, Corfu, and

so on to Alexandria. The convention for the purpose was signed last year, and the papers laid before parliament, showing the means by which it was proposed to construct the line, and the course it was to take, partly through the Austrian dominions; but although that arrangement was concluded in April last year, no progress had as yet been made towards constructing the line; and for this reason, that it was necessary to get a firman from the Turkish Government to land the cable at Alexandria, and on an application being made to Constantinople for that purpose, the answer given was that the Messrs. Newall had had conceded to them the exclusive right to land a telegraphic cable at Alexandria. Strong remonstrances were made by the Foreign Office to the Turkish Government on the subject, and it had taken until the present year to overcome the difficulty. But lately a convention had been signed by Turkey with the Austrian Government and ourselves giving permission to land the cable. But at the last moment, three or four days ago, a communication had been received to the effect that the state of things had changed altogether, and that no company would undertake to make the telegraph on the terms and conditions stated in the contract. That communication had not yet been considered by her Majesty's Government, but he could assure the house that before any new arrangements were entered into less favourable to this country, they would maturely and calmly consider the whole question of telegraphic communication by the Mediterranean with the East.

In reference to the line attempted by the late Government from Falmouth to Gibraltar, he quite agreed that it would be advantageous to England as being independent of any foreign control; still it would involve the loss of an enormous length of cable if that cable should fail, of which there appeared to be too great a probability. It was thought before taking any decided step in the matter, it was desirable that further experiments should be made, and a commission of eminent engineers, presided over by the late Mr. R. Stephenson, was appointed for that purpose. Numerous experiments were made accordingly, and much interesting information was collected; but at present the report was not in a fit state to be brought under the consideration of the Government. At the same time her Majesty's Government had not abandoned the plan if they found it could be successfully carried out. Under these circumstances it was considered whether some use might not be made of the cable, and after communicating with the Indian Government it was thought advisable to employ it in laying down a line between Singapore and Rangoon; thus affording a more ready communication between India and China—a matter at the present moment of considerable importance.

THE WEATHER.

The French philosopher Arago has left on record his opinion that if an encyclopædia were written of what we do not know, how much larger it would be than that of what we do know! The savant could wander in imagination through the mazes of human knowledge, and as he arrived at the confines of it in various quarters of those limited dominions which we possess, could penetrate in imagination to the bases of hidden truths; like the traveller who sees the snowy peaks of distant mountains far beyond his power of reaching, and though prizing the range of his own steps over a country that he has seen, contemplates in his mind on the vast extent of that which he has not seen. Another assertion of Arago was that he is a bold man who ventures to foretell the weather of to-morrow! If such really be the case, bold men are not wanting,—almost as plentiful as leaves in autumn. But what is there to which bold man will not aspire, who,

As the story goes,
Can only see beyond his nose.

All history, and Milton besides, pronounces the fact that men will aspire to be gods! What is groveling earthly science from the art of making sugar-plums to the mysteries of dynamics, compared with celestial science, but which even the celestial scenery of the ill rewarded Dick only leaves us to ponder over in wonder and amazement. What is there that the human mind will not pry into, ever thirsting as it is for something new? Happily the weather is always at hand, the most prolific of fertile subjects, with its ever varying face of smiles and frowns and tears, and all the changes between azure blue, dark clouds, and rain! What is the cause of all these? Man must know it! and knowing it must be weatherwise!! What avails then the warnings of Arago, or the repudiation of all weather philosophy so recently made by our own Herschel.* We must know *if we can* know the weather we are to have to-morrow, and here is Admiral Fitz Roy with a string of maxims in the *Times*, (11th of September, 1860,) fresh from the hotbed of Meteorology at the Board of Trade, to teach us the mystery! We are not for slighting them,—'tis a favourite subject of our own, and what concerns sailors more intimately than that science, the knowledge of which expedites their business. Besides, to contribute in the diffusion of "useful knowledge" of any kind has always been the object of the *Nautical*, and we gladly therefore give space to the following.

Familiar as the practical use of weather-glasses is, at sea as well as on land, only those who have long watched their indications and compared them carefully are really able to conclude more than that the rising glass† usually foretells less wind or rain, a falling barometer

* See *Daily News*.

† Glass, barometer, column, mercury, quicksilver, or hand.

more rain or wind, or both; a high one fine weather, and a low the contrary. But, useful as these general conclusions are in most cases, they are sometimes erroneous, and then remarks may be rather hastily made, tending to discourage the inexperienced.

By attention to the following observation (the results of many years' practice and many years' experience) any one not accustomed to use a barometer may do so without difficulty.

The barometer shows whether the air is getting lighter or heavier, or is remaining in the same state. The quicksilver falls as the air becomes lighter, rises as it becomes heavier, and remains at rest in the glass tube while the air is unchanged in weight. Air presses on everything within about forty miles of the world's surface like a much lighter ocean, at the bottom of which we live, not feeling its weight because our bodies are full of air,* but feeling its currents, the winds. Towards any place from which the air has been drawn by suction,† air presses with a force or weight of nearly 15lb. on a square inch of surface. Such a pressure holds the limpet to the rock when, by contracting itself, the fish has made a place without air‡ under its shell. Another familiar instance is that of the fly, which walks on the ceiling with feet that stick. The barometer tube, emptied of air, and filled with pure mercury, is turned down into a cup or cistern containing the same fluid, which feeling the weight of air, is so pressed by it as to balance a column of about thirty inches (more or less) in the tube, where no air presses on the top of the column.

If a long pipe, closed at one end only, were emptied of air, filled with water, the open end kept in water and the pipe held upright, the water would rise in it more than thirty feet. In this way water barometers have been made. A proof of this effect is shown by any well with a sucking pump, up which, as is commonly known, the water will rise nearly thirty feet by what is called suction, which is, in fact, the pressure of air towards an empty place.

The words on scales of barometers should not be so much regarded for weather indications as the rising or falling of the mercury, for if it stand at "changeable" and then rise towards "fair" it presages a change of wind or weather, though not so great as if the mercury had risen higher; and, on the contrary, if the mercury stand above "fair" and then fall, it presages a change, though not to so great a degree as if it had stood lower; besides which, the direction and force of wind are not in any way noticed. It is not from the point at which the mercury may stand that we are alone to form a judgment of the state of the weather, but from its rising or falling, and from the movements of immediately preceding days as well as hours, keeping in mind effects of change of direction and dryness or moisture, as well as alteration of force or strength of wind.

In this part of the world, towards the higher latitudes, the quick-

* Or atmosphere, or the atmospheric fluid which we breathe.

† Or exhaustion.

‡ A vacuum.

silver ranges, or rises and falls, nearly three inches,—namely, between about 30 inches and nine tenths (30·9) and less than 28 inches (28·0) on extraordinary occasions; but the usual range is from about 30 inches and a half (30·5) to about 29 inches. Near the Line, or in equatorial places, the range is but a few tenths, except in storms, when it sometimes falls to 27 inches.

The sliding-scale (vernier) divides the tenths into ten parts each, or hundredths of an inch. The number of divisions on the vernier exceeds that in an equal space of the fixed scale by one.

By a thermometer the weight of air is not shown. No air is within the tube. None can get in. But the bulb of the tube is full of mercury, which contracts by cold and swells by heat, according to which effect the thread of metal in the small tube is drawn down or pushed up so many degrees, and thus shows the temperature.*

If a thermometer have a piece of linen round the bulb, wetted enough to keep it damp by a thread or wick dipping into a cup of water, it will show less heat than a dry one, in proportion to the dryness of the air and quickness of drying.† In very damp weather, with or before rain, fog, or dew, two such thermometers will be nearly alike.

For ascertaining the dryness or moisture of air, the readiest and surest method is the comparison of two thermometers, one dry, the other just moistened and kept so. Cooled by evaporation as much as the state of the air admits, the moist (or wet) bulb thermometer shows a temperature nearly equal to that of the other one when the atmosphere is extremely damp or moist; but lower at other times, in proportion to the dryness of air and consequent evaporation,—as far as 12 or 15 degrees in this climate, 20 or even more elsewhere. From 4 to 8 degrees of difference is usual in England, and about 7 is considered healthy for inhabited rooms.

The thermometer fixed to a barometer intended to be used only as a weather-glass shows the temperature of air about it nearly, but does not show the temperature of mercury within exactly. It does so, however, near enough for ordinary practical purposes, provided that no sun, nor fire, nor lamp heat is allowed to act on the instrument partially.

The mercury in the cistern and tube being affected by cold or heat, makes it advisable to consider this when endeavouring to foretell coming weather by the length of the column.

Briefly, the barometer shows weight or pressure of the air; the thermometer, heat and cold, or temperature; and the wet thermometer, compared with a dry one, the degree of moisture or dampness.‡

It should always be remembered that the state of the air foretells

* Thirty-two degrees is the point at which water begins to freeze, or ice to thaw.

† Evaporation.

‡ The two thus combined making a hygrometer: for which some kinds of hair, grass, or seaweed may be a makeshift.

coming weather, rather than shows the weather that is present,—an invaluable fact too often overlooked; that the longer the time between the signs and the change foretold by them, the longer such altered weather will last; and, on the contrary, the less the time between a warning and a change, the shorter will be the continuance of such foretold weather.

To know the state of the air, not only barometer and thermometers should be watched, but the appearances of the sky should be vigilantly noticed.

If the barometer has been about its ordinary height, say near 30 inches (at the sea level),* and is steady, or rising, while the thermometer falls, and dampness becomes less, north-westerly, northerly, or north-easterly wind, or less wind, less rain or snow may be expected.

On the contrary, if a fall takes place with a rising thermometer and increased dampness, wind and rain may be expected from the south-eastward, southward, or south-westward.

A fall with a low thermometer foretells snow.

Exceptions to these rules occur when a north-easterly wind, with wet (rain, hail, or snow) is impending, before which the barometer often rises (on account of the direction of the coming wind alone) and deceives persons who, from that sign only (the rising) expect fair weather.

When the barometer is rather below its ordinary height, say down to near 29½ inches (at the sea level), a rise foretells less wind, or a change in its direction towards the northward, or less wet; but when it has been very low, about 29 inches, the first rising usually precedes or indicates strong wind; at times heavy squalls from the north-westward, northward, or north-eastward,—after which violence a gradually rising glass foretells improving weather if the thermometer falls; but, if the warmth continue, probably the wind will back (shift against the sun's course), and more southerly, or south-westerly wind will follow, especially if the barometer rise is sudden.

The most dangerous shifts of wind, or the heaviest northerly gales, happen soon after the barometer first rises from a very low point; or, if the wind veers gradually, at some time afterwards.

Indications of approaching changes of weather and the direction and force of winds are shown less by the height of the barometer than by its falling or rising. Nevertheless, a height of more than thirty (30.0) inches (at the level of the sea) is indicative of fine weather and moderate winds; except from East to North, occasionally.

The barometer is said to be falling when the mercury in the tube is sinking, at which time its upper surface is sometimes concave or hollow; or when the hand (see note in page 2) moves to the left. The barometer is rising when the mercurial column is lengthening,

* It differs, or stands lower, about a tenth of an inch for each hundred feet of height directly upwards, or vertically, above the sea; its average height being 29.94 inches at the mean sea level in England. Allowances must, therefore, be made for barometers on high land or in buildings.

its upper surface being convex or rounded, or when the hand moves to the right (see note in page 2).

A rapid rise of the barometer indicates unsettled weather; a slow movement the contrary; as likewise a steady barometer, which, when continued, and with dryness, foretells very fine weather.

A rapid and considerable fall is a sign of stormy weather and rain (or snow). Alternate rising and sinking indicates unsettled and threatening weather.

The greatest depressions of the barometer are with gales from S.E., South, or S.W.; the greatest elevations, with wind from N.W., North, or N.E., or with calm.

Though the barometer generally falls with a southerly and rises with a northerly wind, the contrary sometimes occurs; in which cases, the southerly wind is usually dry with fine weather, or the northerly wind is violent and accompanied by rain, snow, or hail; perhaps with lightning.

When the barometer sinks considerably, much wind, rain (perhaps with hail), or snow will follow; with or without lightning. The wind will be from the northward, if the thermometer is low (for the season)—from the southward, if the thermometer is high. Occasionally a low glass is followed or attended by lightning only, while a storm is beyond the horizon.

A sudden fall of the barometer, with a westerly wind, is sometimes followed by a violent storm from N.W., or North, or N.E.

If a gale sets in from East or S.E., and the wind veers by the South, the barometer will continue falling until the wind is near a marked change, when a lull *may* occur; after which the gale will soon be renewed, perhaps suddenly and violently, and the veering of the wind towards the N.W., North, or N.E. will be indicated by a rising of the barometer with a fall of the thermometer.

Three causes (at least)* appear to affect a barometer:—

1. The direction of the wind—the N.E. wind tending to raise it most—the S.W. to lower it the most, and wind from points of the compass between them proportionally as they are nearer one or the other extreme point.

N.E. and S.W. may therefore be called the wind's extreme bearings (rather than poles).

The range or difference of height shown, due to change of direction only, from one of these bearings to the other (supposing strength or force, and moisture to remain the same), amounts in these latitudes to about half an inch (as read off).

2. The amount—taken by itself—of vapour, moisture, wet, rain, or snow in the wind, or current of air (direction and strength of wind remaining the same), seems to cause a change amounting in an extreme case to about half an inch.

3. The strength or force alone of wind, from any quarter (moisture

* Electrical effects are yet uncertain.

and direction being unchanged), is preceded or foretold by a fall or rise, according as the strength will be greater or less, ranging in an extreme case to more than two inches.

Hence, supposing three causes to act together—in extreme cases—the height would vary from near thirty-one inches (30·9) to about twenty-seven inches (27·0), which has happened, though rarely (and even in tropical latitudes).

In general, the three causes act much less strongly, and are less in accord; so that ordinary varieties of weather occur much more frequently than extreme changes.

Another general rule requires attention; which is, that the wind usually appears to veer, shift, or go round with the sun (right-handed, or from left to right),* and that when it does not do so, or backs, more wind or bad weather may be expected instead of improvement.

It is not by any means intended to discourage attention to what is usually called "weather wisdom." On the contrary, every prudent person will combine observation of the elements with such indications as he may obtain from instruments; and will find that the more accurately the two sources of foreknowledge are compared and combined, the more satisfactory their results will prove.

A barometer begins to rise considerably before the conclusion of a gale, sometimes even at its commencement. Although it falls lowest before high winds, it frequently sinks very much before heavy rain. The barometer falls, but not always, on the approach of thunder and lightning.† Before and during the earlier part of settled weather it usually stands high and is stationary, the air being dry.

Instances of fine weather, with a low glass, occur, however rarely, but they are always preludes to a duration of wind or rain, if not both.

After very warm and calm weather, a storm or squall, with rain, may follow; likewise at any time when the atmosphere is heated much above the usual temperature of the season.

Allowance should invariably be made for the previous state of the glasses during some days, as well as some hours, because their indications may be affected by distant causes, or by changes close at hand. Some of these changes may occur at a greater or less distance, influencing neighbouring regions, but not visible to each observer whose barometer feels their effect.

There may be heavy rains or violent winds beyond the horizon and the view of an observer, by which his instruments may be affected considerably, though no particular change of weather occurs in his immediate locality.

It may be repeated that the longer a change of wind or weather is

* With watch-hands in the northern hemisphere; but the contrary in South latitude. This, however, is only apparent; the wind is actually circulating in the contrary direction.

† Thunder clouds rising from north-eastward, against the wind, do not usually cause a fall of the barometer.

foretold before it takes place, the longer the presaged weather will last, and, conversely, the shorter the warning, the less time whatever causes the warning, whether wind or a fall of rain or snow, will continue.

Sometimes severe weather from the southward, not lasting long, may cause no great fall, because followed by a duration of wind from the northward; and at times the barometer may fall with northerly winds and fine weather, apparently against these rules, because a continuance of southerly wind is about to follow. By such changes as these one may be misled, and calamity may be the consequence, if not duly forewarned.

A few of the more marked signs of weather, useful alike to seaman, farmer, and gardener, are the following:—

Whether clear or cloudy—a rosy sky at sunset presages fine weather; a red sky in the morning bad weather, or much wind (perhaps rain); a gray sky in the morning, fine weather; a high dawn, wind; a low dawn, fair weather.*

Soft-looking or delicate clouds foretell fine weather, with moderate or light breezes; hard edged, oily-looking clouds, wind. A dark, gloomy blue sky is windy; but a light, bright blue sky indicates fine weather. Generally, the softer clouds look the less wind (but, perhaps, more rain) may be expected; and the harder, more “greasy,” rolled, tufted, or ragged, the stronger the coming wind will prove. Also, a bright yellow sky at sunset presages wind; a pale yellow, wet:—and thus by the prevalence of red, yellow, or gray tints, the coming weather may be foretold very nearly: indeed, if aided by instruments, almost exactly.

Small inky-looking clouds foretell rain:—light scud clouds driving across heavy masses show wind and rain; but, if alone, may indicate wind only.

High upper clouds crossing the sun, moon, or stars, in a direction different from that of the lower clouds, or the wind then felt below, foretell a change of wind.†

After fine clear weather, the first signs in the sky of a coming change are usually light streaks, curls, wisps, or mottled patches of white distant cloud, which increase, and are followed by an overcasting of murky vapour that grows into cloudiness. This appearance, more or less oily, or watery, as wind or rain will prevail, is an infallible sign.

Usually the higher and more distant such clouds seem to be, the more gradual, but general, the coming change of weather will prove.

Light, delicate, quiet tints or colours, with soft, undefined forms of

* A “high dawn” is when the first indications of daylight are seen above a bank of clouds. A “low dawn” is when the day breaks on or near the horizon, the first streaks of light being very low down.

† In the tropics, or regions of trade winds, there is generally an upper and counter current of air, with very light clouds, which is not an indication of any approaching change. In middle latitudes such upper currents are not so frequent (or evident?) except before a change of weather.

clouds, indicate and accompany fine weather; but gaudy or unusual hues, with hard, definitely outlined clouds, foretell rain, and probably strong wind.

Misty clouds forming, or hanging on heights, show wind and rain coming if they remain, increase, or descend. If they rise or disperse the weather will improve or become fine.

When sea birds fly out early, and far to seaward, moderate wind and fair weather may be expected; when they hang about the land, or over it, sometimes flying inland, expect a strong wind, with stormy weather. As many creatures besides birds are affected by the approach of rain or wind, such indications should not be slighted by an observer who wishes to foresee weather.

There are other signs of a coming change in the weather known less generally than may be desirable, and therefore worth notice; such as when birds of long flight, rooks, swallows, or others, hang about home, and fly up and down or low,—rain or wind may be expected. Also when animals seek sheltered places, instead of spreading over their usual range; when pigs carry straw to their sties; when smoke from chimneys does not ascend readily (or straight upwards during calm), an unfavourable change is probable.

Dew is an indication of fine weather; so is fog. Neither of these two formations occurs under an overcast sky, or when there is much wind. One sees fog occasionally rolled away, as it were, by wind,—but seldom or never formed while it is blowing.

Remarkable clearness of atmosphere near the horizon, distant objects, such as hills, unusually visible, or raised (by refraction),* and what is called “a good hearing day,” may be mentioned among the signs of wet, if not wind, to be expected.

More than usual twinkling of the stars, indistinctness or apparent multiplication of the moon’s horns, haloes, “wind dogs,”† and the rainbow, are more or less significant of increasing wind, if not approaching rain, with or without wind.

Near land, in sheltered harbours, in valleys, or over low ground, there is usually a marked diminution of wind during part of the night, and a dispersion of clouds. At such times an eye on an overlooking height may see an extended body of vapour below (rendered visible by the cooling of night) which seems to check the wind.

Lastly, the dryness or dampness of the air, and its temperature (for the season), should always be considered, with other indications of change or continuance of wind and weather.

* Much refraction is a sign of easterly wind.

† Fragments or pieces (as it were) of rainbows (sometimes called “wind-galls”) seen on detached clouds.

NOTES OF A VOYAGE TO THE PACIFIC IN H.M.S. "HAVANA,"—
Captain T. Harvey.

(Continued from page 495.)

On the morning of February 20th we made the island of Whytootacke, bearing S.S.E., distant about twenty miles, appearing on the horizon like two hummocks. On a nearer approach it presented a pleasing undulating appearance, with the usual luxuriance of vegetation displayed in the tropics. The eastern end terminated in a long low sandy spit. Near the middle of the island is a round hill, which Mr. Hull found to be 410 feet in height, and in lat. $18^{\circ} 49' 40''$ S. and long, $159^{\circ} 43' 40''$ W., with two conspicuous cocoa nut trees on its summit. To the westward of this are several smaller rounded hillocks, beautifully wooded; one showing a remarkable bold front of dark stone, from the eastern spit up to which is a continuous white sandy beach, backed by a thick belt of fine cocoa nut trees. From the termination of the sandy beach, and at the foot of the rocky bluff, a coral reef extends off S.W.b.S. to a small island covered with trees about five miles distant, throughout which the sea breaks heavily.

A whale-boat, with oranges, pine-apples, &c., for presents, soon came alongside, the natives in her expressing great delight at seeing us, professing to be English, and assuring us that an English missionary was living on the island. From their description of a ship which had previously visited them, we concluded that H.M.S. *Alarm* had been boarded by them some two months previously; and their greatest anxiety was that we should land, as, by their account, no man-of-war had ever been to visit the island. One of the natives who was more importunate than the others, and called Jim, undertook to pilot our cutter through the reef, and despatched their whale-boat on shore to give intelligence of a party that would follow. This consisted of the captain and some of the officers.

We found the entrance of the lagoon indicated by a flag on a respectable looking staff, which we passed on the left hand, and found a current setting rapidly through the channel and across it to starboard, which should be allowed for, and that the entrance was not more than ten yards across, although it was five fathoms deep. But as we passed in the lagoon shoaled rapidly, with a very foul bottom, though, from the clearness of the water all dangers are visible. Our attention was first attracted by a jetty of considerable extent constructed out of blocks of coral, and near the inner end of it a stream of fresh water, from which ships are supplied. And at a short distance from the shore we found a large open shed or house, which evidently served as a market-place or exchange.

The church and school-house next met our attention, as they presented an imposing appearance in a beautiful clear space. Their substantial construction and complete fittings were pointed out to us with evident satisfaction by Mr. Royle, the missionary, who told us he had been between eighteen and nineteen years on the island. His account

of his first troubles and eventual surprising success was given by him with that warmth of feeling which well showed the difficulties he had overcome. We learnt from him that there are 1,200 living souls on the island, all Christians. Except the very aged and the infants and children, to read and write was general among them. The use of fermented liquors and tobacco was repudiated by them. Their houses are clean and they were all decently clothed, and, so far as appearances enabled us to judge, they were happy and contented. We found the missionary was accompanied to the island by his wife, who is an English lady. They have six daughters, all born on the island; the two eldest being now in England for education. We learnt also that the *John Williams*, barque, of London, was attached to the mission, periodically visiting all their stations in Southern Polynesia. American whaling ships are annual visitors, calling for wood, water, and general supplies. These consist of pigs, fowls, muscovy ducks, pumpkins, sweet potatoes, bread-fruit, yams, beans, plantains, pines, oranges, cocoanuts, bananas, &c.; and it was highly gratifying to find Mr. Royle speaking so highly as he did of the considerate conduct of the captains of these vessels. Much of their barter goes on by exchange, though the value of money is perfectly understood. The natives meet in May of each year to subscribe towards the expenses of the mission, and do so most liberally; in fact, their generosity must be remarkable when they presented three hundred dollars to the Sailors' Home at Honolulu!—a fact that should not be forgotten by any ship that comes to their island.

On returning to our boat after our agreeable visit, the chief men had assembled in the market to express the gratification which our presence had afforded them, and requested our acceptance of a large quantity of everything the island produced,—all this having been collected and placed in front of the building. It was explained that the Queen's ships had nothing in the way of trade to offer in exchange,—that even our boat could not carry the tenth part of it. But it was immediately replied they did not want anything in exchange, they were too happy to see English man-of-war ship at their island, and that their boats would embark all of it for us. This was irresistible, and we invited them to come and see the ship. The oldest man accordingly came in our boat, while their whale-boats, four in number, heavily laden, accompanied us, three of them taking our laden cutter in tow. When on board they refused any refreshment excepting tea, and were astonished and highly pleased with everything they saw, and with delight in his eyes the old man's son told me it would cause a big talk of many days. The ship of course was filled by natives during the day. They had free access to every part of her, wherever they pleased, and although so many things were quite new to them, they never touched anything without permission,—indeed, their behaviour was the admiration of us all.

Mr. Royle gave us the following as the names of the principal islands of the Harvey Group, which differ materially from those generally in the chart:—Rarotonga, 3,500 inhabitants; Mangaia, 5,000,

(about a hundred whaling ships recruit at each of these islands annually); Aitutake, 1,400; Atue, 1,000; Mitiaero, 250; Mauki, 350.

They have a small schooner belonging to the island, which trades between the several islands of the group and has been once to Tahiti.

The natives inform us there are a hundred fathoms alongside the reef, and therefore no anchorage; that the shore is bold to, and off the sandy beach on the N.W. side clear of all danger. During our visit to the shore Mr. Hull, our master, made what observations he could, but the strong current much interfered with them. His report states that,—The main island of Whytootacke is about five miles long by three broad. With the exception of a beach a mile and a half in extent on the N.W. side, it is surrounded by a reef. From the middle of the beach abovementioned the highest hill rises to 410 feet above the level of the sea, and is in lat. $18^{\circ} 49' 40''$ S., long. $159^{\circ} 43' 40''$ W., assuming Honolulu to be in long. $157^{\circ} 49' W.$ To the southward of the beach is a peculiar high rock, about three hundred feet in altitude, the same mentioned above as a rounded hillock showing a remarkable bold front of dark stone. The reef commences at a rocky point terminating the beach, and extends in a S.W.b.S. direction, connecting the island with another small one, covered with trees, distant five miles from the South point of the principal one; and from this small island the reef continues nearly due East for eight miles, enclosing a group of seven or eight small islands, all thickly wooded, the outer one being five miles S.E. from the South point. From this the reef appeared to trend to the North. The best approach is from the N.W., the reefs extending some distance outside the islets; no bottom was found with 110 fathoms line. The entrance to the lagoon is about half a mile South of the rocky point before mentioned. Of its eastern shore we know very little, but conclude that the reef continues from the North point to the islets of the S.E. part.

At six on the fine clear morning of February 22nd we passed over the position of Armstrong Island, according to Arrowsmith's chart.

The southerly current which had been constant to us since leaving Christmas Island appeared now to have ceased, and we were amused by a waterspout in the afternoon of the 24th of February in lat., obs., $23^{\circ} 10' S.$, long., chron., $161^{\circ} 3' W.$ The wind was light from W.S.W., but heavy clouds were rising in the N.E., and we shortened sail in anticipation of equalls. The wind now veered to E.b.N., strength 4 to 5, with rain, when at 3h. p.m. the wind backed to the southward, falling calm at S.S.W., we observed a waterspout forming within about thirty yards of our starboard bow, the water forming it revolving from right to left and moving to the N.N.E. At this time it was quite calm, with light rain. We had anticipated some mischief, but in the course of a few minutes it subsided, and a faint column was seen to descend from the clouds over it a portion of the way, but its junction with the revolving part below was not visibly completed. But as this dispersed a magnificent and fully formed waterspout appeared on the starboard quarter, moving quickly to the

S.S.W., the sea at its base being in a furious turmoil. At the upper part of the column dense clouds were in rapid motion, when on a sudden it broke with a loud crash of thunder and some vivid flashes of lightning. At this time the huge mass of cloud at first appeared to descend with the falling portion of the column, and while this was whole the water at the surface was dashed about and thrown up in sheets of spray much resembling dust in little whirlwinds magnified to a huge scale. A third waterspout was also seen forming on our port quarter at about the distance of five hundred yards, but nature was too weak to complete the work, and it vanished away. In the afternoon which followed the wind was light and variable from the southward, interrupted by calms, but settled steadily at N.N.W., where it remained, the weather clearing, while the sea for a considerable time after the dispersion of the spouts remained in a state of agitation, as if it was influenced by a strong tide rip. We observed the gyrations of the large spout to be the same as the other, from right to left. Had it struck the ship there would have been considerable damage; but a small vessel would have had no chance with it.*

* An American whaler, of which there are some two hundred in the Pacific, is reported—"At Sunday Island, May 1st, ship *Ocean*, Gifford, full and bound home. *Had been boarded by a waterspout a few days previous, which took away his mizen-mast.*" This is concise and business-like.

In the New Bedford *Shipping List* for January 17th, we find the annual exhibit of the whale fishery for 1859. The tables give a comparative view of the business for some eighteen years past, and show a rapid decrease both in the number of vessels engaged and the average catch. The falling off in the number of ships employed now from that engaged in 1859 is fifty-four, or about one-twelfth. This decrease is confined mostly to the North Pacific fleet. The following synopsis of the whaling business for 1859 is from the same paper:—

During the past year there have been heavy pecuniary losses, in the aggregate, to persons engaged in this branch of industry, while few have succeeded in realizing *golden* returns. Various causes combined to produce this result. Ships have returned with scanty fares, whose outfits were of the most liberal kind, and whose expenses during their absence contributed largely to the indebtedness of their owners. These causes, added to the depreciation of the price of oil, have entailed upon the whale fishery a series of misfortunes.

The number of vessels employed in the service on the 1st January, 1860, is 571, showing a decrease, as compared with the previous year, of 54 vessels, with an aggregate of 18,066 tons—being a greater number than for the ten preceding years; and we predict that there will be as great a falling off the current year as in 1859.

The average price of sperm oil for the year 1859 was 136½ cents per gallon, against 121 cents in 1858, showing an improvement in sperm oil. In whale, for 1859, the average price was 48½ cents per gallon, against 54 cents for 1858, showing a decline in price for whale oil.

The imports for 1859 were as follows:—Sperm, 91,408 barrels; whale, 190,411 barrels; bone, 1,923,850 lbs. From this we gather that there has been an excess over the year 1858—in sperm, 9,467 barrels; whale, 8,179 barrels; and bone, 1,707,929 lbs. The exports of sperm oil largely exceed those of 1858, while that of whale has been light. The exports of bone have been up to the average of former years. There is a steady and increasing

On the 26th of February, with the wind from North to N.N.E., we passed over the position of Tuaneke, $26^{\circ} 30' S.$, $160^{\circ} 25' W.$, as given by Captain Hammond, H.M.S. *Salamander*, in *Findlay's Directory*, page 805, part ii. There was also an island marked Kemin on Arrowsmith's chart, about fifteen miles North of that position, which was not seen, although we passed within a short distance of its place at daylight. There was something in the formation of the clouds this morning which in several places very much resembled land. These appearances might have had something to do with the supposed islands. We ran for that given by Captain Hammond, to clear up the doubt placed against the notice in the *Directory*.

On the 28th of March we arrived at Valparaiso, after going to $45^{\circ} 50' S.$ latitude to pick up the westerly winds. Experience has proved that the only way to make this passage is by running clean full to the southward, not caring for the loss of easting. When bound to Tahiti from Honolulu at this season, a ship should pass North of Hawaii and get well to the southward before making to the eastward. This is a suggestion from the frequent difficulty in making the passage.

(To be continued.)

THE ISLAND OF NEWFOUNDLAND.—*Extracts from a Lecture by the Right Rev. Dr. Mullock.*

The Island of Newfoundland, as you may perceive by the map, is the greatest in North America, nearly 400 miles long from Cape Ray (Raye) or Split Cape, as called by the French, from its appearance at sea, to Quirpon, on the N.E., and about 300 miles wide from Cape

demand for sperm oil both in this country and Europe; and consumers will give it their preference to the many lubricating compounds forced upon buyers that are composed chiefly of sperm, so long as importers will dispose of their stocks at prices offering inducements. The stock on hand and the quantity to arrive of course govern the seller in fixing the real value upon the article; nevertheless, extremes should be avoided as calculated to injure rather than advance the trade. Sperm oil, from present indications, will doubtless reach 150 cents per gallon, a price full as low as it can be imported for.

Up to November 16th, there arrived at the Sandwich Islands 174 vessels from the Northern Seas, with an average season's catch of 528 barrels whale oil. The ill success that has attended the northern whale fishery the past season, as well as previous ones, affords but poor encouragement for the prosecution of this enterprise. Whales are both scarce and shy, and while in former years ships would fill in one cruise, they are now absent two, three, and four years, and return, not a few of them, with comparatively nothing, involving the owners in heavy losses. That the fleet is larger than the business will warrant must be obvious to every reflecting mind, and our tables for 1860 we believe will show that our predictions are founded on fact. A gradual reduction is going on, and many ships, particularly those requiring heavy repairs, will be withdrawn from the service.

Race (Raze), on the East coast, again to Cape Ray on the West. It contains, it is calculated, about 35,000 square miles, or 22,720,000 acres. This, however, is only an approximate calculation, as the country has not been explored, much less surveyed. It is of a triangular form, very narrow towards the North,—hence called by the French “Petit Nord,”—very wide at the southern base, and having attached to it, as it were, the great peninsula of Avalon, separated from the great island by the bays of Placentia and Trinity and joined to it by an isthmus of only two or three miles, and this province is again divided by the two noble bays of St. Mary and Conception.

In no other part of the world are there more noble bays and harbours than in Newfoundland. Eighty and ninety miles the ocean penetrates by those great arms into the land, conveying to the doors of its inhabitants the treasures of the deep, and affording them a cheap means of conveying their produce to market, such as a hundred millions spent in railways could not procure. It is most providential that everything required to carry out the great industry of the country—the fishery—is found here better than in any part of the world,—the bays and harbours, the vicinity of the great breeding grounds, the abundance of wood adapted for boat building, cooperage, flakes, and stages, the bracing winds and absence of a burning sun for drying, the rocky ledges—the feeding ground of the cod, and, above all, the hardy, daring sons of the soil, men nurtured in danger, rocked in the tempest, men to whom the severest hardships are only sport, who know no danger, who tread the frozen ocean with as firm a step as their native soil, and yearly undergo without a murmur more danger than usually falls to the lot of the most daring through their entire lives.

You perceive that the capital, St. John, is placed almost in the centre of the great peninsula of Avalon, on the nearest point to Europe, with a port the most secure perhaps in the world, fortified by nature and only requiring a very moderate outlay, and a few thousand brave soldiers, to make it, I may say, impregnable—the Gibraltar or Sebastopol of the North Atlantic. A fleet of war steamers stationed in St. John, sheltered by the guns of Signal Hill and South Side batteries, would give the command of the North Atlantic to Great Britain, and, with Bermuda, paralyse the commerce of the entire seaboard of the neighbouring continent. I consider St. John and Bermuda as the two great bastions of North America, but I leave the subject to be discussed by military men.

It has been said that the trident of Neptune is the sceptre of the world, and unless some extraordinary change take place in naval affairs, like the introduction of gunpowder into modern warfare, the saying has hitherto held and will hold good. See the immense importance of Newfoundland: between French, English, and Americans, there are now, I suppose, from 50,000 to 70,000 men employed in the fisheries, amidst ice, fog, and storm. If the fisheries were fully developed, as they will be in future times when the population increases and extends all along the shores and into the interior,

this number will be doubled. The gulf and river of St. Lawrence depend altogether on Newfoundland,—the possessor of this country holds the keys of the gulf. The Labrador, which will in time become a country like Norway, will swell the contingent of seamen. The fisheries then will not be confined to the shores, but our mariners will each summer explore the recesses of Baffin and Hudson Bays, and probably follow the seal to Greenland. Now, a maritime population like this must have a great influence in the affairs of the world hereafter, and hold a place of the highest importance among the hundreds of millions who in two or three centuries hence will people those northern lands from the frontiers of Mexico to the shores of Hudson Bay.

This, ladies and gentlemen, is not a sketch of the imagination, for as sure as the rivulet swells to a mighty river in its course and bears the fleets of nations, so sure, according to the laws of nature, will the wonderful development of these countries take place. Wars or pestilence may check it for a time, but nothing will stop it. The island, as you see, is trending, if I may use the expression, N.E. and S.W. All our great bays, with the remarkable exception of the Bay of Islands, Bonne Bay, and Ingornachoix Bay, on the western or gulf side, follow the same direction as do the mountain ridges and the great lakes which fill up the valley of the interior. It would appear as if the whole island were in a fluid state when hills and mountains took this direction. The country is for the most part, geologically speaking, of primitive formation, granite, slate, old red sandstone; indeed I may describe it as a great skeleton poorly furnished with flesh. We have in the neighbourhood of Conception Bay inexhaustible quarries of sienite or red granite. The front of the Presentation Convent is built of this material, and though it has not been quarried, but only taken from the boulders on the surface, it is imperishable. In the same locality I have seen on the road and in the garden fences the most splendid blocks of oriental porphyry, that rare material that we see in Rome alone, of green serpentine and of cipollino. The traveller is astonished at the riches of the altars in the Roman churches constructed in what the Italians call *pictra dura*; the brilliancy of the colour and the high polish of the variegated material. Well, between this and Holyrood, at the head of Conception Bay, there exist materials enough to ornament all the churches and palaces of the world. It will, however, be long before these rich but intractable materials will be turned to any account.

Grey granite is found in great abundance in almost every locality of the island; slate of a superior quality in Trinity Bay, and I suppose a thousand other places if sought for; plastic clay and brick clay abound in our immediate neighbourhood. That most useful material, lime, is most abundant in the North and N.W.; the shore about Ferroll, in the straits of Belleisle, is almost entirely composed of it. It is plentiful also in Canada Bay, and lately deposits have been found in many other places,—I recently saw a quarry in the harbour of Burin in the side of a cliff. Codroy would furnish plaster

of paris for all the purposes of building and agriculture, and one of the most beautiful sea views I know of is the painted plaster cliffs near Codroy. In the Bay of Exploits, remarkable for its fine timber and scenery, fine-grained red sandstone, a beautiful material, for building, is found. It is said that good white marble is got in the Humber River. Coal is said (and, though I have not seen it, I have good reason to believe it) to exist in the upper part of Codroy River. The coarse building stone of St. John is a fine material for rough work, and the cathedral shows what can be done with the fine sandstone of Kelly Island.

The mineral resources of the country have not been as yet turned to much account. Rich copper ore is found in many places in Conception Bay, Placentia Bay, and White Bay. If the country were explored and capital invested in mining, under judicious management, there is no doubt but that the enterprise would be a great source of wealth for centuries, perhaps as great as the fishery is at present. But when we consider that only a small portion of the country has been hitherto explored, and only on the sea coast,—that whatever mining operations have been undertaken, except at La Manche, have been of the most superficial character, merely, I may say, surface works, and that it was very recently that any attention at all has been paid to mining, the sea being naturally considered by a maritime and fishing population as the only mine worth exploring,—a mine richer in reality than all the silver mines of Mexico, producing millions for the last three centuries, and inexhaustible,—we ought to rest satisfied with what has been done as an earnest of what will be done hereafter. I heard from Mr. Crocket, one of the superintendents at La Manche mines, that there was then as much lead discovered as a thousand men could not remove in twenty years. To a person like myself it appeared unaccountable that such a region of lead as I saw there should be left idle.

Silver is found in several of the lead specimens I have seen, though not in any great quantity in La Manche ore; and I have seen minute threads of native silver in stones taken from a well dug in the neighbourhood of the hospital of St. John. Time will tell whether, like the Lagenian mine, sung by Moore, these indications are only spangled over the surface, but I have not the least doubt that copper and lead are most abundant and will hereafter be an enormous source of wealth to the country. Of native gold, though the most generally distributed of all metals, I have not seen a specimen but one, with some microscopic particles glistening in the quartz. The person who had it told me he would call again and tell me the locality of his discovery, but never did so. It would be easy to try by amalgamation whether the spangles were gold or not. The gold matrix, as described by Humboldt and others, certainly exists, but the attention of the people has never been called to it.

It is remarkable that the fishermen in the lower part of Placentia Bay used to go to La Manche, take the pure galena, smelt it, and run jiggers out of it, and still the existence of the mine, though

almost every pebble on the shore had specks of lead in it, was either unknown or disregarded. This shows how much we require that the country should be explored by competent persons. Since the discovery, three or four years ago, many thousand pounds' worth of lead has been shipped off. Once, while I was there, six tons, valued at £15 a ton, were shipped off, and another time I saw several, perhaps a hundred, tons of dressed ore in barrels, prepared for exportation; and still so little knowledge did the people possess of the treasure existing in their midst, that for generations the only use made of it was to dig out a bit to make a jigger.

Very beautiful specimens of coral and pebbles are sometimes fished up by the French bankers; for the French, as we know, follow the bank fishery to a great extent, and those who have been in the habit of crossing the banks on their voyage to Europe must have been surprised to see the number of French ships riding at anchor by their hempen cables, better adapted than chains for the continual and short pitch of that sea, and the hardy fishermen passing along in their large boats, hauling their bultows—the most ruinous mode of fishing ever practised. The bank fishery, as you all know, is confined to the French and the Americans, as we cannot compete with their bounties, and there is not a single British ship on the banks. It is a dreary locality, the almost constant fog and drizzling rain, the doleful sound of the fog horn or the ships' guns calling their crews, the troubled ocean, the ships rolling almost under the waves, steadied by their main or trysails in addition to their moorings,—all these make an impression on a stranger the first time he passes the banks in summer which he never after forgets.

From this also most persons receive an erroneous idea of the climate of the island, which they imagine to be the same as that on the banks, and coming themselves from the cloudy though genial atmosphere of England or Ireland, cannot believe that we are all the while enjoying a clear, bright sky, beautiful as that of Italy, and breathing an air dry and pure, never felt in the humid region of the Gulf Stream. "What an awful climate," they will say, "you have in Newfoundland,—how can you live there without sun in a continual fog?" "Have you been there?" you ask them. "No," they say, "but we have crossed the Banks of Newfoundland." How surprised they are then when you tell them that for ten months at least in the year all the fog and damp of the banks goes over to their side, and descends in rain there with the south-westerly winds, while we never have the benefit of it unless when what we call the out winds blow. In fact, the geography of America is very little known even by intelligent writers at home, and the mistakes made in our leading periodicals are frequently very amusing. I received a letter from a most intelligent friend of mine some time since, in which he speaks of the hyperborean region of Newfoundland: in my reply, I dated my letter from St. John, N. lat. 47° 30', and directed it to Mr. So-and-so, N. lat. 52°.

The summer here is remarkable for fog, on the southern and south-

western coast especially, not on the northern or eastern side; the reason of this is the more northerly set of the Gulf Stream in summer. During the winter months the northern or arctic current is stronger and pushes the equatorial current to the South, consequently, as we have very little intermingling of warm water with our gelid sea, we have little or no fog. But in summer the water is not so cold: the Gulf Stream pushes its warm current over the banks, throws a supply to the South and S.W. of the island, towards St. Mary, Placentia, and Fortune Bays, and Burgeo and the harbours on the southern shore by Rameo. St. Peter Banks and all the shallow seas about begin to send off steam. The Bay of Fundy is clouded, the steamers are frequently a day waiting to grope their way into Halifax Harbour; and the dense fog, as far North as St. John, is seen like a great wall at sea, though in general it does not penetrate far inland, as the people say "the shore eats up the fog."

The Gulf Stream, then, has to answer for the fogs of Newfoundland as well as for the humidity of Ireland, and though it does not bathe our shores, still a large portion of heat is thrown off by it, which accounts for the mildness of our climate in comparison with that of the neighbouring continent. We never have the thermometer down to zero, unless once or twice a year, and then only for a few hours and for a few degrees—three, four, or perhaps ten, while we hear of the temperature of ten and twenty below zero in Canada and New Brunswick, and this life-destroying cold continuing for days, perhaps weeks. Then see another effect of this, for Canadians and other North Americans of the same latitude are obliged to keep up hot stoves almost continually in their houses, while we have open fire-places, or at most Franklins, our children, I may say, as lightly clad as in summer, spend a large portion of their time in the open air; and thus while our neighbours have the sallow hue of confinement tinging their cheeks, and their children look comparatively pale and delicate, our youngsters are blooming with the rosy hue of health, developing their energies by air and exercise and preparing themselves for the battle of life hereafter, either as hardy mariners or healthy matrons—the blooming mothers of a powerful race.

Thus the Gulf Stream, which clouds our skies, paints the cheek, invigorates the population, pours out to us in its return from the northern basin the Arctic Current, which enriches our seas with fish, and enables us to furnish this luxurious and necessary article of food to the languid intertropical nations, for no food is so agreeable to the inhabitants of warm countries, whose diet is mostly vegetable, as the dried cod-fish of Newfoundland.

I may remark that by the climate table furnished me by Mr. De-laney, I find that the highest temperature was 96°, on the 3rd July; —8° on the 3rd of March; and the mean temperature of the year (1859) 44°; mean max. pres. of barometer, 29.74 in.; rain, 63.920 for the year; max. quan. in twenty-four hours, 2.098 in. Wind, N.N.W. and W.N.W., 200 days; N.E., 25 days; West and W.S.W., 38 days; S.S.W. and S.E., 102 days. Rain fell on 110; snow, 54

days; thunder and lightning 5 days. We have all the advantages of an insular climate, a mild temperature,—with its disadvantage, uncertain weather. I may remark likewise what Abbey Raynal has recorded already, that the climate of Newfoundland is considered the most invigorating and salubrious in the world, and that we have no indigenous disease.

It follows naturally that I should, in connection with our climate, speak of our limited agriculture. Besides the shallow nature of our soil in most parts of the island, we have, on account of the set of the arctic current carrying its floating ice and icebergs along our shores, a late and uncertain spring; harbage will not, at least within the influence of the cold winds, spring up as soon as our latitude would entitle us to; we may perhaps be three weeks late, but then see the compensation we reap from those fields of ice, a crop which I suppose altogether realizes a million sterling in the European markets,—I mean the oil and skins of the seal: a crop which we do not sow, but the reaping of which encourages shipbuilding, rears up the hardiest mariners in the world, and throws hundreds of thousands of pounds into circulation at a season which in all other northern countries is one of comparative idleness. The prosecution of the seal fishery does not interfere with the summer cod fishery, the winter herring fishery, or farming operations. Thus we have a great blessing bestowed on us by Divine Providence, a wonderful source of wealth coming in just at the time that, but for it, we should have nothing else to do. For this we may thank the great northern current, which retards our spring but sends us a rich harvest, and one which no government bounty or encouragement could create elsewhere.

A doubt has been expressed by many whether the seal fishery will last; they fear that the continual destruction of both young and old seals will exterminate the breed and destroy the fishery, as was the case with the Greenland whale fishery. I cannot agree in this opinion, and I will state my reasons. It is true the seal, *phoca cristata* or *barbata*, is one of the *mammalia*, bringing forth but one at a time, and that annually it cannot multiply like the cod-fish with two millions of eggs. If we could get at the seals, then, I have no doubt but that in a few years, like the Greenland whale, they would be almost all destroyed.

To return, however, to our agricultural capabilities. First, we have the means of raising on our wild pastures millions of that most useful animal to man—the sheep. On the southern and western shores, indeed everywhere in the island, I have seen the finest sheep-walks; and, what is better, the droppings of sheep in this country induce a most luxuriant crop of white clover, and prevent the spread of bog plants. If sheep were encouraged we should have fresh meat in abundance, and their fleeces would furnish warm clothing in the winter. All garden vegetables, cabbages, carrots, turnips, salads, &c., are brought to the highest perfection, and the climate appears especially adapted to impart succulency to them. The potato, you all know, before the rot was of the finest quality. It is now nearly

recovered. Cereal crops demand a special notice. Wheat will ripen very well, especially if the proper variety of seed adapted for a northern country be procured; but as long as we have the great grain country of the United States at our doors no one will take much trouble about such an unprofitable crop. I have never seen finer barley than the growth of Newfoundland, and all persons who have bought, as I have done, Newfoundland oats, at nearly double the price of the husky grain imported here, will find that he has gained by his purchase. Hops are most luxuriant, and so are strawberries, currants, gooseberries, cherries, and many other species of fruit. The hawthorn flourishes here when planted, and I have seen as fine hedges of it laden with haws here as in the home country; and I mention this as a proof of the comparative mildness of our climate, for I find in Russia, as far South as Moscow, it is a hot-house plant.

My estimate, then, of the agricultural capabilities of Newfoundland, comparing it with what I have seen in the North of Europe, is that if we had a large agricultural population, we could support them in comfort, and that as population increases we must attend more to the land, and then more general wealth and comfort will be diffused a hundredfold than now, when our population is, I may say, wholly maritime, and we depend almost altogether on other countries for our food. The soil in general is thin but kind, easily cleared, and, besides the legitimate manure of the farm-yard, can always be enriched near the sea by searack and fish offal. The climate is comparatively mild, and all we want are hands and industry. The fishery, however, of Newfoundland is the great and grand industry of the country.

Allow me to say a few words of my experience of the people. I have found them, in all parts of the island, hospitable, generous, and obliging; Catholics and Protestants live together in the greatest harmony, and it is only in *print* that we find anything, except on extraordinary occasions, like disunion among them. It is a pleasing reflection that, though we are not immaculate and rum sometimes excites to evil, still, out of a population of over 130,000, we have rarely more than eight or ten prisoners in jail, and grievous crimes are happily most rare,—capital offences scarcely heard of.

Newfoundland Morning Post.

TALIEN BAY, CHINA.

[The following masterly description of the bay and its adjacent country, that forms the rendezvous of our China squadron, from the correspondent of the *Daily News*, is well worth preserving in our pages as an enduring picture of Chinese scenery.]

Talien-hwan Bay, or more properly Talien Bay (for *hwan* in Chinese means bay), may be described as a large inlet of the sea, mea-

suring about eight to ten miles from North to South, and twelve to fourteen from East to West. It is open to the sea to the S.E.; the entrance is twelve or thirteen miles across, and three small islets, called the San-Shan-tau Islands, stand in the entrance, about equidistant from each shore, and form a natural breakwater against the force of the sea when rolling up into the bay during S.E. winds. The S.E. and N.W. shores of the bay are steep and rocky, and in some parts perpendicular cliffs rise up from the water. On the West side and in the N.E. corner the land slopes gradually to the sea, and forms a shelving beach. The shores of the bay are very much indented, running into a number of subordinate bays or harbours, the principal of which are Victoria Bay, on the S.W., Hand Bay, on the N.E., Bustard Cove, in the centre of the eastern shore, and Odin Bay, a few miles to the South of the former.

At all these places the anchorage and landing is good, and advantage has been taken of this to distribute the forces into several camps at these different localities, by which arrangement crowding of the transports in one spot has been avoided, and a sufficient supply of water procured with greater facility. The troops are living in bell tents, and the whole force is remarkably healthy. The commander-in-chief and his staff remain on board their ships in Victoria Harbour; a more convenient arrangement for communicating with the different divisions and transmitting orders than could be made if head-quarters were on shore. Every morning a small steamer leaves Victoria Harbour at daylight, and performs the tour of the bay, calling at each of the camps on the other side to receive and deliver the daily mail and carry the admiral's orders to the fleet. The transports belonging to each division are anchored opposite their respective camps, ready to receive the regiments on board when the time for re-embarkation arrives.

It is no small subject for congratulation that the whole of this enormous fleet, numbering nearly 200 vessels, arrived in Talien Bay and landed the army on its shores without accident or mishap of any kind, with the exception of the loss of the *Assistance*, the commander and master of which were reprimanded by court-martial.

If the Chinese mean fighting delay must have been very serviceable to them, giving them time to increase their means of opposition, as they must now be convinced of our serious intentions. In other respects it has not been without benefit to ourselves, as it has afforded the opportunity of discovering defects and supplying deficiencies, where any existed, in the equipment of the forces, and the change from shipboard to shore has been most beneficial for the horses of the cavalry and artillery.

Many letters that should have been received by the *Malabar* are missing, but this may be owing to the eccentricities of the Hong Kong post-office, popularly believed here to be the very worst in the world. As letters that should have gone to Chusan, Shanghai, Canton, and Singapore have been sent on here, it is not unreasonable to conclude that our missing despatches have gone to one or other of these places.

And those whom Providence has largely endowed with hope look forward with expectation to their "turning up" at some future time.

Talien Bay is formed by two long peninsulas that stretch out like horns from the mainland, and converge towards the entrance of the harbour. The breadth of each of these peninsulas may be on an average four or five miles. The centre reach is occupied by a range of rocky hills; the formation appears to be chiefly clay slate. About the summit of some of the hills there are masses of quartz rock, and some of our more enterprising explorers say they have discovered gold. A specimen which was shown to me does not appear very hopeful, however, although with the aid of a microscope, a strong light, and a powerful imagination, some faintly glimmering specks on the quartz were discernible, which possibly were gold in infinitesimal quantities. If further researches do not yield a more favourable proportion of gold to quartz, the Talien diggings will not prove remunerative, nor help much to pay the expences of the third Chinese war.

On the West side of the bay the inhabitants are altogether dependent upon wells for water, but on the eastern side there are several streams, especially in the neighbourhood of Odin Bay, of which the water is excellent and abundant. The country is much intersected by deep ravines and water courses, formed by torrents from the hills during rain, or possibly melting snow. Whichever it be, it is clear that at times the water must rush down there in great volume and with considerable force. Some of these chasms are upwards of 100 feet in depth, and of great width. The country around the base of the hills is an undulating plain, descending gradually in most directions to the sea; but in some parts it continues seaward at a considerable elevation, and terminates in an abrupt cliff, going sheer down into the water. In many of these cliffs are caves, worn by the action of the waves, tenanted by the common rock pigeon, while innumerable jackdaws build their nests and rear their young on the projections of the rocks on the face of the steep. The plains are all cultivated. In whatever direction you go, and looking from the tops of the mountains over a most extended view, you see every field from the sea up to the hills, and sometimes ascending their sides to a considerable height, under cultivation, and at this time of the year covered with crops. Bearded wheat waving its yellow ripening ears in the wind, green fields of maize and millet, and a description of bean which, from its constant recurrence in every direction, must be a popular article of food,—these appear to be the chief productions.

The country is studded with villages, some of them large and populous, others mere hamlets, or single farm steadings, but all well built of stone, with enclosed yards and outhouses, and with an air of substantial comfort and responsibility about them for which I was not prepared. The crops are beautifully clean; the wheat, instead of being sown broadcast, appears to be regularly planted, with a certain interval between each plant; the furrows are straight and regular, and the total absence of weeds would drive an English farmer into fits. How they get rid of them I know not. Either "ill weeds do

not thrive apace" in this favoured clime, or the inhabitants must devote their lives to tearing them up by the roots and carefully concealing or destroying them, for I have seen no vestiges, either living or dead, of their baleful presence. Bullocks, mules, and ponies are used for their agricultural operations, and drawing the carts which are generally employed for transport. Those I have seen are very rude affairs,—what you could imagine would be produced by a cross between a primitive wheelbarrow and the worst Indian hockery, a heavy, cumbrous too-shafted arrangement, as aggravating to the quadruped that draws as to the biped that drives it. Some of the villages are extremely prettily situated. You occasionally come upon one on the sloping sides of the ravine, nestling amongst fine willow trees, each house with its little enclosed garden, in which you may often see the bright flowers of the hollyhock and the dark green foliage of the pear and plum tree.

The inhabitants, as far as I have seen them, are most civil and obliging. The men generally come up and "chin, chin," an operation performed by joining the thumbs of both hands, closing the fingers, and shaking the two fists thus held together up and down in front of the chest. The women hide themselves, and the children, perplexed between a desire to flee in terror and curiosity to have a good look at the white man, frequently remain fixed to the spot, staring as well as they can out of their squinting slit-like eyes. The villagers are strong athletic looking fellows, taller than the Hong Kong Chinamen, and not more handsome; indeed if I say they are, as a rule, extremely plain looking people, I shall not be far from the truth. I'm afraid, too, that they are extremely dirty. They respond with alacrity to signs for water and fire, and accept and smoke our cheroots with avidity. The water they draw up from their small deep wells is so cold and so clear and so delicious on a hot day that one almost feels repaid for coming so far, by having tasted and enjoyed it.

Some of the country walks are so like home, that at times it is difficult to realise we are 7,000 miles in a straight line from dear old England. The fields of waving yellow corn, from which as you pass along the lark springs up and soars away into the blue sky, pouring down his rejoicing melody; the clear sparkling streams with sedgy banks, where you see the gay dragon-fly flitting on the surface, and the grotesque tadpole waggling in the shallows of the water; the notes of the cuckoo in the valley; the flight of the magpie across your path; the stunted oaks and fir trees on the hill side, the thistles and dog-roses and wild thyme, and above all, the familiar dandelion, are all recognised and greeted as the well known and dearly loved acquaintances and companions of other days, and fill the heart with home memories and associations. And then the climate. To those especially who have been accustomed to the July suns of India, it is indescribably refreshing to be able to spend the whole day in walking or riding about the hills and over the plains without being oppressed by the heat, or reminded by a choking sensation in your throat and a

swimming in your brain that your breathing an atmosphere of apoplexy and *coup de soleil*.

The sea breezes blow here all day, cool and invigorating, and the whole frame is sensible of an exhilarating influence. There is, however, a great absence of animal life in the country. The birds are few, even crows, those citizens of the world, are absent; and the beasts are none—if we except a few lizards and one or two hares that have been seen. Of domestic animals there is a tolerable supply. Bullocks, mules, donkeys, goats and sheep, pigs, dogs, and cats, and fowls, are more or less abundant. On our first arrival the people were very shy; but, encouraged by not being molested, by the proclamation issued by the admiral and commander-in-chief, and above all by the regular payment they get for everything they sell, they are beginning to overcome their coyness and to bring supplies to our markets, which have been established in every camp. At least this is the case on the East side of the bay, where daily purchases are now made to a considerable extent of beef, mutton, poultry, pigs, and eggs. The natives in the villages on the West side, near Victoria Bay, are either of more sullen temperament or stand in greater awe of the mandarins, who, they assert, have prohibited all commerce with the “foreign devils” on pain of decapitation.

This country is not a part of the kingdom of Corea, but is a portion of the Chinese province of Laou-tung, and the inhabitants are the result of a mixture of colonists from the province of Shan-tung, on the opposite coast of the gulf of Pe-chi-lee, and Coreans, the aborigines of this country. The province is governed by mandarins appointed from Peking, and is said to be vigorously administered. North of Hand Bay, on the other side of the peninsula, and on the shore of the gulf of Pe-chi-lee, is a considerable town called Kin-choo. It is walled and has guns mounted at the gates,—is the residence of a mandarin of some consequence, and is said to contain 15,000 inhabitants. As it is not more than seven or eight miles from our camp at Hand Bay, it might perhaps be a good situation for a depot, if it is decided to have one in this neighbourhood. It would have the advantage of being easily defended, and from the number of its inhabitants must always be provided with a considerable supply of provisions. If the bay in which it is situated has good anchorage and deep water, ships coming from the Pei-ho could go up to the town without coming into Talien Bay at all. And this would be no small advantage in winter, when the waters round the shores of this bay are said to be frozen. We hear that there is a small force of “Braves” stationed in this town, and an officer who reconnoitred it a few days ago came upon a small picket of soldiers of some kind or other, a mile or so from the walls. They made a rapid retreat, led in their flight by what appeared to be their commandant. There is a talk at present of establishing a depot at Odin Bay, and leaving a force for its protection; and some intrenchments are begun there already with that view, I understand; but it does not appear certain

that anything has yet been finally decided upon. Our other depots are at Hong Kong, Chusan, and Shanghai.

The idea of a convalescent station at Poo-too has been abandoned, and Chusan is retained. Poo-too, though to all appearance a most charming place, had not been tried, and might have been found unhealthy; and Chusan was already well known, and possesses advantages in the way of furnishing supplies which Poo-too has not. It was at one time in contemplation to have a depot at Chefoo, but the anchorage is not favourably reported of, and it does not appear to offer any great inducements in other respects. It is occupied by the French, and report says they find it very hot, and have not been particularly successful in obtaining fresh provisions.

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

Holloa, Sec! Heard the news from the North?

No! What news? replied the Secretary, always ready for the first packet.

Why, continued Arion, the Pacific's all in a blaze about it. They have got the Yankees to the North of us all, and as for Parry, he is done out and out!

Tell that to the marines, Arion, your're always gammoning,—that, my boy, *wont wash!*

Won't it, Mr. Secretary, just try, here it is, just received in a special despatch. Read it,—perhaps it will do for the Club.

The Club, Sir,—the Club! *Infra dig.*, we only take facts, Master Slyboots.

The Secretary, with a serious look, reads as they continue on their way to the Club:—

Extract from log of the ship *Flying Typhoon*. Spun yarn, master, last from the North Pole, having on board 000 barrels sperm, 000 whale oil, and considerably less bone.

Oct. 20th.—The newly electric-plated frigate came in collision with one of the ventilating towers of the Behring Straits Submarine Railroad, and was so seriously damaged that she sunk immediately in 100 fathoms water.

Nov. 1st.—Lat. 40° 0' N., long. 170° W., spoke the balloon *Arctic*, of New York and Peking Line; heard that the island of Nantucket, which had suddenly foundered, had again appeared, very little damaged by its submersion; was to be repaired, and soon be in as good condition as ever.

Nov. 2nd.—Spoke Chinese junk *Ha Chin*, Captain Joss McFunn, twenty-one days from Shanghai, bound to San Francisco. Reports the island of Chusan still aground, and no hopes of getting it afloat. The insurance company refuse to pay the insurance, alleging that she

was deficient in spars—especially in chopsticks—and badly manned, having only a hand and a half to a rope. The Mandarin of the Pewter Button refuses any further advances, and the fish-women of the island are in open revolt; the prospect is that the empire will again be plunged into the horrors of uncivil war. Should this be the case an unprecedented rise in the price of tea and putty will be the consequence, and the small quantity of these articles now in the market makes the prospect serious. It is hoped that some Christian Government will interfere before it is too late.

Nov. 30th.—Spoke the American whaleship *Bangup*, Bunker, of New Bedford, in lat. $89^{\circ} 30'$, with about the same oil and bone that we have. The *Bangup* had seen several whales this season near the pole, and had been very fortunate, not getting two, and coming very near another, which she didn't get. Captain Bunker intended to cruise till December, and then go home through Davis Straits.

The *Flying Typhoon*, being rigged with one of Cracker and Co.'s Patent Ice Breakers, succeeded in forcing her way through the ice, and, entering the open sea in July, got near a whale on the 15th, in lat. $84^{\circ} 10' N.$, long. $110^{\circ} W.$ The next day saw another, and when within a mile fired at him with one of Donner and Blitzer's new guns, but the gunner miscalculating the distance, the bomb passed over the whale and unfortunately took effect upon a Greenland schooner, sinking her on the spot, with all hands on board. No blame attached to the gunner, as the mirage made the distance appear greater than it really was.

Now, friend Arion, you must surely have heard of the new island in the Pacific, that there is one reported on the coast of Chili is no mistake, whether it keeps its place above water or not,—and of this we shall perhaps hear something at the Club.*

Do you mean the mountain top? Oh, aye.

The Chairman, in opening their proceedings, stated that an event had just occurred which placed before them the name of the first lady of the realm. He thought that as that had not yet appeared in their minutes the opportunity should not be lost of recording their loyalty to Queen Victoria. He alluded to the embarkation of her Majesty for the continent at Gravesend, on Saturday, the 22nd of September, and would annex to that event the following remarks on Queen Victoria:—

“What a contrast is visible between the semi-monastic seclusion in which her predecessors kept themselves, and the frank, cheerful, good-tempered sociability of Queen Victoria! Where has not her Majesty been? and what has not she done? She has visited every province

* The Secretary will observe, and we say it with all deference to the Club, that, anxious as we are to preserve our record of their useful proceedings, the recurrence of these introductory notabilia must be rescinded while those proceedings extend to such lengths as they have done. It will be seen by a chart in our vol for 1834 that Parry went as far as $83^{\circ} N.$, and is not yet surpassed.—ED.

and well nigh every considerable town in her kingdom. She has been twice to Ireland. She has an autumnal residence in the remote highlands of Scotland. She has been to Germany. She is the first sovereign of England who, while reigning, has visited Paris, and has been able to contrast the splendour of the Louvre and Versailles with the domestic comfort of Windsor and St. James's. At home, the kindly and graceful activity of the royal lady has thrown the old progresses of Queen Elizabeth into the shade. The principal nobility of England have had the distinction of receiving her Majesty in their ancestral halls. The great manufacturing towns have been honoured by her presence. Whether to inaugurate exhibitions, to pass her soldiers or her sailors, or her volunteers, in review, to preside over the amusements of her tenantry and workpeople, or to gaze upon our national sport at Ascot, the Queen has ever been found ready to mingle with her people, to receive their congratulations, to enjoy a homage which is affectionate without being slavish."

Having thus acquitted himself of what the Club would consider a first duty they would now attend to the remarks of their friend Albert on other subjects.

Albert then said,—

Among the occasional papers of our Club it is stated that questions as to the defects of the Merchant Shipping Act were referred to the Committee of the House of Commons then sitting upon the subject of merchant shipping generally, and that the result has been merely a brief allusion in the report to the subject of discipline, which runs thus:—

"The various minute regulations affecting discipline, offences, recoveries and applications of fines and penalties, are so mixed up with other considerations in connection with the criminal law of the country, and with its general fiscal policy, that your committee need only especially recommend their consideration to the legal adviser of the Board of Trade, in preparing any future revision of the present law."

A legal adviser will no doubt be a very proper person to see that the laws are so framed that their intentions are unmistakeable. But unless an independent committee of nautical men are employed to revise and amend the present inefficient laws, it is useless to expect any beneficial result. The parliamentary committee, it appears, was composed of seventeen members, only one of whom had belonged to the maritime profession. It was, therefore, not to be expected that anything relating to the details of the management of ships could have been gone into. Still, there were in the committee some very able men, who were acquainted with the causes of the profit or loss on merchant ships, and they have certainly brought out a complete exposure of the sacrifices we have made for the benefit of foreign shipping, without the slightest advantage being derived by ours in return! It has been shown by their evidence that shipowners of moderate capital have been reduced to bankruptcy, and that no one but large capitalists can go on,—for these men are able to force on a monopoly of particular

trades. Such has been the fatal injury done to the best interests of this country by following the favourite theories of men who have merely the powers of oratory without the slightest knowledge or experience of maritime affairs.

Let me allude to the following sentences from the report in proof of the correctness of what I have stated. In page 9 we read,—

“Your committee have had evidence placed before them showing how much the repeal of the Navigation Laws has augmented the foreign shipping frequenting our ports, as, indeed, might naturally be expected, for foreign ships were excluded altogether from many branches of our trade previous to 1849. It appears also that, although within the last ten years British shipping has increased absolutely to a much greater extent than during any corresponding antecedent period, its comparative increase has not kept pace with that of the foreign shipping employed in our home trade and in that of our colonies and possessions, and some remarkable instances are adduced of the great augmentation of foreign shipping frequenting our ports.”

Again, in page 10, on reciprocity,—

“The question, however, of the expediency of requiring foreign powers having colonial possessions to reciprocate every advantage to our navigation which Great Britain has accorded unconditionally to them, is one which demands peculiar attention. The British shipowners who carry on the present restricted and scarcely tolerated intercourse with the colonies of France, Spain, and Portugal, find their ships placed at an immense disadvantage in the unequal competition which they have to encounter; while they have the mortification to see foreign ships resort to our own colonies and secure much higher freights than our own ships when chartered to a port in Europe.

“It further appears that in all our colonies and possessions French, Spanish, and Portuguese vessels can generally procure a freight greatly in excess of that obtained by British ships, as the foreign national flag secures, upon arrival at a port of call in England, the advantage of our market, with the option of sending on the cargo to the respective countries in Europe to which the national flag belongs, but from which markets such produce is now excluded by heavy differential duties if carried in British ships. In this respect it is perfectly true that, so far as our shipowners are concerned, we have *given all and obtained nothing in return*. But while those nations act unjustly towards us, they are, by adhering to this restrictive policy, doing an immense amount of injury to their own people, as they enhance the price of all they require to import for their own use, and retard their commerce with other countries to an incalculable extent.”

“The rigorous navigation laws and high differential duties of Spain work precisely analogous results in the intercourse of British ships with the Spanish colonies of Cuba, Porto Rico, and the Phillipine Islands. As regards the direct trade with Spain, the differential import duties and the various absurd fiscal regulations effectually obstruct our navigation with that country, and encourage a contraband commerce in every part of the peninsula; and these vexatious restrictions, still

rigorously enforced by the protective policy of Spain and Portugal, while deeply to be deprecated as tending to promote illicit trade, are injurious to this country in another form. It appears that a considerable amount of capital is invested by British subjects in the ships of both these countries.

“In Liverpool the trade is openly carried on, and the attention of your Committee has been directed to the formation of a company under the Portuguese flag, the promoters of which announce by public advertisement that they have incorporated for the purpose of giving their vessels special advantages over those of other nations. They invite support upon the grounds that their ships, sailing under the Portuguese flag, will be able to command a very large share of the passenger traffic existing between Great Britain, Portugal, and Brazil, and that by reason of having entered into a contract with her Majesty’s Postmaster-General on highly favourable terms, they will be exempted from the liabilities of the Passenger Act.

“Your committee consider that these investments of British capital in foreign shipping, which are made under the allurements of advantages resulting from special privileges, is a feature in the present state of merchant shipping deserving serious attention as deeply affecting our national interests. Exposed to greater liabilities and enjoying fewer advantages than a foreign European national flag, the British shipowner is now tempted to make over his property to the flag of a foreign state; by which proceeding the maritime power of Great Britain is *pro tanto* diminished.”

Now these assertions appear in the Report from the Select Committee on Merchant Shipping (printed August 7th, 1860), and form abundance of matter for the grave consideration of that country whose boast has hitherto been the largest maritime fleet in the world, but which such things are well calculated to reduce. He would conclude for the present by requesting that a general view of the report to which he had alluded, that he had found in that excellent weekly journal, *Mitchell’s Maritime Register*, might be recorded among their minutes, —to which proposal the Club generally assented.

The report commences with a reference to the events which immediately preceded the repeal of the navigation laws, and more especially to the correspondence which took place at that time between the British and American Governments relative to the opening of the coasting trade. This correspondence terminated in the refusal of the American Government to entertain our proposal. Notwithstanding, in 1849, we threw open our own trade to the shipping of all nations; and four years subsequently we adopted the same policy with regard to our coasting trade, the only reservation being the clauses subsequently embodied in the Customs Consolidation Act, empowering the crown to retaliate on the shipping of non-reciprocating states. A sufficient period has elapsed to test the disposition of every maritime state. We give the result in the language of the report:—

“Having thus opened our ports to the unrestricted competition of

all nations, it appears that although many countries have, in return, thrown open their ports to English shipping, there are others that have hitherto refused to reciprocate. France, Spain, Portugal, and Belgium belong to the latter class; and the United States decline to allow British ships to participate in their extensive coasting trade, on both the Atlantic and Pacific seaboard."

And it is further shown that, notwithstanding the unreserved opening of our ports to the foreigner, there are still sixteen countries, including France, Spain, and the United States, where the coasting trade is still withheld from British ships, and reserved to the national flag. All the witnesses concur in regarding the laws regulating our intercourse with non-reciprocating states as "most unsatisfactory," and view with the "greatest jealousy" the restrictions imposed upon our shipping by foreign states. To this cause is mainly referrible the fact that in the home, colonial, and foreign trades the rates of freights have been for a long time "wholly unremunerative." This fact is attested by witnesses engaged largely in the trades in question:—"The British shipowners who carry on the present restricted and scarcely tolerated intercourse with the colonies of France, Spain, and Portugal, find their ships placed at an immense disadvantage in the unequal competition which they have to encounter, while they have the mortification to see foreign ships resort to our own colonies, and secure higher freights than our own ships when chartered to a port in Europe."

The injustice thus inflicted, and its consequences, are neither denied nor palliated in the report, while the persistent policy pursued by the United States in excluding us from their coasting trade is stigmatised by the Committee as producing, in their minds, a sense of "deep disappointment;" and while they are not disposed to recommend a resort to a policy of retaliation, they do not hesitate to express their opinion of the conduct of successive governments in reference to the question.

The refusal of certain nations to reciprocate, and the unfair competition to which the British shipowner has been thus condemned, is but one, though the chief, of the causes of the condition of the shipping interest into which it has been the duty of the Committee to inquire. Events have occurred since 1849 which have contributed to create additional embarrassment, by inducing a supply of tonnage considerably in excess of the demand. The gold discoveries and the Russian war are specially referred to as having, together with the unconditional opening of our ports here and in the colonies, resulted in a "very serious depreciation" in the market value of British as well as foreign shipping; while, in addition to the extraordinary difficulties under which the British shipowner has been placed, by the operation of these combined causes, he has been, and continues to be, subjected to a system of burdens and restrictions imposed by the legislature of his own country, which fill up the measure of the injustice under which his energies have been all but paralysed. These impositions the Committee, after a full investigation, have pronounced to be unequal, onerous, vexatious, and anomalous—calculated to effect no rational

object, but simply to "interfere with the shipowner in the prosecution of his business."

That portion of International Maritime Law comprehended under the title of Belligerent Rights at Sea, has claimed, as it deserved to do, the most serious attention. By her participation in the celebrated Declaration of Paris of 1856, Great Britain finally surrendered the right of search, and formally adopted, once for all, the principle that free ships make free goods. To this Declaration, for reasons assigned at length by the Cabinet of Washington, America is no party. The result has been, that "upon a mere rumour of war in Europe, in which it might be apprehended that Great Britain might be involved, American and other neutral ships received a decided preference in being selected to carry produce from distant parts of the world to ports in Europe, whereby, even in a period of peace, British ship-owners were seriously prejudiced." There can be no doubt of the gravity of this question; and they who have considered the evidence in support of this statement will agree with the Committee that England "must either secure the general consent of nations to establish the immunity of merchant ships and their cargoes from the depredations of both privateers and armed national cruisers during hostilities, or we must revert, if we are allowed, to the resolute maintenance of our ancient rights."

As regards the liability of shipowners, in cases of loss of life or personal injury, as fixed by the Merchant Shipping Act, it has been found that the protection against excessive damages, which it was the intention of the legislature to supply, has not been effectual. The value of the ship and freight is taken at £15 per registered ton as a *minimum*, and the statutory damages at £30. The 511th section, however, leaves it open to any dissatisfied person to sue on his own account, and the question of damages is then reserved for a jury. There is, besides, the additional liability to which the shipowner is exposed by the operation of the municipal laws of foreign states and of our own possessions abroad. The question of damages, it is obvious, becomes further embarrassed in cases of collision where the offending ship has gone down, or where both ships have perished. Societies have been formed for the purpose of protecting the shipowner from the risks inseparable from the employment of his ships in the passenger line, on the principle of mutual insurance. Such risks, however, are not considered to be legally insurable. The Committee recommend, therefore—1. That a clause be prepared, similar in principle to the 55th section of the Passenger Act of 1855, declaring—with reference to the liabilities recited in the 503rd and 504th sections of the Merchant Shipping Act,—“that no policy of insurance shall be deemed invalid by reason of the nature of the risk;” and 2. That an *absolute sum of £15 per gross registered ton*, whatever may be the actual value, shall be established as the definite valuation of the ship, and that all consideration of freight shall be “excluded.” In connection with this, also, the constitution of Courts of Inquiry into wrecks and casualties has not escaped the notice of the Committee.

The legislation which has armed the Board of Trade with the powers of a Court with criminal jurisdiction, is characterised as "very exceptional," and the possibility of the official influence of a powerful public Board being brought to bear unduly against a person implicated, is regarded as a serious compromise of the due administration of justice; but we do not find that the Committee have proposed the transfer of the powers possessed by the Board of Trade to any other more competent jurisdiction.

The admeasurement of ships and allowance to steam-vessels have been the subject of complaint on the part of various witnesses. The Committee, however, believe the law in this respect to be based, as a whole, on equitable principles, and to have answered "exceedingly well" in practice. They therefore suggest that any needful alterations should be left to the discretion of the Executive. As regards the various "minute regulations affecting discipline, offences, recoveries, and applications of fines and penalties," enforced by the Merchant Shipping Act, in respect to ships' crews, the Committee have found them so mixed up with considerations in connection with the criminal law and our general fiscal policy, that they simply recommend that any future revision of the existing law should be referred to the legal adviser of the Board of Trade. The "Rule of the Road," as provided for by the 296th section of the Act of 1854, is considered in its operation "most unsatisfactory," and the Committee suggest that some understanding should, without delay, be arrived at with foreign Powers with a view to the establishing of an international system of lights at sea.

The evils attending the permission granted by the 214th section of the Act enabling seamen to leave their ships abroad, and join those of her Majesty, have already been the subject of comment. The Committee have suggested that the exercise of the power possessed in this regard by officers of H.M.'s ships should be limited to "times and places where there is actual war, and that even in this case the officers of H.M.'s ships should be required to communicate with the master of the merchant ship, with a view to see what arrangements can be made so as least to distress the merchant ship, before communicating with any of the crew, or encouraging them to break their engagement by volunteering for H.M.'s service."

The evidence adduced in regard to Shipping Offices and their operation has not led to any condemnation of those institutions—further than this, that they do not provide the machinery requisite for bringing sailors under the cognizance of official authority. It has been suggested, on the one hand, that the officer at the principal ports should have the power of prosecuting deserters to conviction; and, on the other, that some organic measures should be laid before Parliament for bringing "the whole of the seamen and seafaring population of the United Kingdom under some general and comprehensive regulation, whereby a system of registry and limited service might be established."

The Committee, in dealing with the question of the Light Dues,

and their incidence as a tax upon the shipowners of the empire, have had to consider simply whether it should continue to rest upon shipping or become a charge upon the revenues of the State. They have collected from the evidence that "whilst the tax for the maintenance of lights is easily borne by shipowners whose vessels are engaged in the long-voyage trade, the owners of small vessels, on the other hand, suffer severely from the onerous character of the charge, and steamship proprietors, whose vessels make repeated voyages, complain that the light dues bear most unequally upon their property." They refer, moreover, to the recorded opinion of the present Premier, expressed in a correspondence with the American minister in 1851, in support of the views of the Lights Committee of 1845, who recommended "that all expenses for the erection and maintenance of lighthouses, floating lights, buoys, and beacons on the coasts of the United Kingdom be henceforth defrayed out of the public revenue," and that the debt incurred by the Trinity House in purchasing the rights of individuals for leases and possessions of lighthouses ought to be assumed by the Government. They further point to the fact that H.M.'s ships, revenue and fishing vessels, yachts and ferry boats, are exempt from the payment of light dues; that the cost of bringing our system of coast lights to their present condition is estimated at £4,000,000, every shilling of which has been raised by a tax upon shipping; and that any future charge upon the Consolidated Fund for the maintenance of these lights would not exceed the interest upon this large sum. The Committee, therefore, in view of all these facts and considerations, come to the conclusion that the "lighting of our shores is a high imperial duty, which we owe not merely to ourselves but to strangers whom we invite to trade with us," and they recommend "that the nation generally should pay the cost of the maintenance of the lights," suggesting at the same time that "any law for the establishment of a new system should be framed in such a manner as to authorise some well considered pre-conditional arrangement, in order to secure from foreign powers equal privileges and exemptions for British shipping as regards light dues, or other advantages which might be conceded to foreign shipping in our ports."

On the subject of pilotage, and more especially on the question of a compulsory or voluntary system of pilotage, the evidence has been various and conflicting. Shipowners in the long voyage trade are, for the most part, satisfied with the existing system. The charge for compulsory pilotage in their case is no serious consideration, and the presence of a pilot on board their ships relieves them from a liability they would otherwise contract. With the proprietors of small vessels engaged in the over-sea trade the case is very different. The latter, as a body, complain of the heavy charges for pilotage, more particularly where the vessels are driven by stress of weather into ports and anchorages where the services of a pilot may be dispensed with. The witnesses from Liverpool are in favour of compulsory pilotage. Those from Newcastle, Sunderland, and elsewhere, of the voluntary system. The advocates of the latter system, while contending that it in no way

interferes with the supply of pilots, have dwelt with "great force and justice" on certain anomalies, more especially under the 379th clause of the Merchant Shipping Act, which imposes compulsory pilotage on all vessels coming into London from westward of Boulogne, while all ships coming from North of that port are exempt. The conflict and confusion produced by the exercise of various local pilotage jurisdictions have also been brought prominently before the Committee, who are of opinion,—1. That some "general pilotage measure," for the removal of these existing anomalies, should be prepared under the authority of the Board of Trade. 2. That a "system of voluntary pilotage might be safely established in most parts of the empire, due consideration being had to the interests of those masters who have invested capital on the faith that the compulsory system would be maintained."

In dealing with the important question of local charges and passing tolls, the Committee has for the most part followed in the line indicated by the Royal Commission of 1854. These charges are levied by the local authorities of Liverpool, Hull, Newcastle, and Bristol, and by the harbour and other trusts of Ramsgate, Dover, Bridlington, and Whitby. The Committee have found that £60,000 a-year is still levied upon shipping by the authorities of Liverpool, under a title which is admittedly indefensible,—a fund which is "in too many cases applied to town purposes, and not expended for the benefit of shipping." They have also found that £50,000 a-year is paid by the State for compensation to different "corporations, companies, and individuals," for the abolition of differential rates and duties formerly levied on foreign shipping, but now abolished under treaty, of which sum the pilotage authorities of Liverpool, and the corporations of Hull and Newcastle, are recipients of nine tenths.

It further appears that the Hull Trinity House, "relying upon their Charters," levy £11,000, under the title of Primage Dues, on cargoes; that the privileged pilots of Newcastle receive £9,000 a-year, for which no services whatever are rendered; that the corporation of the latter port possess and exercise taxing powers on shipping of the most "multifarious character;" that these powers, including the privileges of the fraternity of Hostmen, are all "anomalies in our fiscal system," under which comprehensive head are included the powers possessed by the Newcastle authorities of demanding dues from the neighbouring ports of Hartlepool and Sunderland, and by the authorities of Bristol, of levying an impost, under the title of "Haven Master's Fees," from the ports of Newport and Cardiff, and the whole system of passing tolls, as levied at the four harbours abovementioned.

The Committee have, therefore, decided,—1. That the system of reimbursement by the State of the equivalent of tolls and dues on foreign ships ought to be abolished, seeing that the principle of equal duties on British and foreign shipping ought to be the rule of municipal as it is of imperial legislation. 2. That the lights, buoys, and beacons, not being harbour lights, buoys, and beacons, at present supported by the Trinity Houses of Hull and Newcastle, and on account

of which duties are levied or compensation received, shall henceforth be placed under the control and supervision of the Board of Trade.

3. That passing tolls, whether charged at home or abroad, ought no longer to be levied "on any ship or any goods carried in ships, unless such ships enter such harbours." And, finally, that "all monopolies and unjust charges now levied upon ships, or upon goods carried in ships, for which no benefit accrues to the parties compelled to pay them, constitute a heavy grievance and burden upon shipping; and as they tend to divert trade from its natural channels, it is very desirable that they should be forthwith extinguished."

In reference to the passenger trade, the Committee rely entirely upon the evidence furnished by the Board of Trade returns, and in that reliance they assert that the traffic in question is not, as a matter of fact, falling into the hands of foreigners,—on the contrary, that there has been of late a decided increase in the British as compared with the foreign tonnage employed in the passenger trade from this country. The Committee, however, recommend that any exemptions in favour of foreigners engaged in the trade should cease, and that foreign ships should be placed under the same legal obligations as English. They further recommend that the effect of the concessions, granted in respect to the conveyance of passengers to vessels carrying foreign mails, should be "jealously watched" by the emigration officers at the out-ports; that the limit of the two passengers to the 100 tons should be extended to three; and that with regard to the manning of emigrant ships, a discretionary power should be left in the hands of the Commissioners, without reference to the Admiralty, but with a power of appeal against their decision. As regards the Chinese Passenger Act, the Committee content themselves with observing that the abuses of the Chinese coolie trade occur on board foreign, chiefly American, ships; that the provisions of the existing law are salutary, and do not need amendment; but they throw out the suggestion that the prohibition of British vessels to carry Chinese coolies to the "slave-holding states of America, or to any country where slavery is tolerated, is a subject well worthy the consideration of the legislature."

The stamp duties on charter-parties and marine policies of insurance is a tax which has long formed the subject of just complaint on the part of those engaged in shipping, not alone as regards the amount levied, but as regards the inconvenience attending the imposition of the tax. The Committee recommend the reduction of the duty on charter-parties from 5s. to a 1s. adhesive stamp, and the revision of the present scale of stamp duties on marine policies,—if the state of the revenue does not admit of their entire remission,—and they do not omit to say that in this, as in so many other matters, the foreigner has the advantage over the British shipowner, and that common fairness demands that he should be placed on a footing of equality, in order to give him a chance of successful competition.

Such are the more important points in the extended field of inquiry traversed by the labours of the Select Committee on Merchant Ship-

ping, together with the conclusions arrived at,—the result of a careful and, we doubt not, a conscientious examination of the evidence.

Before he concluded he would take the opportunity of observing that he had read the remarks in the *Nautical* on the loss of the *Nussur Sultan* at Rodriguez, and was glad to see the exposure there given of that bugbear of a solitary danger fifteen miles off that island, as well as the nautical wisdom of the gentlemen who formed the Committee that reported on the loss of that ship. After the manner in which Captain Sir John Marshall had so fortunately exposed the mode in which two others reported to have been lost on the same danger and at the same supposed distance from the island, the opinion of those gentlemen will not add that bugbear to the charts, and their report, which may suit very well for Lloyd's, "will not wash" among seamen.

Arion begged to be allowed to read an account which had been placed in his hands, for the vessel in question was the invention of a gentleman who was an experienced seaman and formerly in the Royal Navy. It was entitled the "*Swan of the Exe*."

It having become known when this elegant little yacht was to be launched, a large number of persons flocked to the beach, the novelty of her construction having attracted considerable attention during the last few weeks. The scene was of great animation and beauty, heightened by the strains of the Exmouth brass band, which played some most lively music. The yacht was brought down to the water from Mr. Dixon's yard on rollers. After a little necessary delay to allow the chain cable, &c., to be taken on board, the order to launch her was given. The ceremony of naming was performed by Miss Peacock, a daughter of the owner, and the band struck up "*Rule Britannia*." In going off she unfortunately struck on a large block of stone, which being partially buried in the sand had escaped notice. This difficulty over she glided into the water beautiful and graceful as one of her namesakes, reminding us of Milton's exquisite lines,—

"The swan, with arched neck
Between her white wings mantling, proudly rows
Her state, with oary feet."

The *Swan of the Exe* has been built, as her name implies, after the model of one of the most elegant of birds, for Captain Peacock, F.R.G.S., of Starcross, lately retired from the firm of Seymour, Peacock, and Co., of London, (a gentleman well known for his scientific acquirements and inventive genius,) from his own lines and sectional drawings, by Mr. Dixon, the well known boatbuilder of this town, who has most ably worked out the design. She is exactly four times the size of Bewick's "mute swan," and her proportions are carried out with the happiest effect. The body forms the cabin, the neck the mast, and the wings the sails. The lower part of the body,—that is the part below the water-line,—is made in two equal portions, being, in

fact, the hull of an ordinary boat divided longitudinally; the two flat sides are placed two feet six inches asunder forward, and two feet nine inches abaft, to allow the water to run easily through the aperture. The body then rises from the water-line to the proper height in beautiful curves, carrying out the complete form of the bird. The opening formed at the bow is hidden by imitation feathers, made of broad white tape. The central division in the body being elevated to the right height, forms a table, on the top of which are oval apertures with moveable covers. Through these openings lines may be cast for fishing. She is propelled by steel legs and feathering feet, which work in the central water space, being affixed to joints under the table, at the after part, and are worked with a double handed pump lever by one or four persons across the table. The lever can be folded up and removed when necessary. The rudder is also made a means of propulsion by its being fitted with moveable blades, vertebrated, placed vertically, and striking the water like the tail of a fish; whilst the tiller, which is like the break lever of a railway carriage, is so placed that the person who is steering can work it backwards and forwards, and thus produce a sculling motion.

The head of the bird is beautifully carved and painted, of the exact form and colour of the mute swan; and although of colossal dimensions, (being 2 ft. 6 in. long, 16 in. deep, and 12 in. broad, and the eyes 4 in. in diameter) is very light and elegant, the graceful curve of the neck perfectly harmonizing with the form of the body. Through the beak is a horizontal brass rod, bearing an azure silk banner three yards in length, with her name on it in gold letters. Her name is also beautifully emblazoned on the stern (by Mr. C. Wills, of Exmouth) with the motto of her owner.

Her dimensions are as follows:—length 17 ft. 6 in.; breadth 7 ft. 6 in.; depth from the top of the back 7 ft. 3 in.; height of beak from water-line 15 ft.; superficial area of the wings 230 square feet. The arrangement of the universal joints for working the legs and wings, is most ingeniously contrived. There are also jalousie blinds, and two large windows at the sides, with an oval pane of plate glass in the centre of each. An accommodation ladder can be placed below them when required to use her for bathing. Her internal capacity is 500 cubic feet. The cabin is as comfortable as a first class railway carriage, and of sufficient size to dine ten persons. There are sofa seats on each side, stuffed with granulated cork and cocoa-nut fibre; the backs and elbows with horse-hair. A small ladies' cabin, inside the breast, is fitted up with every convenience. The cooking apparatus is a most clever invention,—every particle of heat being taken advantage of. It boils, roasts, bakes, and stews for ten persons, with a very small quantity of fuel. The smoke passes up the neck and escapes at the nostrils of the bird.

It will be seen by the foregoing description that she is perfectly unique, indeed nothing of the kind has ever been attempted before. The highest praise is due to Captain Peacock, and we heartily wish his beautiful "Swan" all the success she deserves,—a wish, we feel

assured, that will be echoed by all who have the pleasure of his acquaintance. Such a little yacht as this would really be worthy of a place on the ornamental waters of Windsor Park or any of our lakes, although she certainly looks very handsome on the broad waters of our beautiful Exe.

The slight accident that occurred to the *Swan of the Exe* on her taking the water, although unintentional, was the means of proving her to be a perfect lifeboat, that could neither sink nor upset. The water ceased to flow in on its reaching the central platform (18 inches). Captain Peacock, with Mr. Dixon and his son, then got on the back, (still 5 ft. 9 in. above the water-line,) and the latter climbed to the top of the head to clear the flag from the beak; in this state she was towed by a small boat, against the tide, perfectly upright, and beached for repairs. These were effected the next day, when, after being photographed by Mr. Sugg, she proceeded to Starcross, and anchored opposite the owner's residence.

Captain Peacock is also the inventor of the "Poncho mattress, or life, limb, and treasure preserver." During the delay caused by shipping the rudder, &c., of the yacht, Martin, belonging to the coast-guard, went overboard with one of them on. He disported himself in the water like a duck, to the great delight of the spectators. About two thirds of his body only were immersed. There is little doubt but if the passengers and crew of the ill fated *Royal Charter* had had these mattresses every one of them might have been saved, as they are extremely buoyant, easily attached, and protect the wearer from blows. The lower pockets are for specie and preserved meats; the upper ones will hold a packet of papers and two bottles of wine, spirit, or water. It goes on over one or two suits of clothes) and leaves the legs and arms quite at liberty.

Secretary's Mems.

It is said that the dock gates of Sebastopol, now trophies of war in Portsmouth Dockyard, about twenty years ago were seen on the quay of St. Katherine's Dock, London, prior to their being shipped on board a vessel for conveyance to the Crimea; and the greater portion if not all of these gates were manufactured in England.

A submarine cable has been successfully laid between Marseilles, Corsica, and Algiers, so that the Emperor during his stay in Algeria, can communicate directly with Paris. The cost of the cable and the laying down is 1,000,000 francs. A New York paper as a substitute for the Atlantic cable, recommends an electric eel—the head to be fastened at Cape Cod and the *tail* somewhere in Ireland.

It is stated in the American papers that their pet frigate, *Niagara*, is already beginning to show symptoms of being used up.

Some gentlemen have anonymously presented, through Messrs. Ommanney, Son, and Co., the navy agents, the munificent sum of one hundred pounds for the endowment fund of the Royal Naval School at New Cross.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 499.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen in Mls.	Remarks, &c. [Bearings Magnetic.]
22. Gironde	Point Coubre	45° 41½' N., 1° 15' 4" W.	F.	121	15	Est. 15th Aug., '60. North point of entrance.
"	St. George	East bank	F.	44	12	Ditto. Red light.
"	Suzac	East bank	F.	191	12	Ditto. Red light.
"	Point de Grave	45° 34' 2" N., 1° 4' 1" W.	F.	85	15	Ditto. At South point of entrance.
"	Tallais Bank	West bank, light vessel	F.	38	10	Ditto.
"	Tour-de-By	West bank, light vessel	F.	38	10	Ditto.
"	Mapon	West bank, light vessel	F.	33	9	Ditto.
"	Ile de Patiras	on N. point of island	F.	43	13	Ditto.
"	Trompeloup	Old Chapel on West bank	F.	..	5	Ditto. (a.)
23. Isle Brehat	Paon Point	48° 52' N., 2° 50' 3" W.	F.	67	6	Est. 1st Aug., '60. Red light.
"	Rosedo Plat- form	Turret	F.	90	8	Ditto. Red light.
23. Perros Bay	S.E. shore, near Bridge of Nantouar	48° 48' 1" N., 3° 23' 8" W.	F.	33	10	Ditto.
"	Kerjean	S.E. of former	F.	253	14	Ditto.
"	South shore	Behind Pi- geon house	F.	80	12	Ditto.
"	Near Mill of Kerprigent	S.W. of Pi- geon ho. lt.	F.	259	14	Ditto. (b.)
23. Port Ploumanach	Plou Point entrance	48° 50' 3" N., 3° 20' 1" W.	F.	09	5	Ditto. Red light.
25. Gulf Naples	Port Puzzu- oli	Caligula bridge	F.	26	3½	Not stated.
26. Long Island, U.S.	Montank Pt.	.....	..	..	..	Repairs complete. Relighted 10th Oct., '60.
27. Partridge Is- land Light	.....	.....	..	..	..	Steam whistle added. Sounded once a minute in fog.
28. Gittero	Norway	59° 28' N., 58° 30' E.	..	..	4	Est. 1st April, '60. Gletta light removed to Gittero.
29. Cape St. Mary	Newfound- land	46° 29' 4" N., 54° 8' 7" W.	R.	325	30	Est. 20th Sept., '60. Red and white alternately every minute.
29. Cape Bona- vista	Ditto	.....	R.	..	..	Est. 1st Oct., '60. Interval altered. Red and white alternately every minute and a half.
30. Minots Ledge	Boston Bay, entrance	42° 16' 1" N., 70° 45' 2" W.	F.	84	15	Est. 15th Nov., '60.

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

(a.) 22.—To enter the Gironde at night, having ascertained the vessel's position by bearings of La Coubre and Cordouan lights, steer in through the Passe du Nord with the leading lights of Terre Nègre and Pontallac in one until La Coubre light bears N.N.E., when alter course towards Cordouan light until the leading lights of Falaise and Terre Nègre come in one. From thence navigate up the river by keeping these two latter lights and the following lights successively in line:—

St. George light in line with the light on the sand hills of Suzac; Richard

light in line with Tallais light; Pointe de Grave light in line with Tallais light; Patiras light in line with Mapon light; and Tour-de-By light in line with Mapon light. This latter line must be left directly the light on Trompeloup chapel appears in sight, then steer for the light of Port Pauillac, leaving it a little to starboard.

If the St. George and Suzac leading lights are seen when La Coubre light bears N.N.E., their direction may then be followed until Richard and Tallais lights are in line.

The bearings are magnetic. Variation, $20\frac{1}{2}^{\circ}$ West in 1860.

(b.) 23.—The Nantouar and Kerjean lights in line indicate the direction of the western passage into Perros Bay; the Pigeon house and Kerprigent lights in line, the direction of the eastern passage. Vessels intending to enter the Port of Perros by the western passage should leave the line of direction of the two former lights a little before the Pigeon house and Kerprigent lights come in sight; the two latter lights in line lead in.

DIRECTIONS FOR APPROACHING KURRACHEE HARBOUR, *with the depth vessels should load to at the different seasons of the year to ensure crossing the bar without detention.*

At all seasons, if coming from the southward, the coast of Sind, from the parallel of $23^{\circ} 30' N.$, should not be approached under fourteen fathoms. This line of soundings will carry a ship from seven to eight miles off the dangerous banks which extend from the Hujamaree, Kediwarry, and Kokowarry mouths of the Indus River to a distance of seven miles, showing in several places ten fathoms on their extreme edge. The set of the tides and currents being very uncertain, the coast low throughout, and barely visible from the outer edge of the banks in clear weather, too much attention cannot be paid to the lead in passing these banks.*

Ras Muari (or Cape Monze), distant eighteen miles $W.\frac{1}{2}N.$ from the western entrance to Kurrachee, is high and bold of approach. Ships during the S.W. monsoon season should make this headland, running to the eastward for Manora Point, keeping it (Manora Point) on any bearing to the North of East.

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

Masters of ships should not, under any circumstances, attempt to enter the port without a pilot.

Anchorage in the Roads.—From June to the middle of September, ships should not on any account anchor, but stand off and on, keeping

* Since the beginning of 1857, the ship *Admiral Boxer* has been totally lost on the Indus Banks. The ships *Thomas Campbell* and *Augusta*, with the steamer *Pioneer*, have grounded on them, but were eventually floated off. Two large troop steamers have also, in the same period, touched on them.

- the lighthouse bearing from N.b.E. to N.E., one to two miles distant, until boarded by a pilot or directed by signal. September 15th till the end of March, anchorage, lighthouse N.b.E. to N.N.E., distant one mile, in seven fathoms. April and May, lighthouse N.N.E. to N.E., distant one mile and a half, in eight fathoms.

Latitude of the lighthouse on Manora Point, $24^{\circ} 47' 21''$ N.; longitude $66^{\circ} 58' 15''$ E. The light is a fixed one, 119 feet above the sea level, visible in clear weather seventeen miles; in the hazy weather prevalent during the S.W. monsoon, seven to nine miles only.

High-water at full and change of the moon 10h. 30m.; rise and fall on ordinary spring tides, 9ft. 6in.

DEPTH OF WATER ON THE BAR: S.W. monsoon season, May to September,—Spring tides, 22ft. to 23ft. 6in.; neap tides, 19ft. to 18ft.

Fine season, October to April,—Spring tides 20ft. to 21ft. 6in.; neap tides, 19ft. to 18ft. Ships may load.*

From September 15th to April 15th (the bar being generally smooth),—Spring tides, 19ft. 6in.; neap tides, 18ft.

From April 15th to the end of May, from September 15th to the 30th, periods before and after the S.W. monsoon,—Spring tides, 18ft. 6in.; neap tides, 17ft. 6in.

From June 1st to the middle of September, with the average weather in the S.W. monsoon,—Spring tides, 17ft.; neap tides, 15ft. There are days during this monsoon when the sea on the bar is so heavy that ships at the above draft could not with safety cross.

E. GILES, *Port Officer, Kurrachee.*

LOSS OF THE "LORD RAGLAN."

We noted the loss of the *Lord Raglan* in our number for May, expressing our want of information of the coast: Commander C. G. Constable, L.N., has very obligingly sent us the following.

Bombay, June 22nd, 1863.

Sir,—In your number for May, 1860, at page 278, I read the report that the *Lord Raglan* had struck on a rock three miles S.E. of Mongrol and was lost. I write to inform you that the ship was wrecked by running ashore on the Kattewar Coast, about six miles S.E. of Mangarol. The coast is low and level, of a brown colour, and it is seldom you can see it at night, but the bank of soundings extends a great distance off it, and the lead is the best guide when standing in towards the coast by night. 20 fathoms is ten miles off; 10 fathoms is close to the shore, for it is a bold coast. It is perfectly

* The *Bussorah Merchant*, the deepest ship that has crossed the bar, did so in 1857, drawing 20 feet 8 inches, there being at the time 22 feet 2 inches water, with a slight swell; she bumped several times in crossing, losing her false keel.

free from shoals or rocks, except a narrow rocky shoal close to the westward of Diu Head, distant from the shore one to one and a half miles, which should not be approached within 13 fathoms. I commenced the survey of that coast in November, 1852, and Grieve finished it in April, 1854.

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POSITION OF THE "SHAH ALLUM" SHOAL—in the Persian Gulf.

I send you also my report on a small and very dangerous shoal which I found at last in the middle of the Persian Gulf. I had been several times to look for it before, but without success. However, having met Captain Gourley at Bushehr, I went again in search, and found it. The latitude of the shoal by Captain Gourley was quite correct, and his longitude by chronometer was not six miles in error. This, I consider, speaks well for the care with which that gentleman navigates his ship.

The mountains on the Persian Coast may be seen from the shoal in clear weather, as I have mentioned; but I should add that they are very high, Assaloo Notch, for instance, being 4,870 feet.

The report I send you appears in the Bombay Government *Gazette*, and please to take notice that I have corrected it, for the printers out here make sad mistakes, 87 fathoms for 37 for instance,—there is not 87 fathoms in the Persian Gulf.

I remain, &c..

CHARLES G. CONSTABLE,
Commander I.N.

To the Editor of the Nautical Magazine.

P.S. The ship *Flatworth*, Captain Gourley, was from London, bound to Bushehr and Basra, when she struck on the shoal as she was beating up the gulf.

**REPORT UPON THE SHAH ALLUM SHOAL—in the Persian Gulf,
Surveyed in H.M. Surveying Schooner "Marie," I.N., in November, 1859.**

The shoal is named after the ship *Shah Allum*, Captain Sawyer, who reported having sounded on it and found $3\frac{1}{2}$ fathoms in April, 1857.

In September, 1858, the ship *Flatworth*, Captain Gourley, struck upon it in fine weather with a very light breeze and lost some of her keel.

This dangerous shoal lies in the middle of the Persian Gulf, equidistant from the islands of Sheykh Shayb and Halool. From the Western end of the former it bears S. 55° W., distant forty-four miles.

It is a small bank of sharp and rugged rocks,—the whole extent of that part where the soundings are under 20 fathoms, being only two and a half miles North and South by two miles East and West. The

dangerous part, which is at the North end, is not more than one third of a mile across; on it there are generally from 4 to 5 fathoms in overfalls, but in one spot there are rocks sticking up, on one of which we found 17 feet at neaps; time of tide uncertain, so that according to the best of my judgment there would not be more than $2\frac{1}{2}$ fathoms on this rock at low water springs, and at the same time I am of opinion that there is not less than 2 fathoms anywhere at low water. This shoal is steep to all round, 37 fathoms to the South and 40 to 45 fathoms to the northward about a mile from it.

It is the more dangerous as it causes no discolouration to the sea, and does not show from aloft until on it. The bottom was seen when in 7 fathoms, and plainly when under that depth. During the two days I was on it, there were always flocks of small white birds hovering over the shoal parts, and slight marks on the surface of the water caused by the tides. In clear weather the mountains on the coast of Persia between Taurie and Nakheeloo can be seen distinctly from the deck.

The shoalest spot is in lat. $26^{\circ} 25' 20''$ N., and its difference of longitude East of Bushire residency flagstaff is $1^{\circ} 40' 13''$

From it the well known landmark called Assaloo Notch bears true N. $5\frac{1}{4}^{\circ}$ E.

[Captain Constable has our thanks for his attention. He has increased our obligation to him by his care in correcting the *Gazette*, a fact which seamen will not fail to observe.—ED.]

REPORTED ISLAND OFF THE COAST OF CHILI.

A new island of no less than fifteen miles in extent has been reported on the coast of Chili; and, uneasy as that part of the world is well known to be from the effects of volcanic action, it is difficult to imagine so large an extent of surface to have been quietly lifted above the sea level without some indication of troubles of the same volcanic nature on the adjacent coast, even at the distance of eighty-five miles, as it is reported to be. We therefore merely preserve the following report of it for the information of our readers, not anticipating anything more or less than that this island, only seen at a distance, will eventually prove to be no more than a more distant summit of one of the Andes!

“At daylight I was astonished to see land about fifteen or twenty miles to the eastward. It was a splendid clear morning, and the Coast Chili might have been seen at least sixty miles distant. All hands saw clearly that it was an island, consisting of a white mass. Latitude of the middle $31^{\circ} 40'$, longitude $73^{\circ} 25'$. We kept the island in sight till 5h. p.m.

“Island about fifteen miles long from North to South, at three p.m. observed the water very much discoloured.”

Mr. Fischer further informed me that the island appeared to him in its highest part two hundred to two hundred and fifty feet above the level of the

sea. On the northern side there was a very peculiar peak, resembling a Spanish cap turned to the southward.

From the observations taken by Mr. Fischer, the island should be situated about eighty-five miles from the mainland, between Valparaiso and Coquimbo, This would bring it very nearly in the track of vessels coming round the Horn to this coast. I have deemed it my duty to lose no time in acquainting your lordships with the particulars furnished me by Mr. Fischer, that your lordships may take the necessary steps to give this publicity for the protection of shipping interests.

PORT OF LEGHORN.

The following concerning the old and new ports of Leghorn has been addressed to mariners.

Old Port of Leghorn.—To obviate the damage which frequently occurs during the winter season in the old port of Leghorn (or Porto Mediceo), more especially when vessels sail in during the prevalence of the S.W. and W.S.W. winds, the Minister of Marine, by notice, dated the 22nd of June last, has ordered that, during the prevalence of said winds, and under any other imperious circumstances, vessels shall be temporarily prevented entering the said port, as they may then anchor with safety in the new port. In publishing the said decision for the information of Mariners, notice is further given, that on and after the 1st of October of the current year, 1860, whenever the aforesaid imperious circumstances arise, the warning not to enter the old port shall be given to vessels by means of a plain blue flag, hoisted on the outer earthwork at the point of the mole.

New Port of Leghorn.—To obviate the inconveniences and the damages which not unfrequently have occurred in the new port of Leghorn, through the abuse crept in of vessels anchoring on arrival with a single anchor, which allowing them to swing round freely with the wind, sometimes brings them into collision with vessels already anchored there, the Minister of Marine has ordered, under date of the 22nd of June last, that in conformity with the 63rd Article of the existing Regulation of the 13th of October, 1859, for the ports of Tuscany, all vessels hereafter entering the new port shall bring up with both bower anchors; and that all shipmasters who do not obey the present order shall make good all damages which they may thereby occasion to other vessels, conformably to Article 39 of the said Regulation.

ULISSE ISOLA, *Captain of the Port.*

QUELPART, *China.*—H.M.'s Consul at Nagasaki has reported to the Lords of Privy Council for Trade, that the English steamer *Remi*, when proceeding from the port of Hakodadi, in Japan, to the Gulf of Pe-chili, at 8h. p.m., 25th April, 1860, was lost during a fog on an island said to lie about thirty miles to the northward of Quelpart, and not marked on the charts. The position of the island is reported as in lat. 33° 58' 15" N., long. 126° 22' E. of Greenwich.

Caution.—On the passage from Hakodadi to the Gulf of Pe-chili the mariner is recommended to pass to the southward of Quelpart, as the channel to the northward of that island has not been sufficiently examined, and many dangers may exist in it which are not shown on the charts.

EQUATOR, *Atlantic.*—Captain Whitmore, of the ship *Sea Serpent*, says,—On my voyage from London to China the ship struck a shoal which is not laid down on my charts, although I have those which are considered latest (Admiralty, 1859). It lies, according to my reckoning, in lat. $0^{\circ} 35' N.$, long. $28^{\circ} 10' W.$ I sounded immediately, and found no bottom, the ship drawing twenty-one feet, and at the time going eleven knots. What makes it more remarkable is, that it was within twenty-four hours after the Russian sloop of war *Pasodruk*, bound to China, touched upon the same shoal.

[Our readers will have seen the remarks on shoals in this neighbourhood in our August number.]

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

Wales, South Coast, Swansea and Neath, Commander Aldridge, R.N., 1859 (5s.)

North America, West Coast, Nanaimo Harbour and Departure Bay, Captain G. H. Richards, R.N., 1859 (2s.)

East Indies, Bassein and Rangoon Rivers, Lieut. C. Y. Ward, I.N., 1854 (3s.)

Korean Coast, Tsu-sima Sound, Commander Ward, R.N., 1859 (3s.)
Admiralty, September 22nd, 1860.

New Books.

TABLES FOR FACILITATING THE REDUCTION OF LUNAR OBSERVATIONS,
—By Charles F. A. Shadwell, Esq., C.B., Captain, Royal Navy.
London, Potter.

It is a graceful occupation of an officer, when laying down the sword for a while to recover from the chances of war, ever mindful of the wants of his profession, to take up his pen in favour of that scientific branch of it which has been sadly neglected by nearly all who have gone before him. Time was when good lunarians were somebodies—aye, looked up to as a rare genus of the naval officer,—when chronometers were scarce and not even to be had. But, *tempora mutantur*, chronometers are as common as marlinspikes afloat, and lunars are thought of but seldom. It is with the view of correcting this degenerated state of things that Captain Shadwell, while recovering from the effects of a wound at the Peiho, has employed his leisure in calling the attention of the mariner to the whole subject, and placed another method before

him of solving that problem as good as the best before it, proposed by the late much loved officer Lieutenant Henry Raper, of whom Captain Shadwell says with no less grace than truth *nihil quod tetigit non ornavit!*

After giving a general view of the lunar problem, Captain Shadwell proceeds to discuss the various formulæ for clearing the distance, reducing them to rules, and alludes to the advantage of Raper's method by his separate consideration of the effects of refraction and parallax, which in the common methods are combined. He follows this with examples of clearing the distance, selected from the various works on navigation used by the seaman, showing by the rigid accuracy of Raper what their results should have been. The work is completed with the small tables which give the corrections required by Raper's method, and is well calculated to show mariners the real value of the lunar problem and excite a taste for the subject generally, that the advantages of it may not be lost.

A MANUAL FOR NAVAL CADETS.—By *John McNeil Boyd, Captain H.M.S. Ajax.* Longman, London.

There is a marked improvement in this second edition of Captain Boyd's little book compared with his former, to which in some respects it is much superior. But we hope always to be able to call it a little book, to see it that *multum in parvo* on which much of its popularity depends, especially designed, as it is, for little hands. Captain Boyd has now achieved a great object, having placed in the hands of the young cadet a thorough mentor of his professional duties, a *vade mecum* for reference to all. Let him now look well into his modes of instruction and illustration. The *Admiralty Manual* might be consulted by him with advantage. What, for instance, has Mr. Findlay's *Pacific Directory* to do with explaining the principles of the barometer when a Fitz Roy's words are at his command? In many parts of his work he is more happy than this, and it is to be regretted that the slip of a figure will puzzle the juvenile reader in that interesting sketch illustrating the height of the atmosphere. These are things that must receive timely attention to render this little volume as perfect as can be desired, for it is one that should be the first to be placed in the hands of even the embryo Naval Cadet.

EURYALUS.—TALES OF THE SEA.—*A Few Leaves from the Diary of a Midshipman.* Potter, Poultry.

Such is the fanciful title of a neat volume before us, filled with above three hundred pages of a diary of adventure, discovery, narratives of novel and exciting scenes in various parts of the world far and near. The author, grateful for the oft repeated advice driven into his mind by the promise of a reward, (which he never obtained,) manages under all circumstances of heavy or moderate pressure to follow this excellent advice; and, exulting over the treasures of bygone days and years, resolves that the world shall share them, and here they are,—a series of plain unadorned tales. In a few words of introduction he says,—“If it were possible to describe the pleasure and gratification it affords me during leisure hours to open any page of my three volumes, and read over bygone scenes and hours, recalling to memory events that could never otherwise be thought of, I am convinced there are many who would the moment the leaves are unfolded to them say,—‘I'm going to keep a journal,’ and go forthwith and note down the day of the month as a beginning.”

Let our rising generation, our embryo naval heroes, consider well this passage: may it instil into their minds the same desire as that which is now the

source of so much real gratification to the author of the volume before us. But the small end of the wedge is the beginning, and we would particularly point out that the stimulating talismanic inducement to do so is to write down "*the day of the month*," if nothing more, every day, a kind of pioneering process,—something like planting a tender flower, which thus insensibly watered every day, takes root, flourishes, and produces leaf after leaf, and volume on volume of good sensible foliage, improving from the tender and trifling to the strong and vigorous! Here is the first portion of the diary, illustrated with drawings, and abounding in descriptions of adventure between the English Channel and Bhering Strait, not by the northern route,—no novel, for the creed of our author is that "truth is stranger than fiction," and we can assure our readers that they will find some entertaining truths in the *Midshipman's Journal* (query of the) *Euryalus*.

THE LOSS OF THE "JOSHUA WADDINGTON."

This ship has been lost off the N.E. side of Billiton, a place celebrated for an abundance of unknown dangers, and the following report has been made on the subject at an inquiry which took place at Singapore. This important document has been published by the Board of Trade, and is remarkable for sounder seamanlike views of the subject than that to which we alluded in our last as emanating from the *Board* at Rodriguez, and not at Mauritius, as our printer made us say by a mistake of our own.

Singapore, July 25th, 1860.

Sir,—We have the honour to report that, agreeable to orders, we have inquired into the loss of the British barque *Joshua Waddington*, of Liverpool, Frederick Withycombe, master, and find that the said ship left Singapore on the 30th June last with a general cargo for Liverpool, and experienced a favourable passage up to forty-five minutes past noon of the 13th inst., when she suddenly struck on a sunken reef and became a total wreck. The crew were forced to abandon her in their boats on the evening of the 14th idem., having done all in their power to rescue the ship from her perilous position without effect. They were picked up by the British ship *Ocean Mail*, and transferred by her to a Dutch brig in the straits of Rhio, and were landed here in safety on Friday, the 20th inst.

From the evidence before us and the entries in the logbook, we find that the ship was lost on one of the numerous reefs on the N.E. coast of the island of Billiton, at the entrance of the Carimata Passage. As no cross-bearings were taken after the ship got on shore we are unable to state with certainty on which reef she was lost; but from the position of the ship at noon of the day on which she was wrecked, and the bearings of the land at the time, we think that she most probably struck on the reef marked P.D. (position doubtful) on the latest published chart of the locality, about eight miles to the northward of Pigeon Island, near the N.E. point of Billiton. We are of opinion that the captain was imprudent in taking the western side of the Carimata Passage instead of the eastern, as recommended by Horsburgh

(a copy of whose *Directory* Captain Withycombe had on board); but some allowance is to be made for him from the fact of his being a stranger in these seas, he not having been in this quarter of the world since 1830, and he was therefore unacquainted with the dangers of the locality. But in continuing his course after noon, instead of tacking to the N.E., when his latitude and longitude placed him close to a dangerous reef, the position of which was marked doubtful, we consider him guilty of negligence, and deserving the censure of the Board of Trade.

We also beg to remark that at the time of the accident the officers and master were below at dinner, and the deck was in charge of the carpenter; the latter, however, appears to be an experienced seaman, having served twenty years at sea, has been second mate of three ships, and has been for several years in the habit of keeping an officer's watch. By advancing this fact we do not mean to attribute the loss of the ship to the carpenter being on deck; but we feel it our duty to mention it, and notice that such a proceeding is objectionable, and should be discountenanced by the Board of Trade.

We beg to call the attention of government to the necessity of having all the straits between this and Java properly surveyed, as there are many reefs to this day very imperfectly known; and from the increase of trade with Singapore to Java and other islands of the Eastern Archipelago, all the passages are more frequently used now than in former years, and should be correctly surveyed. The Carimata Passage especially is now constantly used, though unknown before the passage of our fleet to Java in 1811. We think that one surveying vessel on this station is inadequate to our requirements, and the Hydrographer might be solicited to send one or more ships to assist Mr. Stanton, commander of H.M.S. *Saracen*. A steam tender would be invaluable to that gentleman. At present he is unable to complete more than half a strait in one season, as, for instance, his work in the strait of Banka in 1859.

In conclusion, we would recommend that a public chart room be established in connexion with the Master-Attendant's Office, wherein the best charts of the neighbouring coasts and seas might be laid out, for the use of masters of ships resorting to this port, so that they might be able to correct their charts from the latest surveys. We have reason to believe that the Admiralty would furnish the charts free of expense for the purpose abovementioned.

We have, &c.,

J. D. VAUGHAN,

Master-Attendant and Marine Magistrate.

J. L. KIRBY,

Nautical Assessor.

To the Lieutenant-Governor of Singapore.

TO CORRESPONDENTS.

A description of Mr. Newman's Tidegauge will appear in our next.

THE
NAUTICAL MAGAZINE

AND

Naval Chronicle

NOVEMBER, 1860.

SHIP "MEDWAY,"—SYDNEY TO INDIA,—*Passage through Torres Strait by Bligh's Entrance.*

Sir,—Having just made the passage from Sydney through Torres Straits by Bligh's Entrance, I send you a copy of my journal, and a few remarks. If you consider them worthy of a place in the *Nautical Magazine* please insert them.

In April of this year I was in Sydney, bound to India *viâ* Torres Straits, in a ship drawing nearly 20 feet water. As I had never been that way, I tried to find out which was the best route through the Coral Sea, and which entrance to take through the barrier. I inquired of several shipmasters who had been through; they all recommended one of three routes, viz.: Raine Island, Stead's Entrance, or Wreck Bay. Every one spoke against Bligh's Entrance, no one having been through it. I picked up some information, and as it appeared the current opinion, I will impart it to you, merely observing that I did not find it correct.

1. Be sure to make either Wreck Reef or Kenn's Reef. 2. The current *always* sets strongly to the westward. 3. After the middle of April you always have clear weather, the glare of the sun is the only thing you have to complain of. I was told this by several; it will be seen that we had more trouble in preventing the rain wetting our skins than in protecting our eyes from the glare of the sun.

I was anxious about the deviation of the compasses, and asked the opinion of an old and much respected shipmaster about swinging the ship to find out what amount they had. He strongly advised me not

to trouble my head about such d—d nonsense; to allow the variation as given on the chart, and by the time we had steered all round the compass we should find ourselves right enough. I was provided with the Admiralty charts Nos. 1,077, 1,042, 1,749, and 2,385; also the Australian Directory, and a copy of the *Sydney Morning Herald* for the 30th of April, 1860, in which is republished a notice from the Hydrographic Office, giving Captain Denham's positions for dangers in the Coral Sea. All the charts required correcting, the *Herald's* positions differing from them.*

I had read in the *Nautical Magazine* the letters of Captain Fraser, (I sailed my first voyage as chief mate with him, and am indebted to him for most of my knowledge of navigation, particularly lunars,) and of Captain Toynbee, in which they speak highly of Bligh's Entrance.† I determined to take that route, and with the track chart, No. 2,385, before me, I could see no necessity to run the ship to leeward to sight anything before I made the Eastern Fields or the coast of New Guinea, and therefore made up my mind to steer North in $157^{\circ} 10'$ E. until in $20^{\circ} 30'$ S., then to follow the Cumberland track. I did so, and did not see anything until the eleventh day out, when we made New Guinea near Cape Hood.

From about $16\frac{1}{2}^{\circ}$ S. we had continued thick weather, with much rain. It was only by keeping a person standing by the chronometer and an observer with an instrument ready on deck that we were able to obtain sights for either latitude or longitude. I only had the meridian altitude of the sun once between Alert Reef and Booby Island; so much for clear weather. I made Brauble Cay on the fourteenth day, was guided up to it by the lead, through a dark, squally, rainy night, until I hove to, a little before daylight, in 36 fathoms, having gradually shoaled from 60 fathoms, running from ten to six miles between each cast of the lead. I was forced to remain all one day at anchor under Campbell Island on account of thick weather and a S.W. wind. I was nearly half a day lying by a French ship that was in a dangerous position in Prince of Wales Channel, to see her out of trouble; and then anchored at Booby Island in sixteen days from Sydney. I will now give you a more detailed account of our proceedings.

Tuesday, 1st May, 1860.—At 8h. 30m a.m. discharged the pilot. At 9h. 15m. the two beacons in one, the angle between the two light-houses $22^{\circ} 50'$; had good observations for chronometer errors; ship's position $151^{\circ} 21'$ E. = 10h. 5m. 24s.,—chronometers slow (No. 3612) 10h. 1m. 33s., (No. 3374) 9h. 54m. 14s., (No. 1989) 10h. 8m. 25s.; the chronometers rated by Sydney Time Ball. We found a very heavy easterly sea. At noon the North Head dipped. P.M., increasing wind. Sunset, threatening appearances to the S.E., with much lightning.

* This was of course to be expected, the corrections could only be applied (as received) to the new editions. The charts 1,077 and 1,749 have already been cancelled.—ED.

† See their accounts in our volumes for 1853 and 1856.

Double reefed the topsails. At 10h., close reefed the topsails, furled mainsail, jib, &c.; kept whole foresail, and at 11h. washed away the fore topmast staysail. Midnight, strong gale, much lightning, rain, and hard squalls. Ship hard pressed; wind S.b.E.; bar. 29.90 to 29.97; ther. 63°.

2nd May.—A.M., first six hours hard gale, with much lightning and heavy rain; very heavy sea. I am truly thankful we are clear of the land. Daylight, more moderate; set double reefed topsails and mainsail. Noon, lat. 33° 7' S., long. 155° 10' E.; a little current southward. P.M., less wind, with a heavy cross turbulent sea; strong tide rips; made more sail; bar. 29.99; ther. 69°.

3rd.—A.M., fresh wind from S.E. and fine; a heavy cross sea. Course N. 20° E., 204 miles; lat. 29° 55' S., long. 156° 36' E.; bar. 30.10; ther. 68°, water 72°; current N. 46° E., forty-six miles. I was prepared for a southerly current. We were much out in our reckoning. P.M., fine weather; var. per amp. 8½° E.

4th.—Throughout fine weather, water smooth; took amplitudes and azimuths both a.m. and p.m., with the ship's head on six different points of the compass, the variation as undermentioned, viz.

<i>Ship's Head.</i>	<i>Port Bin.</i>	<i>Standard.</i>	<i>Starboard Bin.</i>	<i>Var. on Chart.</i>
N.N.E.	9° E.	11° E.	20° E.	10° E.
North	7 E.	9 E.	19 E.	"
N.N.W.	7 E.	9 E.	17 E.	"
N.W.	4 E.	6 E.	7 E.	"
W.N.W.	4 E.	5 E.	7 E.	"
West	5 E.	5 E.	5 E.	"

I thus found that the starboard binnacle compass (the steering compass) had a point easterly deviation when her head was near North, and a little westerly deviation from N.W. to West. We steered by the starboard compass N.b.W. ¾ W. to make a true North course, and N.W. ½ W. to make N. 40° W. true. We have made this twenty-four hours N. 2° W., 143 miles; lat. 27° 32' S., long. 156° 37' E.; no current.

5th May.—A.M., fine weather, the first of the S.E. Trade wind. Course North, 115 miles; lat. 25° 37' S., long. 156° 38' E.

6th.—Moderate S.E. Trade and fine, no current. N. 9° E., 161 miles; lat. 22° 58' S., long. 157° 10' E.; bar. 30.20; ther. 70°.

7th.—A.M., strong Trade with heavy sea. At 1h. a.m., being North of Kenn's Reef, kept the ship off to close the Cumberland's track. N. 18° W., 185 miles; lat. 20° 3' S., long. 156° 20' E.; var. 8° 30' E.

8th.—Strong wind and fine weather, all the clouds coming from the N.W. Current South eighteen miles. We had made N. 44° W., 191 miles; lat. 17° 50' S., long. 153° 57' E. I have steered since noon yesterday the course given in the Book of Directions, and find myself to the westward exactly the amount of the deviation, viz., 3° of course in 200 miles, equal to 131 minutes of longitude. If I had followed my old friend's advice, and allowed the steering compass the

variation as given on the chart, it is probable the Bellona or Bampton Shoals would have brought the ship up, and then, if any of us had ever reached home again, you would most likely have heard of an extraordinary current that had set the ship to the eastward sixty miles in a day and a half. P.M., dark cloudy weather, with rain and squalls; heavy clouds coming from N.N.W.

9th.—Strong wind and squally, with rain and thick weather; a heavy easterly sea. Current S.W., fifteen miles. Day's work N. 38° W., 103 miles; lat. $15^{\circ} 19'$ S., long. $150^{\circ} 50'$ E. P.M., strong wind, with misty rain and fog. Bar. 30.10; ther. 79° .

10th.—Throughout the wind variable in strength and direction; dark gloomy weather, with rain, mist, and fog; heavy squalls from E.N.E. Bar. 30.00; ther. 79° ; N. 44° W., 161 miles; lat. $13^{\circ} 25'$ S., long. $149^{\circ} 56'$ E. P.M., misty, rain, and fog.

11th.—A.M., thick dirty weather, much rain, and heavy squalls between N.E. and E.N.E. Ship under double reefed topsails. N. 43° W., 142 miles; lat. $11^{\circ} 41'$ S., long. $148^{\circ} 15'$ E. P.M., the wind very variable, the water smooth; through the night very dark cloudy weather, misty rain, and heavy showers.

12th.—A.M., first six hours moderate and cloudy; at sunrise the weather cleared. Made the land bearing N.E., a sand hill facing the sea, (which I take to be Keppel Point,) with several hillocks near it, also a high bluff like the Bolt Head, bearing N.b.W. At 7h. my chief mate reported from the top gallant yard a reef, with the water breaking on it, and the white sand or coral visible, bearing about N.E.b.N. I at the time thought it was the Barrier Reef of New Guinea, and as it was not in our way, took no further notice of it; but when laying off the track on the chart at noon, it appeared to me that we were too far off the land to have seen the Barrier. We had good observations at 7h. 30m. a.m. and at 8h., after which it came on thick, with a deluge of rain, until 11h. 40m. a.m., when it cleared up, so that we had observations for double altitudes and reduction to the meridian. The observations reduced to 7h. a.m. gave the ship's place, their latitude $10^{\circ} 36'$ S., longitude $3^{\circ} 51'$ W. of Sydney High Light, or in $147^{\circ} 27'$ E. In page 325 of the *Australian Directory*, in a note at the foot of the page, two reefs are mentioned as having been seen by M. Cantanel some thirty miles to the W.S.W. of Point Hood. Can we have seen one of M. Cantanel's reefs, although the surveying vessels did not see them when in search of them? Since noon yesterday N. 48° W., 110 miles; lat. $10^{\circ} 28'$ S., long. $146^{\circ} 56'$ E.; winds East to S.E.; current S. 50° E. twenty-four miles. P.M., light variable winds and cloudy weather.

13th.—N. 47° W., 100 miles; lat. $9^{\circ} 20'$ S., long. $145^{\circ} 44'$ E.; current East ten miles. A.M., the wind light and variable from S.S.W. to East. The high land of New Guinea in sight. P.M., the wind freshened to a seven knot breeze, at 6h. having made by account since noon thirteen miles of northing, steered West. 8h., strong winds and cloudy, with short intervals of clear sky, allowing us to obtain the altitude of three stars near the meridian. Midnight, fresh

wind and cloudy. Sounded in 53 fathoms, red coral (much broken) and shells.

14th.—A.M., strong wind and cloudy, with misty rain and sharp squalls. At 2h. sounded in 48 fathoms, broken red coral and shells. Proceeded to the westward under three topsails and jib. At 3h., heavy rain and thick weather; sounded in 37 fathoms, broken red coral and shells with two green specks. Found the ship driving over the ground to the westward fast; kept her lying to for daylight. 6h. 15m., heavy rain, with dark cloudy weather. Sounded in 36 fathoms, broken coral and green specks. Bore away for Bramble Cay. About 8h. the weather cleared up. At 10h. made Bramble Cay from the top gallant yard.

As we approached it we made what I thought were the Black Rocks. As we came nearer I found that the mass of black rocks we saw stood on a reef running out from the S.E. part of the cay, with a small space of shallow water dividing the rocks from the cay. This does not answer the description of Bramble Cay in the Admiralty Directory, so I thought we must be wrong, and were down on East Cay. I rounded the ship to, with her head to the northward, and went upon the top gallant yard myself to have a good look for the Black Rocks; or, in the event of our being down on East Cay, for Anchor Cay. I could not see anything except the cay we were doubtful of. It bore from us S.S.W., and was a sand bank, with the top covered with grass or scrub, (not trees,) about fifteen or twenty feet high. It has a reef running out from its S.E. end, on which stand a mass of black rocks as high as the cay and one third the length of it, separated from the cay by shallow water, apparently about half the length of the cay. There is no other cay in the channel with rocks on its end anything like it. The "Negro Heads" that fringe several of the other islands, are no more like the rocks on Bramble Cay in point of size, than Sir Robert Peel's monument in Cheapside is like the General Post Office.

It being now 11h. 30m. a.m., the sun peeped out for a few minutes, and we caught an observation for double altitudes. It gave the lat. $9^{\circ} 5' S$. A cast of the lead gave 27 fathoms, mud, unmistakable mud, green mud; this satisfied me. We up with the helm and make all possible sail to the S.W. In about half an hour we make the Black Rocks. They would be better described as a reef with a few black rocks showing themselves six or eight feet above the water; especially so as a ship making Bramble Cay from the N.E. has the patch of black rocks on its S.E. end, on the same bearing as the reef of black rocks; and as the Directory does not mention the rocks on Bramble Cay, infers that the island in sight is not it. I did not see the Black Rocks until Bramble Cay bore S.E., and was looking anxiously for them in the right direction. I have since ascertained that the French ship *Chatillan*, of Bourdeaux, was bothered the day before me precisely as I was, and on account of not seeing any mention made in the Directory of the rocks on Bramble Cay, which, as the French captain truly observed, are the most conspicuous part of it. Not

seeing the Black Rocks, he ran to leeward until he shoaled his water to 14 fathoms, mud; then being certain he was in the channel, hauled his wind to the southward, but was so far to leeward that he had to anchor half way between Bramble Cay and Stephens Island. Two ships of two different nations being thus deceived in two successive days, shows that the description of the Bramble Cay is not very good; but I bear witness to the accuracy of the description of all the other islands and cays in the channel.

We hauled our wind round Bramble Cay at 30m. p.m., and at 6h. anchored about four miles from Campbell Island in 16 fathoms, rotten or meally sand, almost mud. Campbell Island bearing S.E.b.E.; Stephens Island East; smooth water. Through the night it blew strong from the S.E., with rain. Veered cable to 75 fathoms; the ship did not tend to any tide.

15th May.—A.M., heavy rains, with thick weather; hove short, but the wind then veered to S.W. and came on to blow fresh. We veered cable again, and laid fast all day. At 9h. a.m. a thunder storm came up from the W.S.W., causing the wind to veer to West, N.W., North, N.E., and then S.W., blowing a fresh double reefed topsail breeze and raining in torrents as hard as it did in Sydney on the 28th of last April. While the thunder storm lasted we found the current setting E.b.S. one and three quarters knots by the log. During the other thirty-six hours I was anchored there, the ship was wind rode, and did not swing to any tide.

16th.—Strong wind at S.E. At 8h. 30m. a.m. tripped the anchor and made sail to the N.E., single reefed topsails and topgallant sails set. At 9h. 15m. tacked to S.W., braced the yards sharp up and laid down from S.b.W. to S.S.W., not steering a direct course, but sailing from island to island and keeping away when near them. They all appear of one character except Stephens Island and Coconut Island. It is delightful sailing in this channel, the islands look beautiful: the green grass, trees, and the shrubs quite like a park, and the fringe of white sand, meeting the dark blue water, and blending as it were into a green as it runs out from the ends of the islands. Not the least interesting are the natives, those children of Nature, running along the beach, waving green boughs, shouting and gesticulating, evidently very anxious to hold communication with the passing strangers. The contemplation of the said children of Nature is less pleasant when you fancy them cracking the skull of a shipwrecked sailor and making a grill of him for supper.* We saw natives on four of the islands; the village on Coconut Island appeared to have a considerable number, and we saw three or four canoes hauled up.

We passed Coconut Island at 3h. p.m., and hauled close on a wind to weather the grassy sandbank. We passed close West of the dry sand bank to the S.S.W. of Coconut Island, and brought it to bear E.N.E.; then kept off S.W.b.W., but did not clear the reef, running to the southward of the grassy sandbank. The eastern edge of this

* See account of the loss of the *Mariner*, 1859.

reef or sandbank is of a half moon shape, forming a bay to the eastward, and, from the time it took us sailing along it, I should say it is four miles from the grassy sandbank to the South end of it.

Having cleared the end of this bank, we kept off for Poll Islet, but found a very strong current setting to the W.N.W. Just at sundown we rounded the bank off the East end of Sue Islet, ran through between Poll and Sue, and brought up under the former in nine fathoms, smooth water. The natives kept a good fire burning all night, both on Sue and Poll Islets.

We found a lee current all the way down from Bramble Cay, but it was not strong until we passed Coconut Island. After passing it I think it must have run to the W.N.W. at least three knots. The reefs running out from the Three Sisters appear to me to be laid down much too small on my chart (No. 1077), especially the East end of the reef off Bet Islet. (I have since learned that there is a later edition of this chart published.) If I go through this channel again, and have daylight, I shall go to the northward of Bet Islet and direct for the Nine Pin Rock. I consider that the worst part of the passage is from Coconut Island until clear of the reefs and sandbanks off the Three Sisters. The current takes the ship on the weather beam and runs very strong.

17th.—A.M., fresh S.E. wind; at 8h. wayed and made sail to the N.E. We tacked close to the westward of Sue Islet, and with the yards braced sharp up, laid S.b.W. $\frac{1}{2}$ W., going eight knots, we only just cleared Harvey Rocks. This may give an idea of the strength of the current. When clear of Harvey Rocks, bore away for Double Island. At 11h. 15m. saw a ship ahead running for Prince of Wales Channel. At twenty minutes past noon Tree Point bore South; made out the N.W. Reef. A canoe with three natives in it came to us from Wednesday Island; they appeared active fellows, like the Kroomen of the coast of Africa. They were in full dress,—perfectly naked, except two small shells stuck through the end of their noses, and some kind of grease rubbed into their hair that made it stick out as stiff as the bristles on a hedgehog. They made a curious noise, something between the grunt of a pig and the snort of a jackass. They called loudly for a rope, a rope. Just at this time the ship ahead payed off with her head to the N.N.W., and then brought up all standing. Thinking she must be on shore, we shortened sail and prepared to anchor under Good Island, and render assistance.

I rounded Hammond Rock pretty close, the tide running very strong to the westward, and hauled in S.W. until I shut Double Island in with Hammond Island; I then made out Ipili Reef, and the iron portion of the steamer *Phoenix's* paddle-wheel, and passed close to the northward of them, carrying $7\frac{1}{2}$ fathoms. When clear of Ipili Reef, rounded to, and prepared to assist the French ship. Shortly after we rounded to, I saw him man his windlass and shorten in. In answer to our signal, "Do you require assistance?" he hoisted his number, the *Chattilan*. Seeing the ship was in a dangerous position, I dodged under the West end of Good Island, holding our own. The *Chattilan*

had a boat down sounding, and in about an hour they hoisted her up, set the head sails, and hove up the anchor; and after some time made sail and ran down towards us. We made sail in company, and at 6h. 45m. p.m. anchored in 7 fathoms at Booby Island.



Booby Island,—Post Office.

After we brought up, I went on board the French ship; she was called the *Chattelan*, of Bordeaux, Captain Bonnin, thirty days from Newcastle, bound to Point de Galle, with coals. She had had much thick weather and rain. She came through Bligh's Entrance, made Bramble Cay on the 13th, but not being certain of its being Bramble Cay, on account of the large black rocks on the East end of it, he ran to leeward until he shoaled his water to 14 fathoms, mud, then hauled his wind. He anchored first in 14 fathoms, half way between Stephens Island and Bramble Cay. Next day, the 14th, he anchored under Arden Island, and lay there all the 15th, with thick weather. On the 16th he passed through the channel, and went over to Mount Adolphus and brought up. On the 17th he was a little ahead of us, and rounded Hammond Rock all right, but it appears that he afterwards kept too far to the northward. His look out man made out the sunk reef (*d*) and reported it. Captain Bonnin went aloft to the topmast crosstrees to have a look himself; saw the reef, and ordered the helmsman to luff, to starboard the helm; instead of which, the chief mate ran and took the wheel out of the steersman's hands and jammed the helm over hard a port, and the unfortunate captain from aloft saw his ship (he owns half of her) going before the wind stem on to the reef. He then caught hold of the topgallant backstays and slid down on deck (burning the skin off his legs and hands), shouting out, "Anchor, anchor; let go both anchors." But of course there was much confusion on deck, and the captain was first forward to the stopper. They let go the anchor and brought her up all standing. After she was brought up they dropped the lead over the side and found seven fathoms, but they could see shoal water ahead and all round them. The captain went away in the boat to sound; the anchor lay in nine feet; he could not find more than thirteen feet any where ahead of the ship,—How did the ship get where she was? She drew 16ft. 6in. He then returned on board (it was at this time I passed him, and his signal of distress was flying) and had a good look at his chart (an Admiralty chart by Lieutenant Yule), and from the soundings there laid down thought he might find water to the S.W. He then went away in the boat, sounded in that direction, and succeeded in finding a narrow gap with 3½ and 4 fathoms across the reef into Prince of Wales Channel. Having taken marks of the

land he returned on board, hove up his anchor, and with difficulty succeeded in groping his way across the reef into deep water, and ran down to us. I heartily congratulated him. He displayed much good judgment and great energy in extricating his ship from her dangerous position. Poor fellow, he appeared quite knocked up; he declared to me that he had not slept for four days and four nights: I believed him.

The Prince of Wales Channel must have been sounded with great care, and the soundings very accurately put upon the chart, for by looking at it you will see 7 fathoms where the *Chatillon* was, 2 and 2½ to the eastward of her, with 3 fathoms to the S.W. Captain Bonnin told me that it was the chart having 3½ fathoms marked to the S.W. of him that made him think he could find water out, and caused him to delay answering my signal in the affirmative. And so on board, and to bed: I was tired myself.

18th May.—Fresh S.E. wind. After breakfast prepared to land on Booby Island, when another French ship came down and brought up close astern of us. She was called the *Confiance*, of Bordeaux, Captain Equem, thirty-six days from Melbourne, with timber and passengers for Calcutta. The French captains were acquainted, and we all three fraternized and went on shore to the Post Office together.

The *Confiance* has performed a nautical feat which I consider is worthy of the days of old Dampier. He left Melbourne with the intention of going round Cape Leuwin, but fell in with heavy westerly gales, carried away his mainyard and fore topmast, besides other damage, and was obliged to run to the eastward. After he had repaired damages, finding the wind continued strong from the westward, he determined to try Torres Strait. But he had no chart of the eastern coast of Australia, nor of the straits, nor, in fact, of the Coral Sea. He only had a small general chart, on the scale of about 6° to an inch, and no directions. He had never been through the straits, but his chief mate had once, and had an abstract of the voyage. With this they progressed all right to the northward of Kenn Reef, but got either among the Bellona or Bampton Shoals, I could not find out which. However, he came safely out from among those dangers, and worked his way up to the Barrier. About 4h. p.m. of a cloudy afternoon, with light wind and strong current, he made the Beacon on Raine Island, and put the ship's head for the entrance,—a large black ship of about 1,000 tons was lying on the reef to the northward of Raine Island. It closed in dark when they were abreast of the island, but they ran to the W.S.W. until they found 14 fathoms, then down anchor, quick. In short, he took the Barrier just at dark on a dirty misty day, and without a chart,—without directions of any kind,—without even local knowledge, he brought his ship from Raine Island to Booby Island safe in six days,—three of which he passed at anchor on account of thick weather. He could not show me on the chart which way he had come, but I do not think he had followed the usual track, as he did not recognise the islands on the chart.

He anchored the previous night (17th) inside of Wednesday Spit, in 7 fathoms, and laid there very comfortably with 30 fathoms of cable. After the ship anchored, himself and passengers (he had three gentlemen with their wives and families in the cabin) went to dinner. When nearly finished, the same canoe that came off to us went alongside, and the three natives went on board. They were in the costume I have described, and as soon as they were on deck the head man of the three ran into the cabin, jumped nimbly up on the table, kicked on one side some of the dishes and plates, and squatted himself down in the centre, with his legs crossed like a tailor, and clapped his hands with delight, shouting loudly for "Tobac, tobac." The fellow appeared to think he had done rather a good thing. The ladies who were at table looked in astonishment at this animated table ornament. The captain was taken all aback, for from the time the fellow came over the gangway until he was seated in the centre of the cuddy table you could hardly say "Jack Robinson." However, he sent for a shirt and had it thrown over his head, and fitted him and his companions out with old shirts and trousers, and other small presents; receiving some shells and a few fish in return. They went away well satisfied. It is an absurd idea for a savage to jump upon a table round which eight people are sitting at dinner.



*Cave on Booby Island.—Provisions for the Shipwrecked.**

After having a yarn over the chart, we landed on Booby Island. I saw in the cave a notice left by the *Lansdowne* of the stores she had deposited, viz., 715 tins, 11 tins of bread, 4 barrels of water, 4 barrels of salt provisions. I saw those stores all but the 715 tins: I did not see any of them. I left a chest for a post office, a record book, some pens and ink, a few stores, and some newspapers. I copied and send you the few records I saw. 1st.—In a gilt picture

* These engravings are from sketches made by Lieutenant Chimmo, R.N., for his interesting voyage of the *Torch*, given in previous volumes.

frame, a notice from the shipwrecked crew of the *Supphire*, complaining that some ship had taken good stores away from the island, and substituted bad. It appeared to have been signed by most of the crew. 2nd.—Ship *Lansdowne*, Captain Richardson, left Sydney 2nd April; entered the Barrier by Wreck Bay; landed stores from the Sydney Government on 22nd April; had light winds, bound to Bombay. 3rd.—Ship *Robert Small*, Captain J. B. Darke, left Nelson, New Zealand, 10th April; entered the Barrier by Raine Island 27th April; landed on Booby Island 29th April; anchored twice. A note to Captain Bonnin, *Chatillon*, private. Dutch barque *Smallwood*, Danish schooner *Lootsee*, Dutch barque *Emillie*; all three from Newcastle to Java with coals, all well. Last, on a small scrap of paper and not signed.—“Notice.—On the S.E. side of this island is two wells of good water.” I send a verbatim copy. I think it is a pity that the writer of this notice was not able to give more information,—at least to have put his name to it. The colonial government are at some trouble to send water from Sydney. Having deposited the chest in a dry and conspicuous place, and hung up the record book to the gilt frame at the entrance of the cave, we embarked and got under way.

The ship's longitude for the passage is given by meridian distance from Sydney South Head High Light, assuming it to be in long. $151^{\circ} 18' 15''$ E. I make Bramble Cay West of Sydney Light 29m. 35s. = $143^{\circ} 54' 30''$, and Booby Island 37m. 29s. West of the same, = $141^{\circ} 56' E$.

My object in stating the meridian distance from Sydney is not to correct or confirm the surveyor's position, but to show the data on which I assert that we saw a reef $3^{\circ} 51'$ West of Sydney Heads, and I think nearly in the position M. Coutanse says he saw one.*

I have been rather prolix about the deviation of the compasses because I have been subjected to much ridicule on that subject. I have been gravely lectured about the binnacle not standing fore and aft; and have had a clever fellow offer to come on board and place the compasses for me so that they should agree. But more especially because this is a case in point; in which, if no *deviation* had been allowed for on the run from Lord Howe Island to Kenn Reef, the ship would have been among the Booby and Bellona Shoals. Again, if the same amount of deviation had been allowed for when the ship's head was three points more to the westward, she would have gone on Alert Reef or the Lihau Shoals. Or if the variation given on the chart had been allowed, as I supposed in the first instance, we should have blundered on to the Mellish Reefs, or very close to them. I therefore beg very respectfully to maintain that the local deviation of the compass in merchant ships built of wood is not a pack of nonsense.†

* The reef off New Guinea is new, and the remarks on Bramble Cay shall receive attention.—ED.

† I just remember that when I was in London last, I was talking to one of the London river pilots about the deviation of the compass. He told me that

Having come through the straits, I can only express my astonishment that the passage is considered so dangerous,—it has been a Boguey to me for twenty years. H.M.S. *Herald* having fixed the true positions of the dangers in the Coral Sea, there is no occasion to sight anything before making Bramble Cay, and there is no part of the passage up to it narrower than the entrance to the English Channel. When approaching Bramble Cay the lead is an unerring guide. With the Admiralty chart, No. 2385 (corrected for the *Herald's* positions) and the *Australian Directory* published by the Admiralty, following the directions there given, there is less difficulty in going through Bligh Entrance than there is in going from Dungeness inside the Varne to the South Foreland. Only follow the directions, without attempting to form any opinion of your own. Not many ships have gone through drawing more water than mine (19ft. 6in.), and very few have had more thick weather, yet I declare that I think the straits much less dangerous than the English Channel. I believe that in less than ten years Bligh Entrance will be run through from the westward, during the westerly monsoon, by ships from Singapore and the Bay of Bengal bound to Sydney as frequently as the Raine Island Entrance is now used by ships from Sydney to India during the easterly monsoon. If another edition of the Admiralty chart No. 2385 is published I would suggest a few tracks to be laid down alongside the *Cumberland's* track to induce ships to follow it. For when a man looks at the chart and sees some fifty tracks laid down towards Raine Island and the solitary track of Flinders towards Bligh Entrance, he naturally says, "Oh, it's all precious fine for this fellow to write a long yarn to the *Nautical Magazine*, but I am going where I see everybody else has been.

After leaving Booby Island we passed North of the Money Shoal, and then ran down in $10^{\circ} 25' S.$ to Tinor, then South of Rotti, about twenty-five miles from the land, and out clear of Pulo Dana, at this present writing.

I remain, &c.,

JAMES B. KENNEDY.

To the Editor of the Nautical Magazine.

P.S. I have incidentally mentioned the *Mariner* and *Sapphire* in this letter. I am not aware if you know the circumstances. The affair is most romantic. The *Mariner* loaded timber for masts in

some of the London river tug-boats had a large amount of "local deviation;" that they were not provided with a deviation table, but that when they were in the Channel and wished to be certain of their magnetic course, they put their *compass box* into the centre of the coil of their towing warp, *which is a coir rope*, and that the compass was not affected by local attraction when in the centre of the warp. Can it be possible that there is anything in the fibre of coconut to neutralize the attraction of iron? If the masters of the London steam tugs find they can have correct magnetic courses with the compass placed in their warps, but not when they are not placed there, it appears like it. I think this is worth inquiry.

New Zealand, and is driven on shore on some part of the Barrier Reef on the N.E. coast of Australia. Her crew leave her in boats and land on some of the islands in Torres Straits, where they are attacked by the natives, some killed and, *report* says, cooked and eaten by the natives. The remainder, after great privations, arrive at Port Curtis. Some time after the wreck of the *Mariner*, the *Sapphire* is also wrecked, and the crew in boats proceed to Booby Island, but from some cause do not remain there, but start in their boats again to try and get to Port Curtis. After proceeding some distance to the eastward, to their inexpressible delight they fall in with a ship. When they board her, they find she has no one on board; but she appears all right: she will sail and steer; so they determine to proceed to Port Curtis in her; and after various adventures they arrive there. The master of the *Mariner* had arrived in Sydney and, I believe, sold the wreck to a Sydney firm. The crew of the *Sapphire* were in Sydney when I left, and I think there will be some work for the lawyers. For as the ship was found, in the language of the law, "derelict" and "flotsam," the question may arise unto whom she belongs; what are the salvors entitled to, &c. Or, as I heard it remarked in Sydney, whether, instead of being "salvors," they were not very lucky in finding a ship to make the passage in.

J. B. K.

Master of the Medway.

Arafura Sea, May, 1860.

THE DEVIATION OF THE COMPASS,—*Abridged Report to the Hydrographer of the Admiralty. By Frederick J. Evans, Esq.*

[While we cannot but see with some surprise the cool temerity that is yet to be found among our mercantile commanders in their contempt for deviation of the compass, we observe with pleasure the very happy exception to that opinion found in this number, along with the good effects of attending to it. Certainly, as Captain Kennedy says, "*it is not a pack of nonsense,*" and he happily took the most seamanlike and effective mode of proving it. When this journal was commenced, it was an acknowledged evil in H.M. ships, and aggravated as it was by the daily increasing application of iron as well as the use of steam, it assumed a degree of importance which could not remain unheeded. In fact, notwithstanding the partial application of Barlow's plate, the condition of the compasses generally, which had been shown by that gentleman to have become much neglected, demanded reform. Hence the appearance of the standard compass in H.M. ships, and the system which had already been in practice of finding the deviation on each point of the compass became an established law. Some very interesting and remarkable facts have

been brought to light by this custom in the course of time, a condensed view of which is taken in the following paper by Mr. Evans, who has had charge of the subject since it fell from the hands of the late Captain Johnson; and there can be no doubt that the measure has been the means of improving the safety of navigation. Now, although the subject may be disregarded in some merchant ships, and that too with impunity, it does not follow that the evil does not exist, for it is well known to do so in all ships in a greater or less degree. The Courts of Enquiry (suggested long ago in this journal) amply prove this, and have been the means also of exposing gross cases of neglect, producing the loss of the ship, where the subject has been disregarded. It may be very true, as observed in the foregoing paper, that by the time the ship has steered all round the compass all would be right enough; but what if the ship is not steered all round the compass, and is running on a course with a point of deviation in it, the effect of which places her on shore? We therefore caution our shipmasters against such advice,—they may follow it once too often. It is true their owners may then go to the insurance office, which may do very well for them; but this custom is unknown to the ships of the State; and it would be well if the errors of the compass formed an exception (as capable of being prevented) among other fertile causes producing the loss of a merchant ship, although it is now insidiously at work among those causes which are attributed with an unblushing effrontery and as little regard for fact, to the act of Divine Power.]

The analysis of the deviations of the compass in this paper comprises the observations made in forty-two iron ships, varying in size from 3,400 to 165 tons, a selection of wood-built screw and paddle-wheel steam-vessels, as also the steam-ship *Great Eastern* at various times prior to her departure from England.

The observations made in the iron-built ships extend over periods varying between thirteen and five years; and having been made with the same description of compass—the Admiralty standard—and under similar conditions of arrangement and situation, in accordance with the system carried out in Her Majesty's Navy, details of which are given, the general results are strictly comparable.

In the analysis of the Tables, amounting to nearly 250 in number, of deviations observed in various parts of both hemispheres, the formula deduced from Poisson's General Equations by Mr. Archibald Smith, given in the *Philosophical Transactions* for 1846, p. 348, has been employed.

In this formula, the deviation of the compass on board ship, reckoned positive when the North point of the needle deviates to the East, is given by the following expression:—

$$\text{Deviation } (\delta) = A + B \sin \zeta' + C \cos \zeta' + D \sin 2\zeta' + E \cos 2\zeta'$$

ζ' being the azimuth (by compass) of the ship's head, reckoned from the magnetic North towards the East;

A, D, E being constant coefficients depending only on the amount, quality, and arrangement or position of the iron in the ship: B and

C, coefficients depending on these, and also on the magnetic dip and horizontal intensity, are each consisting of two parts; one caused by the permanent magnetism of the hard iron, the deviation produced by which varies inversely as the horizontal force at the place; and the other, caused by the vertical part of the earth's force inducing the soft iron of the ship, the deviation produced by which varies as the tangent of the dip: B representing that part of the combined attraction acting in a fore-and-aft direction, C that acting in a transverse, or athwart-ship direction.

From the equation $\tan \frac{-C}{B}$, the direction of the ship's force, and $\sqrt{B^2 + C^2}$, the total magnetic force of the ship in proportion to the horizontal force at the place of observation is obtained: for convenience, 1,000 has been adopted to represent the value of the earth's horizontal force at the English ports of observation, in order, by an easy comparison, to note the changes on foreign stations.

By comparison of the coefficients of the several descriptions of ships, it is observed that in wood-built steam-vessels, the coefficients B and C vary nearly as the tangent of the dip; from whence it may be inferred, as a general rule, that in steam machinery permanent magnetism bears but a small proportion to induced; but in iron-built ships, B and C generally vary more nearly as the inverse horizontal force, showing that they depend more on the permanent magnetism of the iron of the ship, and thus confirming the view of the Astronomer Royal, given in his earliest deductions, (Phil. Trans. 1839,) that the effect of transient induced magnetism is in these ships small comparatively. Numerous examples are given in detail of this permanency of magnetism, as also of the gradual diminution of the ship's force resulting from time.

An investigation of the coefficient D, which is caused entirely by the horizontal induction of the soft iron in the ship, and which is known as the "quadrantal" deviation, shows, that while in wood-built steam-ships it seldom exceeds 1° or $1\frac{1}{2}^\circ$, it rises in iron-built ships from $1\frac{1}{2}^\circ$ to 6° and 7° ; the Liverpool Compass Committee recording even a point of the compass.

The chief characteristics of the quadrantal deviation, as developed in this investigation, are—

1. That it has invariably a positive sign, causing an easterly deviation in the N.E. and S.W. quadrants; and a westerly deviation in the S.E. and N.W. quadrants.

2. Its amount does not appear to depend on the size, or mass of the vessel, or direction when building; or on the existence of iron beams.

3. That a gradual decrease in amount has occurred, after the lapse of a number of years, in nearly every vessel that has been observed.

4. That the value remains unchanged in sign and amount, on changes of geographic position.

5. That a value not exceeding 4° , and ranging between that amount and 2° , may be assumed to represent the average or normal amount in vessels of all sizes.

Numerous examples are given in support of these propositions, as also of the uniformity of the amount of quadrantal deviation when determined in various parts of the ship; and, assuming the normal amount in iron steam-ships as from 2° to 4° , an analysis is given by which it is seen that 75 per cent. of the iron ships of the Royal Navy are included in this condition.

Two questions of importance here arise; are the results of this analysis conclusive, and if so, under what conditions do large quadrantal deviations occur? Reverting to the Astronomer Royal's early experiments in 1838-39, in the iron ships *Rainbow* and *Ironsides*, whose values were very small, and presuming that those vessels were built of good material—from their then experimental character—as also that similar conditions of material of good quality exist in the iron ships of the Royal Navy, it is assumed that the value (2° to 4°) represents the average condition of a ship built of the best or superior iron.

On the other hand, can the inference be drawn that large quadrantal deviation in an iron ship implies that inferior material has been used in her construction? Attention is here directed to the ships *Birkenhead* and *Royal Charter*, which from their well-known magnetic coefficients may be regarded as the types respectively of "hard" and "soft" iron constructed vessels, and from their consideration, as also from a review of the general results, these conclusions are derived:—

1. That in an iron ship of ordinary dimensions, a standard compass can be placed, the deviations of which will but little exceed those obtaining in wood-built steam-ships; and further, that on changes of geographic position, however distant, these deviations will be within smaller limits, and can be approximately predicted.

2. A divergence from these conditions will arise when the inductive magnetism of the hull or machinery predominates; and it is inferred, especially from the example of the *Royal Charter*, that large quadrantal deviation and fluctuating sub-permanent magnetism, (due to hull alone) are co-existent, and give rise to conditions of compass disturbance which are beyond prediction, and which have hitherto baffled inquiry and given a complexion to theoretical deductions varying as regarded from different points of view.

In order to examine the change which the original magnetism of an iron ship undergoes after launching, a series of compass observations were made in the steam-ship *Great Eastern* prior to her quitting the River Thames in 1859, and subsequently at Portland, Holyhead, and Southampton*—at the three first named places within short periods of time of each other.

* The observations at Southampton were made after the paper was communicated to the Royal Society, and are introduced by way of supplement.

The results, from an Admiralty standard compass placed in a position the least subject to influence from local masses of iron, were as follows:—In the first five days, from Deptford to Portland, the ship's force had diminished from 0·585 to 0·480, [the earth's force = 1·000,] or nearly one-fifth; representing a decrease in the "semi-circular" deviation from $35^{\circ} 50'$ to $28^{\circ} 45'$; the direction of the force, or neutral points, approaching the fore-and-aft line by 10° , or changing from 47° on the starboard bow to 37° .

At the expiration of the next six weeks, the ship in the interim having made the passage to Holyhead, the ship's force diminished from 0·480 to 0·390, or about one sixth, corresponding to a decrease of "semicircular" deviation from $28^{\circ} 45'$ to $23^{\circ} 0'$, the direction of the force changing from 37° to 32° .

At Southampton, in June, 1860, or nearly eight months after the experiments made at Holyhead, the force had further diminished from 0·390 to 0·235, or by one half, corresponding to a decrease in the "semicircular" deviation from $23^{\circ} 0'$ to $13^{\circ} 30'$; whilst the direction of the force approached the fore-and-aft line 25° , or from 32° to 7° ; the quadrantal deviation remaining nearly constant [$+4\frac{1}{4}^{\circ}$] the whole time included in the various observations.

The unvarying tendency of the direction of the ship's force in the *Great Eastern* to assume a fore-and-aft line, supports the view that time, with the vibrations and concussions due to sea service, leads to a distribution of the magnetic lines, of the nature of a stable equilibrium depending on the average of the inducing forces to which the ship is exposed; the respective sections of the hull having North and South polarity, being separated by lines approximating more nearly a horizontal plane and vertical axis through the body of the ship; instead of the inclined axis and equatorial plane of separation due to the magnetic dip of the locality, and divergence from the magnetic meridian of the hull while building.

The practical information resulting from the example of the *Great Eastern* is, that prior to a newly built iron ship being sent to sea, her head during equipment should be secured in an opposite direction to that in which she was built; and that the magnetic lines should be assisted to be "shaken down" by the vibrations of the machinery in a short preparatory trip prior to the determination of her compass errors, or their compensation; but especially that in the early voyages vigilant supervision should be exercised in the determination of the compass disturbances.

Another important point, generally neglected when compasses are adjusted by the aid of magnets in a newly built iron ship, is rendered manifest by the results of this investigation; namely, the necessity of the errors of the compass being determined and placed on record prior to the adjustment. Without the knowledge to be derived from these observations of the magnetic force of the ship, all future changes of magnetism and consequent errors of the compass are mere guesswork both to those who adjust, and those in charge of the navigation of the ship.

It is recommended that, in any future legislation for the security of the navigation of our mercantile marine with reference to iron-built ships, the determination and record of these preliminary observations should be secured.

The paper concludes by directing attention to the general principles of practical import which result from the investigation, viz., as to the best direction with reference to the magnetic meridian for the keel and head of an iron ship to be placed in building, to ensure the least compass disturbance; the best position and arrangement for a compass to ensure small deviations, and permanency on changes of geographic position; and the changes to which the compass is liable from various causes on the foregoing conditions being fulfilled.

For the best direction in building, it is shown that, from the nature of the polarity of the hull, and especially of the top sides in the after section of the ship and adjoining the compass, where usually placed, the latter is least affected in those vessels built in the line of the magnetic meridian.

For iron steam-vessels engaged in the home or foreign trades in the northern hemisphere, it is recommended, from the then antagonistic magnetic influence of the hull and machinery, to build them head to the North; for iron sailing vessels, from the top sides, in the usual position of the compass, being magnetically weak if built head to the South, the latter direction is to be preferred.

The selection for the position of the compass depends on the direction of the ship during building; in those built head to North, it must be removed as far from the stern as convenience will permit; in those built head to South, as near to the stern as convenient, but avoiding especially, in all cases, proximity to vertical masses of iron. In ships built head East or West, there is little choice of position: in those built on the intercardinal points, a position approximating to the stern when the action from the top-sides—to be determined experimentally—is at a minimum, is to be preferred.

Ample elevation above the deck and exact position in the middle line of the ship, are primary conditions to be observed; and no compass should be nearer iron deck beams than four feet. As every piece of iron not forming a part of, or hammered in the fabrication of the hull, such as the rudder, funnel, fastenings of deck houses, &c., is of a magnetic character differing from the hull of the ship, proximity to any such should be avoided, and, as far as possible, the compass should be so placed that they may act as correctors of the general magnetism of the hull.

As mast compasses are affected by the magnetism of the ship to an amount depending on their elevation, and the direction of the ship in building, the disturbances will be large comparatively, except in those vessels built head East or West.

A series of Tables is appended, wherein the magnetic coefficients and ship's force and direction of the various classes of vessels are given, the ships being classed according to the nature of their material and machinery.

A TRIP TO MAUNA LOA.

In August, 1856, being on a visit to the district of Kona, Hawaii, it was proposed by some of the very hospitable foreign residents of that beautiful spot to make up a party for the purpose of visiting the great mountain of Mauna Loa, which lies in the S.W. direction from Kealakekua, distant about sixty miles. Accordingly, on the morning of August 12th, having procured the services of a native pilot and two native carriers, and packed some little matters in the way of provisions on a jackass and a bullock, our party, numbering three white men, started on horseback from the coffee-plantation of Mr. Charles Hall, at Kainaliu, on our way to the mountain. This plantation is situated in a beautiful hill-side country, about four miles from Capt. Cumings' residence at Kealakekua, and has an elevation of some 1,500 feet. The air here was mild and humid, and everything was covered with a rank growth of vegetation. As we rode along in the bracing morning breeze, we noticed on either hand numerous patches of coffee trees, in many instances growing much too close together, and often choked with weeds. Some of the trees had reached a height of fourteen to fifteen feet, and even under these circumstances were thickly covered with the bright scarlet berries. Taro here grows to a very large size, some of the roots measuring a foot in length by six inches thick. It is the upland variety, and grows on a dry soil, and by many is considered to be preferable to the other kinds. Orange, peach, banana, breadfruit, and other trees were plenty. The vine has also lately been introduced from Tahiti, and promises to flourish well.

On starting, the hour being seven a.m., the mercury stood at 68°. We proceeded directly inland, following an old cart road, partly overgrown with grass, and running through a gently rising ground overgrown with fern, familiarly called "brakes," the presence of which indicates a humid soil. In a few moments we came to the koa woods and passed the sawpit of Mr. Atkins, one of the oldest residents of this district, who says his last visit to Honolulu was some thirty years ago. He was engaged in getting out logs to saw up into shingles for a new house which he is building for himself on the main road. Our path now diverged to the left, when, after a short ride, we came up to the native packers who had preceded us, and on due deliberation it was decided to send back the horses and proceed on foot, as, on account of the thick underbrush and overhanging boughs, it had become a difficult task to sit on horseback without having one's clothes torn from his back.

Our guide, after enjoying the national refreshment of a *puhi baka*, (smoke,) led the way, bush-knife in hand, and showed himself quite expert in cutting down young saplings and clearing the way for us three *kaoles*, who followed on foot, single file; after us came the native packers, with the bullock and jackass, carrying our creature comforts. We had not travelled far thus when we were saluted with the well-known voice of the bird so noted for "pulling corn,"—*caw, caw!* One

of our number, being armed with his sharp-shooter, made at once in the direction from whence proceeded this unearthly noise, but on account of the thick bushes, failed to get near enough for a shot, which was perhaps a lucky circumstance, as from my previous acquaintance of the gentleman's shooting abilities, I would much rather have been the crow on the tree than in a position near the breech of his gun. On we trudged, pushing our way through the forest, sometimes up a steep hill, then again plunging into deep ravines; the sun already darkened by the rank growth of vines and underwood; again ascending on to an open grass plot, with here and there a clump of shrubbery—sometimes a good sized tree growing out of a bed of decomposed lava claspers. On these spots we would sit down to rest, in order to give the packers time to come up with us. Along the route we frequently saw thrifty groves of young koa-trees, with here and there a large one—some of the latter we thought would measure nine feet in diameter, and whose branches, spreading over a large surface, shaded and helped the growth of many young and tender plants. The *koa* makes a fine furniture wood, its grain being thought by many superior to the mahogany, and susceptible of a beautiful polish—the best of charcoal, too, is made from koa. Here we frequently saw the *ohia*, the wood of which is extensively used for building and other purposes. The *ohia* has two distinct blossoms, the bright scarlet and the orange colour, which give the tree a very pretty appearance. We also noticed some sandal-wood (*iliali*) trees, of a very respectable growth, the bark of which was very smooth and of a purple colour. Here, too, was the *mamani* tree, with its delicate leaves much resembling the honey locust of the United States. On our march through this forest we saw many things worthy of note, but that which impressed itself strongest upon our memory, inasmuch as it gave us most pleasure, was the presence and sweet voices of the tiny birds, that fitting from bough to bough amid this forest solitude, seemed to lighten our feet, and smooth the rough realities of the way.

Having rested our animals and lunched ourselves, our pilot in the lead, we again proceeded onward. Slowly and silently through the drizzling rain, now set in for the afternoon, we trudged along through thickets and over rough places, until we suddenly emerged upon an open spot partly covered with grass. In the middle of this miniature park we discovered a brush-house, which had been constructed by natives while engaged in looking up stray cattle. In this we sought shelter, and while reposing on some dry grass, having almost fallen asleep, we were aroused by a shout from one of the packers, who had now come up, of *manu nene!* This meant mountain geese, of course, and sportsmen can imagine the feelings of our party,—two of them, at least, who were provided with guns—the third had a club,—and we sallied out in quest of the geese. It was not long before the woods rang with two reports, (the club did not go off,) and directly a native came in with two fine fat geese. These geese are altogether different from the tame varieties, either those known as the China or the Nova Scotia goose. They have a neck like a duck, no crop, are half web-

footed, and live altogether in the mountains, never visiting the sea-shore. Their feathers are dark grey with some white, and a black streak running from the top of the head to midway of the back. Their voice is anything but pleasant, between the honk of a goose and the quack of a duck. Their flesh, however, is very palatable, and we anticipated a sumptuous dinner at our night camp, when we should arrive there.

Having here rested awhile, we again travelled on, through the wet undergrowth and rain, the latter increasing in volume every mile we progressed *mauka*, until our clothing was quite wet through. It was now getting to be quite late in the afternoon, and the atmosphere rather chilly. Coming to an open space, we stopped for another rest under the shelter of some ohia trees, when it was proposed that we build a fire, the thermometer being at 64° and falling. Our matches had all become damp and useless, but being provided with a tinder-box we raised a blaze, much to our comfort. Nothing like the old fashioned tinder-box for the traveller or sportsman. Here, the bullock and jackass having again come up, they were relieved of their loads, and suffered to return down the hill at their leisure. The clinkers henceforth in our ascent would be too sharp for their unprotected feet, and their duty of carrying the burdens was now to be performed by our natives. These having arranged their loads to their own satisfaction, and our guide again taking the lead, we followed close behind, the path being to him quite plain, but to us strangers in these mountain wilds, quite "a muddle." We now came upon what is called the *Kaawaloa* clinkers, an ancient flow of lava from Mauna Loa, now overgrown with brush and some timber. The walking over this ground was bad, and the rain came down thicker and faster, so that, wet and tired as we were, it required no little exertion to keep up with our native guide, a man of great endurance and a fast walker. These clinkers, so called from their resemblance to the slag of a black smith's forge, are very troublesome things to walk over, there being but little to choose between a road covered with clinkers and one of broken bottles.

Imagine two or three hundred acres covered a foot deep with broken glass, arranged in every supposable position, and you may guess something near what our cowhides under—or rather over—went. We made but small progress, and the temperature of the air had fallen to 61°, when at five p.m. we came upon a mountain mansion, provided by Nature for houseless travellers, and yeapt a cave. This was a large cavity, left in an arched shape by the flowing lava years ago, and with its high roof, dry floor, and utter shelter from the night winds, proved a glorious place of rest after our toilsome day's jaunt. A good fire soon shed its cheerful rays over the interior of this house of lava, and a smoking hot supper, consisting of roast potatoes and butter, and the fragrant Kona coffee, was soon served up, while a cold turkey from our pack flanked the board, or rather rock, which answered for a table. After supper, which to our appetites proved most delicious fare, a large quantity of wood was gathered to keep the fire

going all night and dry our clothes for a comfortable start in the morning. Wearied with our day's walk, we soon gladly retired under our blankets, our beds being formed of some dry grass, which we pulled in the neighbourhood of the cave, and, with but little wooing, the sleepy god soon had us fast locked in his embraces.

These caves are a peculiar feature of all volcanic countries, and of none more so than these islands. They are doubtless formed by a flow or stream of lava, the outer crust of which becoming cool, forms the arch of the cove, while the inner lava continues to run until the eruption ceases and the stream congeals, and thus the cave is formed. The one in which we slept was about twenty feet wide in the widest part, some twenty-two feet high, and thirty feet in length, having an opening or mouth about eighteen feet across. At the further end of the cave was a large hole, and apparently very deep, supposed to lead to a continuation of caves below, through which the lava flowed out into the sea, underground.

August 13th.—This morning before sunrise the thermometer stood at 53° in the cave—estimated elevation above the sea 3,500 feet. At six o'clock, after a cup of coffee, we made an early start. Our way during most of the morning was over clinkers like those of the preceding day, until we came out into an open space covered with grass and scattered shrubbery. Here the natives rested a little and then again moved slowly forward. Geese were again heard, and one more was added to our stock of fresh provisions. At about ten we came to cave No. 2, where we found abundance of cool fresh water. Here the thermometer stood at 63° in the open air, 4,500 feet elevation. Partly covering the cave was a native grass-thatched hut, built by those who in former years used to frequent these mountains for wild cattle and goats. These, however, which were formerly abundant, have entirely disappeared, either having been exterminated by the hunters or driven to other parts. We found some nice dry mats hanging on poles overhead, with which we formed luxurious couches, on which to roll and stretch our already weary limbs until the arrival of our native baggage carriers. The cooking utensils having arrived, two fat geese were in a twinkling stewing in the pot and the coffee kettle sent forth its aromatic steam. Breakfast—or rather dinner—being announced, we gathered round the delicious mess, and our appetites sharpened by our morning exercise and the mountain air, the fowl disappeared in a manner which would have been positively marvellous to metropolitan eyes. Our own appetites satisfied, the natives came in for the finale, and for a few minutes there was a great cracking of bones and sucking of fingers, their motto seeming to be emphatically the more haste the more goose.

Dinner over, we left the cave at one p.m., and resumed our upward march, the thermometer indicating 61° outside the cave. Previous to starting, four calabashes were filled with water to take with us, not expecting again to meet with water until our return. The sun shone brightly and the atmosphere being clear of clouds, we had a good view of the dome of Mauna Loa, the top of which was to be our goal, and

over whose layers of glistening lava we had yet to cross before we could climb the craggy summit and peep into the burning lake beyond. Pressing onward to our task, the path lay over an uneven country, with but a scanty growth of trees and shrubbery. We saw many "silver plants" and other vegetation which were killed by the drought which for the previous seven months had prevailed all over these islands. One year since, during a visit to the crater of Haleakala on Maui, I saw a great many of these plants fresh and healthy, their velvet leaves and silver stalks pointing heavenward to catch the morning dews.

Shortly after we started, the drizzling rain or "Scotch mist" again set in, and continued its disagreeable attentions all the afternoon. Passing a dilapidated goat-pen, we arrived at five p.m. at cave No. 3, where we concluded to remain for the night, as a little further on we should be beyond the range of the woods, and then there would be no facilities for procuring that great desideratum—a cup of hot coffee. Having supped with, if anything, an increased appetite upon that of the last meal, and built a rousing fire to keep out the night air, we "bunked in," with all our clothes on, intending to make an early start.

August 14th.—This morning we found the thermometer 43° , about 7,000 feet elevation. After fortifying the inner man with a breakfast of goose and roast potatoes and the inseparable hot coffee, we were early on our way, the route being now directly up the mountain side. In the far distance we could see some parts of the beach beyond Kailua. Our walking now grew better every mile we gained upward until it became quite smooth, the rock being of that description known by the Hawaiians as *pahoehoe*. A little way from this cave we observed frost for the first time in the hollows. The atmosphere was clear and quite cutting, the thermometer standing at 68° in one's jacket pocket. As we rose higher up, the horizon was visible far above the summit of Hualalai, some thirty miles distant; and the top of Haleakala, on East Maui, appeared about on a level with our stand-point. Looking down the mountain we could just discern an open space, apparently very diminutive, which our guide said was the broad opening clear of wood where we had killed our first geese. Farther on, and vegetation had disappeared, with the exception, here and there, of a tuft of grass or a small whortleberry bush hiding itself behind a projection of lava. Crossing a bed of clinkers we came to the smooth rock again. Here we left our fowling pieces as needless encumbrances and pushed along, passing two miniature craters, from which proceeded streams of what had once been liquid lava.

At 2h. p.m., we arrived at a pile of stones thrown up by the natives in ancient times, possibly for a landmark. Here the air became quite rarified, the thermometer standing at 55° , and one of our natives began to bleed at the lungs, which caused him to lag behind, and we all experienced a feeling of oppression in breathing. Far below us the fog was quite dense, and was constantly rolling its masses up towards us; when meeting the wind from the top of the mountain it would whirl to the right and left, still striving to get upwards, like an

army storming a fortress. At last the assailing party—the fog—got the victory, and came sweeping by us with its cold, chilling influence, its density almost amounting to rain. Occasionally the sun shone out brightly and warmly, when the thermometer would rise a few degrees, to 72° or 76°, falling again in five minutes to 64°. Coming to a cave which had once been occupied by a similar party of explorers as ourselves, we sat down, our heads aching, to rest for a few moments. Proceeding onwards for a short distance, we again had to wait for our native attendants, on whom the rarified air of this elevated spot seemed to act severely, two of them bleeding considerably at the mouth and nose, while our guide was bent double with an attack of cholera. A few moments of the *lomilomi* and he recovered. All were affected with a severe pain in the head, caused by a rush of blood.

At 4h. p.m. the fog had left this region, and covered as with a cloak all the plain below, and as the sun approached the horizon a scene was presented which defies description, and in point of beauty and magnificence exceeded anything we had before witnessed. What a subject for a painter! It was worth all our trials and fatigues—that sunset on Mauna Loa. One of our party somewhat marred the romance of the moment by exclaiming rapturously,—“Oh, for a tar pot and brush, that I might copy this truly rich scene!” Soon old Sol sunk beneath the western wave, leaving behind him a glorious halo of golden rays, forming another beautiful sight.

But the night wind already began to warn us of the necessity of procuring a shelter. Fortunately caves were found without trouble, and settling our natives into one we retired to another, and, taking a single cracker for supper, we buried ourselves under our blankets. Our natives would eat nothing, declaring themselves *aole pololi*. In spite of all our endeavours, the searching wind, which howled and roared around the mountain side, stole under our coverings and interrupted our slumbers with its chilling influences.

August 15th.—This was our fourth day, and peeping out from under our blankets we found the thermometer before sunrise was at 38° in the cave. Loth to meet the chilling mountain air, we covered our heads in the vain endeavour to get another nap, when the approaching light of the God of Day warned us that we must be out, or we should miss the sight of a sunrise from Mauna Loa. The view was grand indeed, almost exceeding the sunset of the previous night. Taking a draught of pure cold water (it made our teeth ache) from a calabash,—the effects of which were quite exhilarating,—we started soon after sunrise for the summit, our heads still throbbing with the same ache as on last evening. After many climbings over lava hillocks, often stopping to rest, at the end of three hours we arrived, [nearly exhausted, at the summit, where all at once the great crater of Mokuaweweo burst upon our view.

Standing upon the brink, a ridge of black lava, we gazed down into the immense abyss yawning before us with all its hidden fires with feelings of awe, and, for relief, looking around, the unbroken horizon met our view in every direction, except where the peaks of Mauua

Kea soared above the line. The morning was lovely, but the sun was uncomfortably warm here in this altitude of 13,760 feet, and the pain in our heads continued with unabated severity. To our judgments, after viewing it from different directions, we came to the conclusion that this crater was about 700 feet deep and five miles in circumference on the outer edge. If our guesses were correct it would prove this crater to be somewhat smaller every way than that of Kilauea, several thousand feet lower down, and situated on the S.E. side of this mountain. In August, 1851, there was an eruption here, the lava flowing in a northerly direction towards the valley between this mountain and Mauna Kea.

To the northward is another crater, and a larger one than the first, from which it is separated only by a dam or narrow ridge. It was in action, though not violently so. We judged it to be about 600 feet deep and eighteen miles in circumference. In vol. i. of the *Hawaiian Spectator*, p. 98, we notice some statements by the late Mr. Douglas, who visited these craters in 1834. He made the depth of this largest crater by actual measurement to be 1,270 feet and its circumference as twenty-four miles. The crater may have varied much in depth since then from repeated eruptions, but we think that Mr. Douglas rather over-estimated the circumference. And furthermore we doubt if he could have visited the highest point of this mountain, as he took his observation from the eastern side, that being manifestly much lower than this, the western side. He makes the height of Mauna Loa as 13,430 feet, and that of Mauna Kea as 13,764 feet,—a mistake, as has been proved, of 330 feet in the first and 189 in the other, too low. In January, 1852, the largest of these two craters overflowed and ran down the mountain towards Kau a few miles, then turning it ran in the direction of Honaunau, about half way down, when the eruption ceased.

As we stood near this wonderful precipice we saw a small, white smoke issuing from the North side of the crater. One of our party was too worn out and feeble to proceed, and leaving him to await our return, we started in the direction of the smoke, hoping to find means to boil our coffee-pot, for by this time we stood much in need of refreshment. We made our way slowly along, picking our path over the rugged ridge of the precipice. Numerous fissures were seen full of water, covered with a thin coating of ice. We filled our flask and had a refreshing drink of this mountain water. From this spot we could plainly see the smoke which we had before observed rising in clouds about 2,000 feet down the mountain, and probably twenty miles from where we stood. As we proceeded further on we came to a small cave-like opening, where, to our surprise, we found a bed of moss and green fern growing as healthy and as thrifty as in the forest below. There was quite a steam rising from this spot, indicating the presence of fire beneath. He we noticed the marks of goats, though made long since, and picked up some walking sticks which had probably been left by travellers—they were old and rotten.

Travelling further on towards a smoke which we saw, one of us made a descent, climbing over blocks of bluish lava and flinty rocks and clinkers. When near the bottom sheets of lava were encountered of a glass-like character, which now and then would let the traveller through ankle-deep. At last, coming to the coveted spot, the smoke proved to be steam, arising from a pile of rough stones. Throwing these on one side in hopes to find fire—in which attempt I was disappointed,—I got thoroughly steamed through, which had the effect of alleviating the headache before mentioned. From this spot a large number of puffs of smoke were observable far down the crater, extending out into the middle. Near by were several cones or chimneys where the lava had partly run over and cooled, and thus remained partly suspended.

There were many wonders observed in this wonderful spot which might be interesting, did time and space allow. But, climbing up the precipice again, I joined my companion, and we took our way back to where we had left our friend and the natives. This was a weary tramp, the sun shining powerfully on our heads. On joining the remainder of our party we had a consultation, and much to our regret it was decided that, considering the fact that one of us was much indisposed and that our natives had quite given out, it was advisable to abandon for this occasion our original design of visiting the burning volcano. We had, however, seen sufficient of the wonders of Nature to amply repay us for all our trouble and labour in roughing it through forest swamps, and climbing up and over blocks of sharp lava. We took one long, last look at this stupendous volcano,—the banks of dazzling white snow on our right,—the blue mountains lifting their heads above a sea of clouds, and looking like islands in the distance,—and started down again as fast as the nature of the road and our weary limbs would allow.

We started on our return at 2h. p.m., and by sundown had descended about 5,000 feet. Here we encamped at a cave, and finding a supply of whortleberry bushes we soon had a cup of hot coffee, which, having fasted all day, was peculiarly grateful to the palate. Making a supper of roasted potatoes and butter, our heads soon recovered their wonted equilibrium, and we enjoyed a good night's rest.

August 16th.—This morning we continued on our way down, stopping to dine at cave No. 2 and to sup at cave No. 1, where we slept. Nothing noteworthy occurred on the way down, and at half past one on the 17th we arrived safely at our starting-place, somewhat stiff in the joints, but well and hearty, and extremely pleased with our "Trip to Mauna Loa."—*Pacific Commercial Advertiser.*

NOTES OF A VOYAGE TO THE PACIFIC IN H.M.S. "HAVANA,"—
Captain T. Harvey.

(Continued from page 521.)

While lying in Valparaiso Bay, in forty fathoms water, we found the ship driving, and on heaving in the small bower cable found the anchor gone. The long link next to the shackle was broken, and the piece of it which came up with the cable dropped off into the manger; no pleasant circumstance as respected the safety of H.M. ship had it happened under other circumstances than it did.

H.M.S. *Trincomalee* arrived on the 19th April, forty-one days from Panama.

On the 24th we sailed for Callao, and, taking the Boqueron Passage, anchored off that place on the 5th of May. But we were required to the northward, and on the 14th sailed for Panama. Crossed the equator on 20th in $82^{\circ} 37' W$. With the exception of some variable weather during the 26th, we took the wind with us up to the Pearl Islands, making Galera at 3h. a.m. on 28th, and anchored off the town of Panama on the following day. A ship bound for Panama should make her way up the bay on the eastern side of it and work up in shore between the Pearl Islands and the main, where there is good anchorage should it fall calm or the current prove strong against her.

During our stay of six weeks we had the usual sultry weather, with rain and thunderstorms. At about four in the morning of July 5th, during a heavy storm, the U.S. frigate *Independence* was struck by lightning; which, shivering the royal and topgallant masts, cleared the topmasts and appeared to pass over the top rim, down the futtock rigging and, entering the mainmast by the necklace, went down the heart of the mast, injuring it severely, and then, by one of the main-deck beams, overboard, when it exploded without doing further mischief. The U.S. corvette *John Adams* also experienced a severe shock at the same time, but was not damaged. Those ships had the old chain conductors; nothing was felt on board this ship, thanks to Sir William Snow Harris!

July 27th, sailed at 8h. 30m. p.m. from the anchorage off the island of Taboga, Panama, for San Francisco, determined, as far as wind and weather would permit, to follow Maury's directions for making the passage.

On the 1st August, in lat. $2^{\circ} 30' N.$, the land obliged us to tack off. On the 6th we passed four miles to the southward of the position of Rivadera Shoal, as given in *Findlay's Directory*, part ii, p. 1046: nothing seen. Continued westward, although forced northward, until the 10th, when we tacked to make southing for a few hours only, and succeeded in gaining the two first crossings, as recommended in *Maury's Sailing Directions*, p. 731 (1854).

On the 21st of August made Clipperton Island, bearing W.b.N. $\frac{1}{2}$ N. Hauled up to pass South of it, and stood along the island, trying for

soundings, but no bottom at 150 and 180 fathoms two miles distant. It was covered with myriads of birds, abundance of large drift wood and pieces of wreck. We had also plenty of porpoises about the ship. On the North side the sea was much less, and landing was apparently easy in whale boats. Our standard chronometer (Webb, 5021) gave the longitude within two miles of Sir Edward Belcher's. It is correctly stated as being visible between four and five leagues off, but it is a formidable danger and a wide berth should always be given to it at night.

On the 24th August, in lat. $14^{\circ} 11' N.$, long. $114^{\circ} 18' W.$, picked up the Trade wind after only a few hours of variables. The brown albatross became numerous as we reached northward. In lat. $34\frac{1}{2}^{\circ} N.$, long. $140^{\circ} 6' W.$, we tacked to make easting, as the wind was hauling more northerly, and made the Farallon light at three in the morning of September 15th, and was soon after in the midst of fog. But we anchored off Soucelito, in San Francisco Harbour, at 4h. p.m., having been forty-nine days twenty hours on our voyage.

This passage is at all times a trying one, lasting frequently sixty, seventy, and even more than a hundred days. It was not usually made until the discovery of gold in California, when vessels, from first rate clipper ships to the smallest coasters, were in request. The old plan is the inshore track, which may occasionally succeed. But by following Maury the heavy rains, excessive heat, and doldrums certain to be met with inshore are avoided, perhaps entirely but certainly to a very considerable extent.

The U.S. frigate *Independence* arrived on October 1st, fifty-nine days from Panama, having kept southing until in $115^{\circ} W.$: went no further West than 132° .

The quickest passage on record between Panama and San Francisco is forty-five days, but even clipper ships have been a hundred days.

There is an island laid down in lat. $24^{\circ} 5' N.$, long. $128^{\circ} 30' W.$, named Henderson Island. Maury's chart, No. 10, series A, has also an island in lat. $24^{\circ} 22' N.$, long. $128^{\circ} 36' W.$, named Henderson or Elizabeth Island. There is undoubtedly an island called Elizabeth or Henderson Island in lat. $24^{\circ} 21' S.$, long. $128^{\circ} 18' W.$, and well known by its affording safety to the crew of the *Essex*, whale ship. But neither in *Findlay* nor the *Nautical Magazine* is there any island so named in the North Pacific, and it appears wrong.

The positions and description given to the Farallones Islands in *Findlay's Directory* are erroneous in every way:—

	<i>U.S. Survey.</i>	<i>Findlay.</i>
South Farallon Lighthouse	{ $37^{\circ} 41' 44'' N.$ $122^{\circ} 59' 18'' W.$	{ $37^{\circ} 36' 0'' N.$ $122^{\circ} 59' 0'' W.$
N.W. Farallon	{ $37^{\circ} 48' 25'' N.$ $123^{\circ} 8' 20'' W.$	{ $37^{\circ} 44' 0'' N.$ $123^{\circ} 7' 0'' W.$

The light is an excellent one.

There are two buoys on the bar. The bar buoy, black and white perpendicular stripes, is in 10 fathoms: Fort Point, N.E.b.E. 96

miles; Point Lobos telegraph, N.E.b.E. $\frac{3}{4}$ E. 7.6 miles; Point Bonito light house, N.E. $\frac{1}{4}$ N. 7.25 miles;—and is placed in the best position for crossing the bar. The four fathom bank buoy—red and black stripes, horizontally—is in $3\frac{1}{2}$ fathoms on the N.W. and shoalest part of the bar: Point Bonito lighthouse, E.b.N. four miles; Point Lobos telegraph, E.b.S. six miles. Keep well South of this buoy and do not open Yerba Buena Island of Fort Point until inside Point Bonito.

The following are Mr. Hull's remarks and directions for working out of San Francisco:—

The ebb tide is felt at Saucelito about an hour and a half before it makes in the stream, and the best time to start from that anchorage is on seeing the ships swing that lie off the city.

In standing towards the Presidio, tack when the Mile Rock comes on with Fort Point, on the opposite shore; tack when the Lime Rocks are on with the point North of them; then make a very short board towards Fort Point, tacking off Point Diable when the Lime Rocks are on with the East point of Angel Island; then across until the leading mark (Alcatraz Island on with Fort Point) is on. On the West board do not open Yerba Buena Island.

The wonders of this extraordinary place far surpassed our expectations—no mean ones, from the accounts previously received. It is rapidly increasing,—indeed, progress is the word here. The commerce of San Francisco finds its way North and South all over Polynesia, even to Australia, China, and India. Its agricultural resources are increasing every year, and the produce is exported to the eastern American States, and even to Europe!

Fortifications are in progress on Alcatraz Island and commanding positions in the entrance of an imposing kind. The United States Government Navy Yard is a large establishment, with works complete for docking, &c., as also for steam purposes. The American officers say that it is not intended their Pacific squadron should go back to the eastern states; that crews for ships commissioned or discharged will come and return *viâ* the Isthmus of Panama. The *St. Mary*, *John Adams*, and *Decatur* have each been re-officered and manned on this system; and the frigate *Independence* was paid off at the navy yard, San Francisco, where she is to remain as a depôt ship.

Steam-vessels of every description are seen on the coast and on the rivers. Clipper schooners and small craft trade to all the Californian and Mexican ports.

On the 4th of October sailed from San Francisco, and on the 13th anchored in Magdalena Bay, off Observatory Cliff, in five fathoms: cliff, S. 74° W.; rocky point South of it, S. 23° E. Swung ship the next morning for local deviation of compasses.

A whaling barque, the *Carrib*, of San Francisco, arrived two days after us, when we learnt from her captain that there was a deep water channel extending North from this bay to Ballenes Reef, 180 miles; that by lightening his ship to twelve feet he had taken her up seventy miles; in the course of the whole distance that there are

three outlets to the sea, in one of which is a passage with five fathoms through heavy rollers; that from twenty-five to thirty American vessels fish in these waters annually for the cow-whale of a species that frequents the Californian coast in great numbers,—dangerous to meddle with in deep water, as they either sound or attack the boats. The cows come here to calve, and are taken in quantities. It appears that they do not commence until the 1st of December, and fish both North and South bays.

These ships have two stations for obtaining supplies of beef, venison, &c., during the whaling season: one, North, called Commadu, which has a track connecting it with Moleje, in the Gulf of California; the southern, Almija, or Lee Bay, which has a road to La Paz. A brisk trade is carried on at this time. Our informant had crossed to La Paz on horseback, and did not see any possibility of a water course connecting Lee Bay with the gulf, as has been supposed. The only way to obtain water is by sinking casks in the sand, which, although brackish and bitter, with wood, is to be had in any quantity. Turtle, fish of various kinds, crawfish, and oysters there are in abundance.

In consequence of this information it was deemed desirable that our Master's, Mr. Hull's, surveying qualifications should be turned to account in exploring this interesting inlet as far as time would admit. So we started from the ship on October 17th with the gig, returning on the evening of the 21st, having succeeded in reaching a second outlet to the sea in lat. $25^{\circ} 30' N.$, long. $112^{\circ} 8' W.$,—the first one being in $25^{\circ} 17' N.$ and $112^{\circ} 8' W.$

Our first day was lost in consequence of taking the eastern channel, which had a more promising looking lead than the other and is marked Ballenes Channel on Sir Edward Belcher's chart. The entrance to the Whaler Channel is more intricate and for some distance difficult to find, the sameness of the numerous low mangrove islands annihilating all distinguishing marks; but in a ship the deep water lead would be easily detected from aloft. In two places, where the channel was very narrow and circuitous, we could only find $1\frac{1}{2}$ and 2 fathoms; least water in the broader parts from 3 to 6 fathoms; the rise and fall in this channel apparently the same as marked on Sir Edward Belcher's chart. Mr. Hull's acquaintance with surveying enabled him to fix a sufficient number of points, by bearings and observations, for a plan of that portion of the channel, which may be serviceable in a geographical as well as a nautical production.*

In addition to the turtle, fish, &c., abovementioned, hares, woodcock, plover, snipe, and curlew were found very numerous and in fine condition. There are also numbers of kiote, the jackal of the country, great cowards, but they make the timid hare very wild. Not more than half a dozen snakes seen, and two rattlesnakes killed.

Leaving this scene of our discoveries (for they were mostly new to

* A reduction of this has been added to the chart.—ED.

the chart), we anchored at San Blas on October 28th; but sailed again the same night for Mazatlan, where we arrived on November 3rd, and whence we started on the 5th for Guaymas.

This passage was made in eleven days. Our strongest winds were from N.W., those from the southward light, but falling calm occasionally with both; the weather fine. Our passage was considered to be the average under sail for November and December until the middle or end of February, when the strong N.W. and northerly winds take off.

As it was advisable to get as close in to the town as the ship's draught would allow, both for comfort and the saving of boats, we took an in-shore berth. But Mazatlan can afford good anchorage, sheltered from the N.W. winds, in the port of Lobos, as also in Santa Barbara and San Ignacio Bays. Santa Barbara would be easily recognised by a peculiar thumb peak nearest Alamas; and with this on a bearing of N. 53° E. leads to the anchorage. A ship should keep near to Point Roja (the Punta Rosa of Raper, correct in latitude, but fourteen miles to the westward in longitude) as there is a shoal off a lagoon on the other shore.

Arbolido Point, as its name implies, is remarkable from the large trees on it—unusually so on this part of the coast,—which are visible some twelve miles off. There is no other like it. Raper's position of it is wrong both in latitude and longitude. Lobos Point, South of Guaymas, may be known by a remarkable bush upon it. The coast North of Guaymas as far as Tiburon Island is very little known. From Tiburon to the Colorado River the coast is clear, and becomes shoaler to the northward after passing Point Cerro de Pelado, where there is very little water.

(To be continued.)

DESCRIPTION OF BASSES REEFS, and Dangers on the S.E. Coast of Ceylon,—By Captain W. J. S. Pullen, H.M.S. *Cyclops*.

The *Great Basses* is a dangerous reef of rocks six miles distant from the nearest part of the southern coast of Ceylon, about half a mile broad and a mile long in a N.E. $\frac{1}{2}$ E. and S.W. $\frac{1}{2}$ W. direction, and being nearly awash or just above the surface of the ocean, is the terror of the mariner at all times when he has to double the southern point of that island in his passage to or from the Bay of Bengal.

A series of good observations with the sea horizon at the anchorage of H.M.S. *Cyclops* on their northern side, during the survey of these dangers, and the adjacent coast in the course of May, June, and July, places the N.E. and highest part of the reef (distinguished by a mast) in lat. 6° 9' 53" N., and 1° 15' 30" E. from the Point de Galle lighthouse, and therefore in long. 81° 32' 50" E. from Greenwich, assuming that lighthouse to be in 80° 17' 20" E.

This result differing from all authorities, but being obtained with nine excellent chronometers from many good observations of meridian distance run both ways, not only between the Basses and Galle, but also between Galle and the station on shore at Potana, with which the Basses is connected by triangulation, may be considered well worthy of confidence.

The reef is one continuous rocky field, portions only showing here and there in the wash of the sea: the north-eastern part is the highest and broadest, where there is a large rocky ledge forming its eastern end, partially detached from the southern part or main body of the reef.

It has deep water on all sides to within half a mile of it; thus there are 16 to 19 fathoms on the southern side, 11 and 12 fathoms on the western, 9 and 10 fathoms on the northern, and 7 and 8 on the eastern sides: but beyond these depths, on the western side, about one mile off, there is a patch of 8 fathoms; and on the eastern side at $1\frac{1}{2}$ mile, there is another of five fathoms, with deeper water between it and the reef.

From the pole on the reef, Katteragamme Peak bears N. $33^{\circ} 30'$ W.; Elephant Hill, North, a little westerly; Chimney Peak, N. $22^{\circ} 30'$ E.; and Nipple Peak, N. $8^{\circ} 30'$ E.;—this line of direction also passes a little eastward of a round topped hill of 105 feet elevation close to the beach, on the West point of the bay next West of Pottana, which hill is called the Little Elephant.

The proper station for a light-vessel for this danger is with the mast above mentioned on the highest part of the reef bearing from S.S.W. $\frac{1}{2}$ W. to S.W.b.W. distant half a mile. This was the usual anchorage of the *Cyclops*, where this vessel rode out many strong breezes.

The Little Basses.—The centre of this reef bears N. $49^{\circ} 45'$ E., distant twenty miles from the pole above mentioned on the Great Basses, and from being less above water than that is even more dangerous. It appears to consist of large boulders, which even by daylight are scarcely perceptible from a ship until close up to them.

The extent of that portion usually shown by breakers is not more than a quarter of a mile across, about E.S.E. $\frac{1}{2}$ E. and W.N.W. $\frac{1}{2}$ W., but W.S.W. from its western part are many sunken patches, breaking so much in heavy weather that occasionally the sea covered with surf is a mile and a half in extent. The anchorage of the *Cyclops* was on the N.E. side of the reef, and from observations similarly obtained as those at the Great Basses anchorage, the centre of the reef is in lat. $6^{\circ} 22' 48''$ N., and long. $81^{\circ} 48' 10.92''$ E. of Greenwich.

The Little Basses is not more than $4\frac{1}{2}$ miles from the nearest part of Ceylon; and for a considerable distance all around it, but more so on its North and western sides, there are patches of shoal water, one of which, named the Three Fathom Tail, carrying the least water, 3 fathoms, bears N.b.W. distant a mile and a half from it. It is of very limited extent with $3\frac{1}{2}$ and 4 fathoms water close around it. From a description by Horsburgh it is concluded to be the shoal on which the

Atlas, (one of the fleet of indiamen under convoy of H.M.S. *Dædalus*.) first grazed over on the morning of the 2nd July, 1813.

There is much difficulty sometimes in discovering the Little Basses, especially when approaching them from the westward, while the sun is to the eastward. When sounding off the coast in the *Cyclops*, on hauling in from deep water for our friendly mark, the Chimney, we have had no bottom with 110 fathoms of line, and almost the next cast soundings in 9 or 10 fathoms, with the breakers just perceptible, close aboard of her,—a practical proof of the steep nature of the bank in the vicinity of the reef on its outer side, and the danger of approaching it from the eastward and southward in that direction on any course from W.N.W. to N.b.E. inclusive.

The following are the bearings from the reef:—Chimney Hill, N.W.; the Nipple, W.N.W. $\frac{1}{2}$ N.; the Elephant, W. $\frac{1}{2}$ S.; Katteragamme, W. $\frac{1}{2}$ S.

By seeing either of the above objects on the bearings stated against it, the mariner will know that the Little Basses Reef is in the same direction. No ship by night should be within a distance of four miles, nor by day within two miles of the Little Basses; and no ship should ever attempt to pass between the reef and the Ceylon shore.

The *Atlas Reef*, bearing N. 36° 30' E. $1\frac{1}{2}$ miles nearly from the centre of the Little Basses, is another patch of 3 fathoms, with 4 and 5 fathoms water close around it, and being most probably where the *Atlas* grazed the second time in getting out clear of the shoal water on that eventful morning, is so named in consequence.

Between the Atlas and Little Basses, and clear of the 5 fathom line around the reefs, is a space at least half a mile wide, with depths varying from $5\frac{1}{2}$ to 8 fathoms water, where the *Cyclops* usually anchored on a bottom of fine mealy sand while examining these shoals. This, being good holding ground, is the position best adapted for a light-vessel for the Little Basses; and if moored in 6 fathoms of water nearly, about half way and a little westward of an imaginary line from this reef to the Atlas Shoal, it would be sufficiently clear from tailing into shoal water in either the S.W. or N.E. monsoon. Some experience of this anchorage in the S.W. monsoon has led to the conclusion that there need be no kind of apprehension whatever for the safety of the light-vessel.

The foregoing being a description of the outer dangers of the coast, the following is a brief account of the high conspicuous land in its vicinity, the heights of which may be used in the day time, on certain bearings to point out the position of these dangerous reefs.

Description of the Coast.

Katteragamme Hill.—The first land seen from a ship approaching the Basses from the westward is the Katteragamme range of hills, the nearest and highest of which is between seven and eight miles distant from the sea. These hills are sometimes conspicuous both from the eastward and westward, when others nearer to the sea are hardly dis-

cernible. Their summit presents an irregular ridge, the N.E. peak of which is also the highest, and is 1972 feet above the sea.

Elephant Hill.—The next height to the eastward is the Elephant Hill, conspicuous from standing alone on the low land near the shore, and bearing a remarkable resemblance to the animal from which it is named. It is two miles from the beach, bare and destitute of trees, and is 480 feet above the level of the sea.

Nipple Peak.—Farther inland, and bearing from Elephant Hill N. 19° 30' E., and about nine miles distant, is Nipple Peak, 903 feet above the sea. Rendered conspicuous by its superior elevation which places it as if alone, this peak is also distinguished by a flattened summit, with two lumps (one at each end) in a direction about W.S.W. and E.N.E., from which it derives its name; the western of these nipples is the higher, the position of which was determined. This hill may also be known by a remarkable cone W.S.W. of it, generally distinguishable, but more so from the eastward, although only 520 feet above the sea.

Chimney Peak.—Next in succession, eastward, is the Chimney Peak, of much service to a ship for ascertaining her position in reference to the Basses; it is 445 feet above the sea, being the highest part of a low range which takes an East and West direction. It appears to be separated from the western part of the range and derives its name from its resemblance to a chimney. It is 4½ miles from the nearest beach, and is very conspicuous. From the Great Basses it is not easily seen, being in fact sometimes entirely concealed by the haze which generally hangs over the land, especially in the S.W. monsoon.

Potana Point.—Is situated rather more than one-third of the distance along the coast, between Elephant and Chimney Hills; and off which point is the only anchorage in shore that was used or was even found available for the *Cyclops* in the course of the survey. This anchorage was in from 5 to 6 fathoms water, with the point bearing about W.S.W. Potana Point forms perhaps the deepest bay on this coast, and would afford shelter in the S.W. monsoon for small craft not drawing more than ten feet; but a heavy sea always setting into it, throws the surf up to its innermost S.W. angle, permitting no one to land or embark without a good wetting. Off the point, and also to the westward of it, the shore is beset with detached rocks for about a mile out, with some showing and others covered, on which the sea is always breaking,—thus presenting the characteristic feature of the coast, viz., a rocky sandy shore wherever there is any tendency to a point.

The station on Potana Point, a sandhill, 105 feet above the sea, is in lat. 6° 21' 30" N., and long. 81° 38' 11.45" E., depending on the position above assumed for Galle Lighthouse, and is the mean of our runs to and from Galle, being 1° 20' 51.45" E. of that lighthouse.

The variation, the mean of a series of sets of morning and evening observations, is 0° 35' W.

The station bears from the Great Basses pole, N. 24° 35' E., distant

12·7 miles, and from centre of Little Basses, S. 79° 10' W., distant 10 miles.

Dangers within the Basses.

Elephant Shoal.—The S.W. end of the Elephant Shoal bears N. $\frac{3}{4}$ E. from the N.E. part of the Great Basses, from which it is distant nearly seven miles. From thence its heavy breakers extend N.E. $\frac{1}{2}$ E. above a mile and a half, and from 150 to 250 yards across.

There is a channel between it and the shore of Ceylon, from which it is distant about 1 $\frac{1}{2}$ mile to 1 $\frac{1}{2}$ mile, but reduced to three-quarters of a mile by some rocks off Annadowe and the next point eastward, on which is the Little Elephant Hill.

Potana Shoal.—In a direction E.N.E. $\frac{1}{4}$ E. from the N.E. end of the Elephant Shoal, and N.N.E. from the pole on the Great Basses, is the centre of Potana Shoal, a rocky patch about half a mile broad and nearly square, on which the sea always breaks. No broken water was seen between it and the Elephant Shoal, and there may be deep water between them, but owing to the heavy sea we were unable to examine it.

Cyclops Reef, bearing E.N.E. $\frac{1}{2}$ E. from the centre of the Potana Shoal, and N.N.E. $\frac{3}{4}$ E. from the pole on the Great Basses, is the western extreme of a long narrow ledge of rock, sand, and stones, extending at least four miles in an E.N.E. $\frac{1}{4}$ E. direction. This shoal is more dangerous than either of the former, from the sea breaking on it only occasionally, and from having deep water close to on each side. In the course of the survey the *Cyclops* struck on it three times, thus entitling it to bear her name.

There is a channel between the western extreme of the Cyclops and Potana Shoals a mile and a half wide, frequently used by the *Cyclops* in passing between her anchorage at Potana and the Great Basses.

Two lines of soundings were taken across the Cyclops Reef with 5 fathoms being the least water, so that it is possible a clear channel may yet be found there; but the least water on the shoal was 2 fathoms, besides many patches of 2 $\frac{1}{2}$ and 3 fathoms. The Chimney, bearing N. $\frac{1}{4}$ W., leads over its eastern extreme edge; and the Nipple, N.b.W., leads over its western extreme.

Dædalus Shoal.—This shoal is a small narrow patch of fifteen feet N.N.W. 3 $\frac{1}{2}$ miles from the Little Basses, and 1 $\frac{1}{2}$ mile off shore, with Chimney Hill bearing N.W.b.W. In the course of the survey the *Cyclops* struck on this shoal, but from its being so narrow was soon off it, and could not again find the exact place with the lead. The depth, therefore, was determined by the ship's draft of water, for on sounding round there was no less than 4 $\frac{1}{2}$ fathoms at the stem, 4 $\frac{3}{4}$ in starboard chains, 3 $\frac{3}{4}$ in port chains, and 3 $\frac{3}{4}$ fathoms astern. From Horsburgh's description, this is evidently the shoal on which the *Dædalus* was wrecked, for it says, "she fell over and went down," the only spot where this could happen, from the deep water close round it. The *Cyclops* had 7 fathoms as soon as she was off.

Passage inside the inside shoal.—There is a good channel within all these shoals that may be taken in case of necessity, by keeping about midway between the Elephant, Potana, and Cyclops Shoals on one hand and the main land on the other, or a mile off shore. The *Dædalus* may be passed on either hand. If passing inside from the westward, keep about a mile from the shore till up to Julius Nave, then edge farther from it. If passing outside of it, keep about halfway between the Little Basses and the shore; but a large ship should never adopt either route without a good pilot on board, or from necessity.

There is deep water between the Great Basses and the land, the shore of which is clear at the distance of two to three miles from it all the way to Galle.

A ship bound westward, after clearing the Little Basses, and certain of daylight, if keeping a good look-out may haul in to pass the Great Basses; and may do the same going eastward to pass the Little Basses, after passing the former. But should a ship, from any unforeseen circumstances, by night ever find herself on any part of the coast inside of them, it would be better to anchor instantly and wait for daylight, to get her position and good soundings; but the easternmost part of Ceylon must not be approached within a distance of five miles, to avoid a long narrow shoal, on the southern point of which we had a cast of $4\frac{1}{2}$ fathoms.* It is not improbable there may be less water than this, for in standing along shore close outside for four miles in 7 to 9 fathoms, discoloured water was distinctly seen, with the appearance of a deep channel inside.

The coast is clear as far as Galle, and may be approached safely to two miles distance, but, as a rule, only in daylight, as it is impossible to judge of distances accurately by night.

Currents.—The currents about the S.E. coast of Ceylon appear to gain strength with the wind, and about the Basses are most irregular: they cannot be allowed for; and the only way of avoiding danger is to give the rocks a wide berth, although it may incur a great loss of time. Instances are known where ships, most providentially only, have escaped wreck, particularly the *Dalhousie*, on her way from Madras to Galle: to have seen the pole on the Great Basses in a dark night must have placed her close to it.

The *Cyclops*, running a meridian distance to the Great Basses from Galle, passed Dondra Head at 6h. p.m.; her position was well ascertained just before dark, showing the distance of fifty-seven miles to the western reef, bearing N. $72^{\circ} 30'$ E. The wind was aft, moderate, and a S.W. swell; sail was shortened, the fires had been banked and wheels disconnected some time, so that the distance might not be overrun, and a large allowance made for current.

At 3h. 45m. the next morning the wind was somewhat fresher, and she was rounded to with head southerly, supposed to be ten miles from the Basses, after allowing fully ten miles easterly current. At 4h. a

* This shoal is not laid down in any chart.

cast of 45 fathoms was obtained, plainly showing from previous sounding the ship had drifted outside the line of the Basses Reefs; and at daylight, instead of having them in sight, she was at least ten miles to the S.E. of them, and no bottom with 100 fathoms of line; set by a current of $26\frac{1}{2}$ miles in 14 hours, or 1.85 the hour, on about a S.b.E. course.

Had this current been more northerly, as might reasonably have been expected from former observations, serious consequences might have resulted. Nor was this the strongest current that we had found, nor in the only place. About half way between the two reefs a current of 2.6 knots on an E.b.N. course was found; but these, with their dates, direction, and strength, are all noted in the chart for the information of the mariner.

Tides.—While lying under the Little Basses, or within them, a set of tide directly to windward has been occasionally felt, the wind blowing strong enough at the time to keep the ship quite broadside on; but this seldom or never lasted more than a couple of hours. At the Great Basses it was never felt, and only occasionally as far West as the anchorage off Potana, and the greatest strength ever found by us at Little Basses was three-quarters of a knot.

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

General Average.—Discipline of Merchant Ships.—The Peninsular and Oriental Company's Ships.—The Stade Dues.—Filibustier: its Origin.—Gales and Hurricanes.

“Coming events may cast their shadows before them,” observed the Chairman, in opening the present meeting, as is very well known, but real events had come so thick upon their hands that he feared the time and patience of the Club would be all wasted with one half of what they might have before them. What with the business of General Average, Stade Dues, the Navies, Royal and Mercantile, of this Country, Gales and Wrecks, and a multitude of other matters too many to enumerate, they had enough on their hands. But he would not trespass further on their time, and would be happy to proceed at once with the principal of these, the first he had named, and would ask their friend, “experienced Albert,” to introduce it to their attention.

Their worthy Chairman, observed Albert, had alluded to the subject of General Average, which he would take first. It appears that the state of this subject is not satisfactory, and has long excited the attention of merchants and capitalists not only in this country but abroad; and a movement had at length been made, headed by the veteran nobleman who is well known to be well experienced in doing good,—he meant Lord Brougham, who had presided over a meeting which would be best alluded to in the report which had been made of

it. Now he would merely observe in introducing this for the discussion of his friends, that if equity to all parties lay at the bottom of the resolutions, as he believed it did, they would have his best support, and, he doubted not, also that of his friends. Even as a subject which not only concerned merchants and shipowners, but the captains into whose hands their proceedings passed would find in the resolutions ample room for discussion and opinion.

At the meeting of the Social Science Association at Glasgow, the subject of General Average was brought under discussion. The subject is a summary of the proceedings:—

Mr. P. Rathbone, the Secretary to this Department, and other gentlemen read a short paper on the subject, after which a discussion took place, Mr. Richards, Mr. Benecke, Mr. E. N. Rahnsen, Mr. Theodor Engels, Antwerp; Mr. Thomas R. Davidson, London; Judge Marvin, New York; Mr. Bradford, Boston; Mr. Daniel Wheeler, Mobile; and Lord Brougham took part. The following resolutions were put to the meeting:—

1. That the damage done to a ship and cargo running on shore was not to be allowed in General Average.

2. That the damage done to ship, cargo, and freight in extinguishing a fire shall be allowed in General Average.

3. That the damage done to cargo by chafing and breakage resulting from a jettison of part of the remainder of the cargo shall not be allowed in General Average.

4. That the damage done to cargo, and the loss of it and the freight on it, resulting from discharging it at a port of refuge in the way usual in a port with ships not in distress, shall not be allowed in General Average.

5. That the loss sustained by cutting away the wreck of masts accidentally broken shall not be allowed in General Average.

6. That the expense of warehouse rent at a port of refuge on cargo necessarily discharged there, the expense of reshipping it, and the outward port charges at that port, shall, when the ship carries on the cargo from that port, be allowed in General Average.

7. That the damage done to ship, cargo, and freight, by carrying a press of sail, should not be allowed in General Average.

8. That wages and provisions for the ship's crew shall be allowed to the shipowner in General Average from the date on which his ship reaches a port of refuge in distress till the date she leaves it.

9. That the contributing values of ship, freight, and cargo, when the amount of expenses is less than the value of the property finally saved, shall be their actual value to their owners at the termination of the adventure.

10. That when the amount of expenses exceeds the value of property finally saved, the excess of expenses over the proceeds shall be apportioned as if the whole property had reached its destination.

11. That, in fixing the value of freight, the wages and port charges up to the date of the General Average Act shall not be deducted;

and the wages and port charges after that date shall be deducted from the gross freight at the risk of the shipowner.

These resolutions, with the exception of the first, were agreed to, and a committee was appointed to draw up rules founded upon the resolutions. The rules were brought up and passed, the first rule being modified as follows:—

“That as a general rule, in the case of the stranding of a vessel in the course of her voyage, the loss or damage to ship, cargo, or freight, shall not be the subject of General Average, but without prejudice to such a claim in exceptional cases upon clear proof of special facts.”

The two following resolutions were then adopted:—

“That the meeting hereby requests the Council of the Association to assist by their counsels such person or persons as may be approved of by them, in drawing up a Bill, with a view to its being enacted into a law by the legislative authorities of the several nations of the world, which Bill shall define, as clearly as may be, the term ‘General Average,’ and describe more or less fully the cases intended to be included within the definition, and which shall also specify the nature of the loss, damage, or expense allowable in the General Average, and the principle on which the amount of the loss, damage, or expense shall be ascertained; also furnish a rule or rules for ascertaining the contributory values of the interests concerned, and which shall also contain such matters as the person or persons drawing up the Bill may think it advisable to insert. That upon such Bill being drawn up and printed, copies thereof shall be transmitted to the several Chambers of Commerce, Boards of Underwriters, Shipowners’ Associations, and other commercial societies in different parts of the world, accompanied by a copy of this resolution, and a request to them to examine and return the said copies, with such alterations or amendments as they may think proper to make therein, within six months from the time of the receipt thereof. That, upon the return of the said copies, or upon the expiration of the said six months, the said Bill shall be revised by the person or persons drawing up the same, enlightened by the information acquired as aforesaid. That, upon the Bill being perfected in the manner aforesaid, it be recommended to the Parliament of Great Britain, the Senate and Legislative Body of France, the Legislative Bodies of Holland and Belgium, the Congress of the United States, and the legislative authorities of other commercial nations, to enact the same into a law.”

The second resolution was—

“That in the meantime the meeting resolves to circulate as widely as possible for general information the rules embodied in the resolutions which have been passed by the meeting as those which, under a uniform system, it might be desirable to consider.”

Leaving this for the discussion of those whom it most concerned, continued Albert, he would now bring before the Club a further defect in the Merchant Shipping Act in reference to discipline in addition to his former remarks on this subject. A captain here asks, what is the

punishment for abusive language and states the following case in the *Shipping Gazette*.

Constantinople, September 30th, 1860.

Sir,—I beg to call your attention to a case which I have just brought before the British Consulate in Constantinople, with a result which I think all will admit to be unsatisfactory. I do not throw any blame on the Consulate, but rather on the law,—that is, on the Merchant Shipping Act, 1854, an Act requiring, in many instances, amendment. Throughout this Act there is no clause under which a seaman can be punished for abusive language. The crews know this, and too often irritate their officers in the most unbearable manner, when, in the heat of the moment, some of us naturally may retort with a blow. For this we are fined in Constantinople from £2 to £5, and the seaman is again sent on board, unpunished for his insults, there to boast in the fore-castle, among his messmates, that he has obtained “A jolly good victory over the d—d Skipper.” They also assert, “We are in port, we’ll do as we please;” and they do so. Witness my case, which is this: One of my crew, being on shore, was ordered by me to assist in pulling off the ship’s boat, in which there were three other hands, I steering. He refused, and, folding his arms, sat in the bow of the boat in defiance. I then ordered him out of the boat, and we left him on shore, the time being one o’clock p.m. I went on shore again at three p.m., and met him. He immediately insulted me in gross language, still asserting, “I am in port, and I’ll do as I please.” I was thus compelled to give him in charge of the Turkish police, who took him before the English Harbour Master, who ordered him to be locked up for the night, and to be taken next day before the English Consulate. Going thither, the man exclaimed, “You have had me before a — Greek Consul, d— your eyes, you —, you have,” (meaning by the Greek Consul our respected English Harbour Master). When before the Court, I was called upon to indicate any clause in the Merchant Shipping Act under which punishment could be inflicted for abusive language. Of course I failed in this, simply because there is no such clause in the Act. Then I was told the point of “refusal of duty” lay between me and the man, the latter persisting in defence that he did not know how to row, and that he had shipped only as an ordinary seaman. To get rid of so black a sheep, I arranged with the Consul to pay his passage back to England, I being bound into the Black Sea, to which the man at once agreed; but next day he said he “would not be turned out of his ship; he was in port, and as good a man as his master.” The result is, he remains with me, and will most probably further insult and annoy me, as the Court did not even reprimand him for the above conduct. I ought to have said I did not strike him, although terribly and unavoidably irritated.

I am, &c.,

HENRY STRATTON,

Master of the Affiance barque, of South Shields.

But it appears the captain was still to be saddled with this sea lawyer, and he would ask how could it be expected, knowing the propensities of sailors, for a captain of a merchant ship to maintain his command when men with impunity may conduct themselves in that manner.

The next subject to which he would allude was the overcrowding of vessels of the Peninsular and Oriental Company in the hot climates through which they had to make their voyages. He would request the attention of the Club to the following letter.

Aden, September 11th.

Sir,—The month of September in the Red Sea is proverbial for its heat. It is well known to overland passengers to India or China, that at this time the passage between Suez and Aden is almost dangerous on this account. Having just completed that passage, I can speak from experience. The thermometer each day in the captain's cabin on deck, where a certain amount of breeze was blowing, at noon stood at from 90° to 95° in the shade. During the last voyage down the Red Sea of the Peninsular and Oriental steamer conveying the mails to India, four passengers died on board from the effects of the heat, and seven more are reported to have sunk in consequence of the debilitating effects of the voyage.

And yet what was the state of affairs with the steamer from which I date this letter when she left Suez? In face of the well-known heat, and of the mortality which took place the other day in the Red Sea, the first-class passengers by the *Nemesis* found themselves crowded into the stern of the ship, huddled four and five into cabins calculated only for two or three, and denied all access to the fore-castle, which, as is well known, is frequently the most airy part of the ship, and becomes during a voyage the licensed smoking-place for the gentlemen. As for the unfortunate second-class passengers, they were in a still worse predicament. The *Nemesis* is not calculated to carry many of them, but the thirty or forty she had on board during this trip had their space encroached upon by upwards of 180 French soldiers on their way to China.

It was in vain that, before sailing from Suez, the passengers protested to the captain, (who, however, behaved like a gentleman,) and to the Peninsular and Oriental Steam Navigation Company's agent at Suez (who, curious to say, is also the British consul there!) against the injustice of turning the *Nemesis* into a troop ship, simply for the sake of profiting the Peninsular and Oriental Steam Navigation Company, and thus occasioning inconvenience to a number of persons who had paid high fares for their passages to India or China. The captain referred to the Peninsular and Oriental agent as his superior authority, and, from the Peninsular and Oriental agent and British consul, no redress was to be had. A protest was then signed by eleven military and naval medical officers on board, objecting, on sanitary grounds, to the over-crowding of the vessel. This protest the captain handed over to the Peninsular and Oriental Company's agent and British consul, but it produced no effect whatever on that personage. The vessel

sailed. During the fourth night two passengers died, and several others were seized with illness. During this night, also, two of the overworked stewards were taken ill. On the fourth day several ladies were attacked, more or less seriously, and one gentleman (Mr. Dunn, M. P.) died. After this there were many more cases of illness, all referrible to the heat and the polluted air proceeding from the fore part of the ship, where all was confusion and overcrowding. There the French soldiers lay huddled together, pushing the second-class passengers into the smallest possible compass. At certain times of the day three soldiers cooked their food on deck, and the effluvium and stench arising from this and from the unwashed bodies of so many men were carried aft. Add to this, that there was no hospital accommodation on board, no attendants, and but a very inadequate supply of medicine; that the sick lay about the decks, and in one or two cases died, as it were, in public, and you have some idea of the discomforts and miseries of this voyage.

I am, &c.,

AN INDIAN ARMY SURGEON.

This was followed by the following protest.

*Peninsular and Oriental Steam-ship Nemesis,
Aden, September 11th.*

Gentlemen,—We the undersigned passengers of the steam-ship *Nemesis*, request your attention to the undermentioned facts connected with our present voyage.

You are no doubt aware that the month of September is the hottest and most fatal to passengers by your steamers plying in the Red Sea. With the knowledge of this fact, and notwithstanding the already crowded state of the ship with first and second class passengers; in spite also of a strong written protest lodged with the captain, signed by eleven military and naval medical officers, who considered it their duty to intimate to him, before weighing anchor, that, on sanitary grounds, the vessel was in an unfit state to proceed to sea, you or your agents embarked on board the *Nemesis* 180 French troops bound for China, thereby compelling us who had engaged passages at first-class rates to endure the discomforts and dangers necessarily attendant on a troop-ship.

The captain, in the most polite manner, handed over their protest and referred them to your agent at Suez, who declined to interfere in the matter.

We now beg to call your attention to the cases of sickness and deaths which have occurred on board, comprising, as you will find on reference to the log, some eighteen or twenty of the former and three of the latter, two of which occurred under the most most unsatisfactory circumstances, arising from the excessive heat, overcrowding, and impure atmosphere of the ship.

We would also call your attention to the fact that no provision whatever in the shape of a hospital, has been made for the care of the

sick, without which, in this climate, treatment can be of but little avail.

We beg to enclose a copy of the medical protest referred to in this letter, and are, gentlemen,

Your most obedient servants,

D. HODSON, Lieut.-Col., 3rd Madras European Regiment,
and sixty-one other first-class passengers.

*To the Chairman and Directors of the Peninsular and
Oriental Steam Navigation Company.*

The foregoing exhibited a state of things which the company would no doubt find it their interest to remedy. But there was one thing more in it which was no less worthy of their attention, and that was the smoking in the fore-castle,—a system by which the whole ship becomes exposed to the fumes of tobacco. He did not mean to say that they were so unbearable as the cooking of the French soldiers. But it is very well known that by the very progress of the ship on her way that all foul odours from forward come aft, and really when sea-sickness and heat contributed so much to the misery of passengers, especially ladies, why should they have an additional torment in filthy tobacco smoke and the odours from stale pipes and half burnt cigars.

These are evils which must be corrected, but they will only be so while they are held up to public condemnation. It was not long since some similar remarks on the P. and O. ships had been made at the Club, he believed they had not been without their good effect.

Another incubus he was glad to find was likely to be removed from the progress of our maritime commerce in the abolition of what were called the Stade Dues, or a deliberate tax, originally established for rebuilding Hamburg when destroyed by fire about the time of the Norman conquest, and imposed on ships of all nations carrying merchandize to the Elbe. It was one of those ancient impositions that had been almost hallowed by time, similar, indeed, to the Sound Dues, which our American friends, with the freedom of the waves in their composition; had been the first to treat as they should be. This last remnant of the feudal system he was happy to say seemed to be in a fair way of being bought up, in which this country would bear its share. If they would turn to the *Nautical Magazine* for 1858, they would find an account of this tax, but when he stated that it amounted to about four pounds for every hundred tons, our merchants might well exclaim against it.

There was a subject on which he dared hardly venture at the present moment, more from its lengthy nature than any thing else. He alluded to the approaching abolition of the old "articles of war,"—those ancient but barbarous regulations established for the discipline of our Royal Navy since the days of Charles the Second. On the 1st of April next a new code of regulations would take effect throughout the fleet, which, while they equally upheld the discipline of the fleet, were tempered with that spirit of humanity, he would term it, that marked the character of the present day. He would briefly ob-

serve that the measure, which has received the *imprimatur* of the Government, having passed the ordeal of Parliament, says—

“That it is expedient to amend the laws relating to the government of the navy, whereon, under the good providence of God, the wealth, safety, and strength of the kingdom chiefly depends. The Act is divided into seven parts. Public worship in the navy is to be properly conducted, and the Lord’s Day is to be observed according to law. Penalties are to be imposed for misconduct in the presence of the enemy, for neglect of duty, for mutiny, and for insubordination, as well as for desertion. For absence without leave an offender may be imprisoned for six weeks, with or without hard labour, or such other punishment as the circumstances of the case may require, and forfeit a sum not exceeding two days’ pay, exclusive of all charges of apprehension, and, in addition, for every twenty-five hours of absence a sum not exceeding six days’ pay; and any person may be deemed to be absent without leave, notwithstanding his absence may not have been voluntary, but may have been caused by imprisonment under a commitment for an offence against the law. Penalties are to be enforced for profane swearing and other scandalous actions in derogation of God’s honour and corruption of good manners, with dismissal from the service. Other offences are described and the punishment to be inflicted, and also the constitution and proceedings of courts-martial. Provision is made for insane persons in the royal navy. During imprisonment the pay and wages of offenders are to be suspended and stopped. The Act repeals the whole and parts of several statutes, commencing with the 22 Geo. II, c. 33, and ending with the 16 and 17 Vict. c. 69.”

He had no doubt the ends and objects of the whole measure would be secured, and he considered that great credit was due to any Board of Admiralty that should succeed in remodelling one which should secure those objects which the former did, besides substituting for the barbarous excrescences of the former laws, others that would consolidate with them the convenience, by which he meant the adaptation of measures to time and circumstances, and nature of the Royal Naval Service of this country.

Well matured nautical wisdom, gained from long experience, had indeed been employed to produce this measure, and would that he could turn to that long code of laws for their Mercantile Marine with as much satisfaction as to the new “articles of war;” but there he found the quarter-deck of the British merchantman unprotected against even drunkenness, inducing acts of insubordination and disorderly conduct which were the inroads to disobedience, violence, and mutinous proceedings too commonly seen there.

He had already pointed out this defect and he was glad to see that a case of this kind had become the subject of civil action,—a case of mutiny involving the death of a sailor had been speedily disposed of as it should be. A case of mutiny had just occurred in a ship, the crew of which chose to demand that they should go to Ascension, and threatened to tie up the captain unless he complied. Arms were

resorted to, and the affair afloat ended in the ringleader being shot by the mate! On shore, this officer, being a prisoner charged with the murder of the man, has been set at liberty, the grand jury having seen the transaction in its real colours—mutiny on the high seas—and ignored the bill charging him with the crime of murder. There is no doubt that in extreme cases when appeal is made to the heads of an English jury, composed of clear-seeing, independent gentlemen, justice is safe, law and order on the quarter-deck is upheld; but it is in the hands of persons inexperienced in the matters they have to deal with—of minor matters, which, however, it is well known lead to serious ones—that our measures generally fail. Remember that word “inexperience,” and substitute for it “efficiency” in the person who has to work—efficiency for the work he has in hand—and his work will be complete. But he feared that he had trespassed much on the attention of the Club, and he would reserve his further remarks on several subjects for another opportunity, leaving to his friend Rodmond to bring forward other matters which had no less claim than the foregoing on their attention.

Rodmond, in continuation of the searching remarks of his excellent friend who had just sat down, said he might first notice the admirable light which had been placed with so much judgment off the N.W. end of the Varne. A quick red revolving light was no less happily chosen than the position of the vessel itself, for it would keep ships to the northward of that dangerous shoal, where they ought to be, and not to the southward, or attempting to pass between the two shoals, neither of which had they any right to do, or getting hampered, as they might be, with the indraft towards the French coast. He remembered well the loss of those unhappy ships, the *Reliance* and the *Conqueror*, off the Boulogne shore, and the narrow escape of that excellent officer, Captain Jenkin Jones. Had the Varne Light existed then, neither of those wrecks, nor that of the *Blervie Castle*, would have occurred.

A general approval of these observations followed from the members of the Club: when Rodmond continued,—There is a curious term which has crept into our all-appropriating language and is now in common use among us, but would be laid aside, as *filibustering* in the West Indies would perhaps cease for awhile since the great filibustier, General Walker, had paid the penalty of his piratical proceedings. And this is the term filibustier itself. The real origin of this word is our own old one “freebooter.” In former days, about the time of Sir Francis Drake, when private enterprises were encouraged and the propensity of Englishmen for salt water and what it produced was developed in this country, privateers were common among the West India Islands, and many were the raids and piratical proceedings committed by them, when they obtained the name of *freebooters*. Thus, Captain George Watling—from whom Watling Island, it is supposed, obtained its name—was a celebrated freebooter. Their deeds of daring extended even to Panama, and great was the dislike of the Spaniards for them, who were then settled on those coasts. Hence the name of freebooter, by which they were known among their countrymen, was

adopted by the Spaniards by a name assimilating to it as nearly as their language would admit, and filibustier is not amiss for an imitation of freebooter. Filibustier and filibustero became the names adopted for them by the Spaniards. Thus in the Spanish *Maritime Dictionary*, published from the royal press at Madrid in 1831, we find as follows:—“Filibuster, s. m., *nav.*, voz derivada del nombre ingles *filibustier* que tuvieron en otro tiempo los piratas de las Antillas en la America,”—that is, “a word derived from the English name ‘freebooter’ [filibustier is the nearest Spanish expression to it], by which the pirates of the Antillas, in America were formerly called.” Hence the term filibustier is really neither more nor less than the Spanish adoption of our old term “freebooter.”

That misguided individual, the Freebooter General Walker, had at length run into the lion's mouth and found the fate he had so richly deserved. The last record of him may be worth preserving in our annals. A reward of two thousand dollars had been offered for his capture.

H.M.S. *Icarus*, Commander N. Salmon, with a transport of troops under the command of Alvarez, had proceeded to Rio Negro, where Walker and his band had encamped. The boats of the *Icarus* passed up the river, captured Walker and seventy of his men, all of whom had been taken back to Truxillo, and given up to the authorities of Honduras. Many of the men being sick, were permitted to return to the United States, on condition of never again engaging in an expedition against Central America. As for Walker and one of his colonels, named Kudler, they were to be shot.

And thus the freebooter met his fate. Being condemned, but with difficulty saved from popular fury, in his six days of imprisonment he had ample time for thought, and conscience smote him on contemplating his prison, and also on seeing the people that he had defeated and driven from their homes on the 6th of August treating him with the greatest benevolence and kindness. Carried to the place of death and being ready to be executed, he begged leave to address the people in these few words:—“I declare myself to be a member of the Roman Catholic church. I declare that I have injured the people of Honduras to a great extent, being led to do so by the people of the island of Ruatan, who, after calling me, deceived me and left me to my fate. I ask pardon for the poor men that accompanied me, for they are not so guilty as I am. If my life can be of any benefit to society I lay it down with the greatest readiness, pardoning my judges, that I may be enabled to obtain my pardon in the next world.” These were his last words, and with these the scene closed; it being worthy of notice that although the port of Truxillo was attacked ruthlessly by him, yet the people of the town pitied him, and in the whole crowd there was not one glad countenance.

It appears, continued Rodmond, that the Gulf of Mexico had been visited by a severe hurricane on the 15th September, involving a great loss of property. Nearly every house in Belize was carried away, and several lives were lost. Milneburg, the terminus of the Ponchartrain

Railroad, was submerged, and the wharfs damaged. It was reported that all the wharfs and bath-houses on the lake shore between New Orleans and Mobile had been swept away. The town of Biloxi, Mississippi, was in ruins. At Mobile the storm was severely felt. All the wharfs in the lower part of the city were submerged during the gale. Pomeroy and Marshall's lime warehouse was burnt and several steamboats blown on shore. The loss by the fire and storm was 500,000 dollars.

The last of this hurricane would seem to have found its way to our islands in the beginning of October. The effects of it at St. Kilda are thus related by Captain Otter, in command of H.M.S. *Porcupine*:—

“What a fearful storm we have encountered off St. Kilda! The poor people of that island have suffered much. The whole village is unroofed; the cut crops blown into the sea; and their boat destroyed just on the very next day after their little boat harbour was finished. I hope some good, charitable people in the South will send us some assistance for them.

“It was indeed of God's mercy that we were not dashed to pieces on the cliffs of St. Kilda or the outlying island of Levinish. The noise the wind made was awful, it literally screamed again, and nothing but a lurid glare of salt spray could be seen, except occasionally an unwelcome appearance of those awful cliffs over our heads. It was touching to see the people collected at the points in the Sound of Harris on our return, waving their handkerchiefs in welcome to us: they had quite given us up!

“One of our best boats has been dashed to pieces on shore. The other went down at anchor, but was saved. The officer in the tent was left, like those at Balaclava, in his shirt, and his traps had gone off everywhere. The boat's crew and himself took shelter in a neighbouring cottage, not too well clad for such weather.”

The relief has happily been complete, (in which he believed H.M.'s Government had done its part) for it appears a committee was formed in Glasgow, and Messrs. Cross and Sons, seedsmen, undertook to receive subscriptions. The call upon the citizens of Glasgow and the West coast received a ready and liberal response, no less a sum than £500 having been contributed in a very short time. This sum is amply sufficient to relieve the wants of the little community of St. Kilda, and further contributions are unnecessary. The requisite supplies were forwarded from Glasgow, consigned to the care of Captain Otter, of the *Porcupine*, to whom their distribution has been intrusted, and whose intimate knowledge of the islanders affords a guarantee to the public that their benevolence will not be misapplied. [They could not have been trusted in better hands.]

In addition to the sums collected by the Messrs. Cross, a sum of about £50 has been collected by Messrs. Edmonston and Douglas in Edinburgh, while above £100 have been sent to Mr. Hall Maxwell, secretary to the Highland and Agricultural Society. The donations have come from persons resident in every part of the country, and may be said to have been made spontaneously, as, beyond the mere

publication of the case, no canvas or solicitation has been employed. Among the subscriptions are a munificent sum of £50 by the Duke of Hamilton, £10 by the Duke of Atholl, £5 by the Earl of Selkirk, and a sum of above £30 collected in Greenock by Mr. Mackenzie of the *Advertiser*.

It would be unjust to the proprietor of the island, Mr. Macleod, who resides in England, to omit stating that as soon as he heard of the calamity he wrote to Mr. Hall Maxwell, expressing his wish to provide whatever was necessary at his own expense. The subscription had, however, already been made, and the committee in Glasgow, while appreciating Mr. Macleod's liberality, were unwilling that he should bear the whole burden of so peculiar a case, well knowing that to the proprietor the value of St. Kilda is merely nominal. Among the articles forwarded to the islanders were the following:—About fifty sacks meal and flour, forty sacks potatoes, sixty bushels seed oats, forty bushels seed bere, some rye for seed, two tons Peruvian guano, a quantity of horsehair for ropes, a quantity of cord and twine, a quantity of timber for roofing, straw for thatching, bran, bean meal, &c., for the cattle; cheese, tea, sugar, tobacco, teapots, and a great variety of culinary utensils. Instructions have also been sent to Captain Otter to procure a strong boat in the Highlands for the use of the islanders.

The gale seems to have commenced at St. Kilda on the 3rd of October, and continued for several days, and swept with equal fury the whole of the coast of the North of Europe, and the havoc amongst the shipping—especially in the Baltic, where the storm seems to have spent its full force—has been truly awful. Lloyd's agents at Riga, Helsingborg, Skioe, Memel, Norden and neighbouring ports, have furnished a most fearful list of disasters, there being upwards of sixty wrecks posted in the books during the day.

Among the more serious losses is that of the *Arctic*, iron screw steamship, Captain Bowes, commander, which was on her usual passage from Hull and Grimsby to St. Petersburg. By the telegraph despatch, dated Skioe, Saturday morning, October 6th, it appears that the ill-fated steamer was wrecked on the 4th inst. near Lewoig, on the coast of Jutland, and that four of the passengers and two of the crew were drowned. The *Arctic* was a new ship, having only been last year built, and was 674 tons. She was a favourite vessel on the station, and had a valuable general cargo; but her loss is accounted for by a *deck load* of 340 bales of cargo, 30 tons of coal, and two four-wheeled carriages! He had thought the days of deck loads were gone by and that they were illegal! But then it was understood that she was insured altogether for £50,000, more than half of which was effected at Lloyd's.

The fatal wrecks of several English ships with all on board are reported. They are mostly from the Tyne and northern ports. The brig *Marsden*, Mr. Esdaile master, of Shields, was carried high on the beach of Nidden, near Memel; also a Pomernian schooner and two ships stranded near Libau. The telegram states that the names of the vessels are not known, but that all hands were lost. Near Borkum

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NEWMAN'S TIDE-GUAGE

The guage, as shown in the illustration, consists of a ...
... is made to revolve on its axis once in every ...

two ships were wrecked, the *Tiberius*, Captain Harris, and the *Carlisle*, belonging to Shields, both crews perishing. The brig *Hendon*, of Sunderland, was lost at Geestenwade, and the master, Mr. Longstaff, mate, and four men were drowned. In the Cattegat a schooner was seen to founder by the *Mercurius*, which arrived at Elsinour on the 5th; nothing was seen of the crew, and it was believed that they had perished.

The telegram from Thisted states that during the hurricane of the 4th, 5th, and 6th, no fewer than thirteen ships were cast ashore:—the *Richard*, Schultz, master, of Dantzic; *Hertha*, of Coslin; *Palme*, of Stettin; *Helene*, of Soderhamn; *Meickena*, of Groningen; *Eugene and Pauline*, of Nantes; *Travail*, of St. Malo; *Harmonie*, of Frederikstadt; *Louise*, of Libau; *Mina and Carl*, of Leer; and *Espiegle*, of Jacquey.

At Skioe, in addition to the *Arctic* steamer, seven vessels, laden with timber and grain were lost. They were the *Barend*, of Harlingen; *Emanuel*, of Friesland; *Maria*, of Stockholm; *Margaretha*, of Burgtade; *Kronsprins Frederick*, of Drobak; *Albrecht Thaer*, of Doram. A despatch from Riga mentions several vessels to have been stranded on the Livonian coast during the gale, and that they had since become wrecks. The *Cyrus*, bound to Dundee from Riga, was stranded on the Oesel. The *Ludovico*, from Memel to Lynn, and the *Francisco*, from the Tyne to Memel, were wrecked at Helgared, near Helsingborg. The *Agnes*, from London to Stettin, was lost at Torekow. The brig *Jamesons*, from Newcastle, is reported to be lost near Norden. The brig *St. Lawrence* was stranded on Bornholm. The *Widar*, from Sunderland, was cast ashore near Proebbernan, and the Russian ship *Archangel Michael*, from St. Petersburg, was stranded and lost near Narva. From Elsinore a list of water-logged and leaky ships has been forwarded by telegraph: among them are the *Harmonie*, from Sundswall for Douglas; the *Henriette*, Kleist, for Hull; the *Alohyimist*, Andrews, from Newcastle for Cronstadt; and the *Minstrel Boy*, for Littlehampton. The *Alnwick Packet* was lost on the Moasdroogden.

Such are some of the effects of the gale of October, *not* foretold, the Club would observe, in the July number of their adopted periodical, the *Nautical Magazine*.

[A demand on our space for other important matter obliges us to reserve the rest of the Club discussion for our next.—ED.]

NEWMAN'S SELF REGISTERING TIDE-GUAGE.

The Tide-guage, as shown in the illustration, consists of a cylinder A, which is made to revolve on its axis once in twenty-four hours by
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4 K

the action of the clock B. A chain, to which is attached the float D, passes over the wheel C, and on the axis of this wheel C (in about the middle of it) is a small toothed wheel, placed so as to be in contact with a larger toothed wheel carrying a cylinder E, over which passes another smaller chain. This chain, passing along the upper surface of the cylinder A and round a second cylinder F at its further end, is acted on by a spring so as to be kept in a constant state of tension. In the middle of this chain a small tube is fixed for carrying a pencil, which being gently pressed down by means of a small weight on the top of it, performs the duty of marking on paper placed round the cylinder the progress of the rise or fall of the tide as the cylinder revolves and as it is drawn by the chain forward or backward by the rise or fall of the float. The paper is prepared with lines equidistant from each other, to correspond with the hours of the clock, crossed by others showing the number of feet of rise and fall, and may be obtained on application at the Admiralty, Whitehall.

The cylinder while in action revolves from left to right to a spectator facing the clock, and the pencil is carried horizontally along the top of the cylinder, and the large wheel being made to revolve by the rise and fall of the float turns the wheel with the small cylinder E attached to it; and if the tide is falling the small chain is wound round the cylinder E, and the pencil is drawn towards the large wheel; but if, on the contrary, the tide is rising, the small chain is wound on to the cylinder F by means of the spring contained in it, and is thus constantly kept in a state of tension; and thus by means of the rise and fall of the tide a lateral progress is given to the pencil while the cylinder is made to revolve on its axis by the clock, and thus a line is traced on the paper showing the exact state of the tide continuously, without further attention than is necessary to change the paper once every day and to keep the pencil carefully pointed.

A good self registering tide-guage is a valuable and important acquisition wherever tidal observations are required, and the only one which an experience of many years has brought to our notice as being an established and perfectly efficient instrument of this kind is that invented by the late Mr. John Newman, of Regent Street, London. It is now in action in several parts of the world, silently and *faithfully* performing its duty, requiring no other kind of attention than that of a very few minutes daily, and thus admitting (even if only temporarily required) the employment of the person on any other service whose duty it would otherwise have been to have registered the tide. It has done much by its faithful records in contributing to the construction of good tide tables for many places; for those unavoidable defects dependent on merely watching the surface on a divided scale are set aside by it, all erroneous conclusions excluded, and a true delineation of Nature's own making is preserved by it for the theorist.

Nautical Notices.

PARTICULARS OF LIGHTS RECENTLY ESTABLISHED.

(Continued from page 551.)

Name.	Place.	Position.	F. or R.	Ht. in Feet	Dist seen Mls.	Remarks, &c. [Bearings Magnetic.]
31. Agon Island	Sweden	61° 38' N., 17° 29' E.	R.	95	12	Est. 10th Sept., '60. Interval 40 seconds. Visible from N.N.W. round by North and East to S.W. $\frac{1}{4}$ W. Lights discontinued on 29th September until further orders.
32. Venetian Coast	.....	.....	..	..	..	Est. 10th July, '60.
32. Civita Vecchia	Italy, West coast	.....	F.	..	..	Est. 10th July, '60.
33. Rio Grande do Norte	Brazil	5° 45' S., 36° 13' S.W.	F.	43	12	Improved. Stands in Fort of Santos Reis Magos.
34. Varne Shoal	Straits of Dover	.....	R.	38	10	Est. Oct., '60. Red light revolves <i>quickly</i> . (a.)

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

(a.) 34.—The light-vessel carries a ball at her mast-head by day, and lies in 16 fathoms at low water springs, with Dungeness Lighthouse bearing W.b.N. $\frac{1}{4}$ N. distant 11 $\frac{1}{2}$ miles; Folkstone Church North, (westerly), 9 miles; South Foreland High Lighthouse N.E. $\frac{1}{4}$ N. 12 $\frac{1}{2}$ miles; N.E. Varne Buoy N.E.b.E. $\frac{1}{4}$ E. 5 miles; and Cape Gris Nez Lighthouse S.E. $\frac{1}{4}$ E. 12 $\frac{1}{2}$ miles.

Also that the *red beacon buoy* heretofore lying near the Varne Shoal has been removed to the north-eastward, and marked "N.E. Varne." This buoy now lies in 13 fathoms at low water, with Dungeness Lighthouse bearing West (northerly) distant 16 miles; Folkstone Church N.W. $\frac{1}{4}$ N. 8 miles; South Foreland High Lighthouse N.N.E. 8 miles; Cape Gris Nez Lighthouse S.S.E. $\frac{1}{4}$ E. 11 $\frac{1}{2}$ miles; and the Varne Light-vessel S.W.b.W. $\frac{1}{4}$ W. 5 miles.

The bearings are magnetic. Variation, 20 $\frac{1}{2}$ ° West in 1860.

REVOLVING LIGHT OF JERVIS HARBOUR, AUSTRALIA.—*Eastern Coast.*

Sydney, New South Wales, August 18th, 1860.

Sir,—The government of the colony having erected a lighthouse on the coast near Jervis Bay, and a large proportion of our seamen being of opinion that a much more efficient site might have been chosen in that locality, I take the liberty of enclosing you a copy of the notice just published, with a request that you will place the position on the chart, and give us your opinion. As a reader of the *Nautical* for many years, I trust this will not be deemed an intrusion.

Until this edifice was raised to stagger my preconceived notions, I was always under the impression that a coast light should be on a salient point, and not in an indentation of the general coast line, which you will readily see this occupies. The best charts of the coast

now in use, "Stokes' running survey in H.M.S. *Acheron*," and the most recent accounts of proposed lighthouses note one as *intended* to be placed on Cape St. George; but this one as you will see is two miles North of that projection, and consequently far within a line drawn from it to Crocodile Head, the most eastern land on this part of the coast line.

A strong opinion prevails amongst those nautical men here who have studied the subject, that Crocodile Head, North of Jarvis Bay, would have been the best position, and for these reasons:

1st.—It is the most salient point on the whole of this part of the sea board, and therefore to be to the eastward of, or outside, this point is to be clear of all the land in its vicinity.

2nd.—It would be seen on the coast line to the northward of it for the full extent of the range of the light, being an excellent guide for vessels bound to or from this port; and there would remain but a comparatively small unilluminated space between the limits of its visibility and that of Sydney Light. Further, there are several small harbours and a good roadstead North of Jarvis Bay, which this light would be very useful to.

3rd.—From a ship to the southward it would be seen much further into Wreck Bay than the present lighthouse can be, and if kept in sight outside Cape St. George, it would clear all the coast South of that projection.

4th.—It would be a much better guide for entering Jarvis Bay, a port which by its assistance even the *Great Eastern* might enter in any weather and find secure anchorage.

The present erection, though stated to be on a *prominent* headland, is in reality on an almost straight line of coast, as you will see by the chart and the directions herewith, which give the bearings of the points on each side of it as respectively North and South.

The light will be hidden to the northward by Crocodile Head, and to the southward by Cape St. George, to any vessel on the usual coast track.

Crocodile Head is from 200 to 250 feet high, a precipitous headland, but easily accessible by land from Jarvis Bay.

Having stated this much, I again beg that you will (being guided by the chart of the coast) tell us, readers of the *Nautical Magazine*, whether in reality we, who thus think, know nothing about these matters, and that the position chosen is all that could be desired or obtained, or whether you are of opinion that so important a beacon should have been placed where it would have produced the greatest advantages.

I am, &c.,

AN AUSTRALIAN NAVIGATOR.

To the Editor of the Nautical Magazine.

The bearings given are magnetic, the distances are in nautical miles, and the variation is $10^{\circ} 15' E$.

A white stone tower has been erected on a prominent headland, situated $2\frac{1}{2}$ miles South of the southern bluff (Bowen Island) of Jervis Bay, and 2 miles North of the projection known as Cape St. George, on the coast of New South Wales, from which a light will be exhibited on and after the 1st of October next.

The tower is 61 feet high, and the centre of the light will be 224 feet above high water level, and will be visible in all directions of the horizon from N. 27° E., round by the eastward to South $0^{\circ} 40'$ W.

It will also be visible $19^{\circ} 52'$ further to the westward over a sloping hill, situated to the southward of the lighthouse, but only when at a considerable distance to the southward of the same.

The light is on the catoptric principle of the third class, and revolving, exhibiting at intervals of 30 seconds a red, green, and white light alternately.

The intensity of the white light is visible from an elevation of 16 feet, in clear weather, at a distance of 20 miles, while its green and red rays vanish at a distance of 15 miles.

The latitude is $35^{\circ} 9' 15''$ S., and the longitude $150^{\circ} 47' 48''$ E.

Vessels coming from the South will open this light over the sloping hill to the southward of it, on a bearing of N. $20^{\circ} 32'$ E.; caution must, however, be observed in approaching Cape St. George, (a low, dangerous, rocky point, on which the sea breaks,) and when within a distance of 8 miles or thereabouts, the light should not be brought to bear to the northward of N. 10° W., as, when a vessel is near the land to the south-westward of this bearing, it will be partially, if not wholly, obscured; but by standing to the eastward it will gradually open out, and when bearing N. 25° W., or N.N.W. $\frac{1}{4}$ W., it may be passed with safety at a distance of from one to two miles.

Vessels from the southward should always endeavour to make this light, so as to prevent being embayed in the deep indentation lying to the westward of the cape, designated Wreck Bay.

Vessels approaching from the northward will open this light clear of Crocodile Head, on a bearing of S. 27° W., and by keeping it in view may pass in safety to the South, at an offing of from one to two miles.

Vessels entering Jervis Bay (a good and safe anchorage in all winds) will shut the light in with the North end of Bowen Island, on a bearing of S. $\frac{1}{4}$ W.

We have deliberately considered all the points of our correspondent's letter, to which we have added the notice of the light, as above seen: and with the chart of Captain Stokes before us, (sheets 2 and 3 East Coast, South of Sydney, Nos. 2,142, 2,143,) have noted down our answers to the arguments which he has advanced in the order in which they stand. They are these:—

No. 1.—Quite true.

No. 2.—Quite true.

No. 3.—True also,—that is, the light would have been visible more in the offing or approaches of Wreck Bay; and something short of 100 square miles of area are lost in which it would have been visible if on Crocodile Head. And certainly it would then also have served as a good clearing mark for the coast southward of Cape St. George.

No. 4.—Neither site would have made it a good guide for *entering* Jervis Bay,—although if on Crocodile Head it would have been better than where it is, because the land of Perpendicular Point would be more easily seen at night than Bowen Island, which seems to be low. But for entering Jervis Bay by night either a harbour light on Plantation Point, or a lightvessel in the bay would be desirable.

There can be no doubt that the present position of the light incurs a loss of 30° of the horizon, or about $2\frac{3}{4}$ points of the compass to the northward and 2 points more to the southward. To the northward the coast might have been approached even to two miles within the line of soundings laid down on the chart; in fact, an area of surface would have been gained of 200 square miles; and to the southward, as before observed, a nearer offing gained to Wreck Bay, had the light been placed on Crocodile Head,—to say nothing of the additional range of the light gained by the superior height of that headland.

Surely some fatality attends the Australian Lights. Here is an opportunity lost of placing a light to the best advantage on a noble headland: instead of which, a large portion of its benefit is thrown away; for it is now, as it were, partly under “a bushel.” Was it to imitate the *choice* position of the Sydney Light that this was placed on a straight line of coast? Possibly some terrible wreck like that of the *Dunbar*, in 1857, will bring the ill chosen position of this into painful notoriety on some future day. Our Australian friends seem to be unfortunate in their choice of those who have to direct these matters for them. For with good charts the place for a light being badly selected, is the more inexcusable.

While we may thank the Pilot Board for the information that the light is catoptric, what we should like to make our seamen understand is the real meaning of their description,—that it is “revolving, exhibiting at intervals of 30 seconds a red, green, and white light alternately.” Now the words above quoted will bear more constructions than one. By the old term “revolving,” the seaman *understands* that the light is interrupted by an interval of darkness. Then he is informed that “at intervals of 30 seconds” this revolving light is to be “red, green, and white.” Nothing being said about duration of interval either of light or darkness, he would be left to determine in his own mind whether those lights, “red, green, and white,” are each to last for 30 seconds, or whether the three lights are to appear in the interval of the 30 seconds. But fortunately the word “at” comes to his relief, and he makes up his mind to an “alternate” appearance of each light, following the other, as might be said, consecutively. Having come to this conclusion, he is then at a loss for the

duration of each light, and whether the lights follow each other consecutively by passing from one to the other after a small interval of each light, or whether each light is merely a flash, or whether each light is separated from the other by a brief interval of darkness. He is left to guess which of these is meant!

Doubtless the real state of the case in regard to these particulars is very well known to the Sydney captains and the Pilot Board; but it is to be regretted that their varied light, beautiful to appearance as it no doubt is, comes described to us in such ambiguous terms that if we are at a loss to comprehend them and to say which is really meant by them of these three conclusions: how are seamen to do so, who always delight in plain intelligible English?—ED.

CAMPBELL REEF, *Torres Strait.*

Ship Storm Cloud, Madras, August 27th, 1860.

Sir,—For the information of those who may be pursuing the route through Torres Strait by Bligh's Northern Channel, I beg to acquaint you with a shoal not in the Admiralty chart, 1845 (Captain Blackwood's survey), which I passed on my passage through the straits in this ship.

When passing from Bet Islet and Nine Pin Rock to Ince Point breakers were seen on the lee bow (starboard). We passed them within three cables' lengths. They were about half a mile in extent, N.E. and S.W., or nearly parallel to the ship's course S.W. $\frac{1}{4}$ S. Through the centre of the shoal Mount Ernest Island bore N.b.E. $\frac{1}{4}$ E. 7 miles, and the largest of the double islands S.b.W. $\frac{1}{4}$ W. $5\frac{1}{2}$ miles distant. This position is as correct as could be ascertained, as we were passing rapidly through the water under a press of sail.

I consider this a very dangerous shoal, as it is in the direct route from Nine Pin Rock to the Prince of Wales Channel; and I do not think it would show in light winds, as there appeared to be three or four feet water on it, and no discolouration: only the long narrow line of breakers indicating its position.

I am, &c.,

JAMES CAMPBELL, *Commander.*

To the Editor of the Nautical Magazine.

[Captain Campbell has our best thanks for so promptly reporting this danger, which has taken its place in the chart as *Camp'ell Reef* by order of the Lords Commissioners of the Admiralty.—ED.]

East Coast, Outer Route.—On the East side boundary dangers, the position of Booby Reef is stated in Hydrographic Notice No. 5 to be in long. $158^{\circ} 19' 23''$ E.; it should be $158^{\circ} 31' 53''$ E. Bampton Reef (omitted) S.W. end is in lat. $19^{\circ} 52' 22''$ S. and long. $158^{\circ} 19' 23''$ E. See *Nautical Magazine* for former positions.

VICTORIA PATCHES.—*N.W. Coast of Borneo.*

Information has been received at the Admiralty that H.M. steam-vessel *Victoria*, on the 16th of August last, from Labuan on the N.W. coast of Borneo, passed over a coral patch, the least water obtained on which was only seventeen feet. It bears about S.W. $\frac{1}{2}$ S. nearly $7\frac{1}{2}$ miles from the westernmost Bruni Patch.

Also, that two coral shoals have been discovered off this coast by the brigantine *Acis*. The position of the eastern shoal is given as lat. $3^{\circ} 45' N.$, long. $112^{\circ} 42' E.$ The other shoal lies on the same parallel, and a short distance to the westward.

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

East coast of Scotland, Firth of Forth, St. Abbs Head to Stirling, 3 sheets, Comdr. Thomas, R.N., 1858, (each 4s.)

Polar Sea, Spitzbergen Islands, Danish survey, 1838, (3s. 6d.)

Mediterranean Sea, Sicily Islands, Lipari Islands, M. Daroudeau, French survey, 1858, (4s.)

Mediterranean Sea, Archipelago, Smyrna Harbour, Captain T. Spratt, R.N., C.B., 1859, (5s.)

Africa, West coast, Niger River, various authorities, 1850, (3s. 6d.)

East Indies, Banguay and Balambangan, Captain Sir E. Belcher, R.N., C.B., 1844, (3s.)

Korea, Tsau-liang-hai (late Choesan Harbour), Commander John Ward, R.N., 1859, (3s.)

Tartary, St. Vladimir Bay, Commander J. Ward, R.N., 1859, (2s. 6d.)

Tasmania, General Chart, with plan of D'Entrecasteaux Channel and Derwent River, various authorities, corrected to 1860, (5s.)

Admiralty, 22nd October, 1860.

PENCILS.—There is a smoothness and easiness in the working of these pencils, along with a toughness and freedom from breaking, that will prove very satisfactory to those who have to use them: and, moreover, the colour of their work has a good quality of dark tint, instead of that pale grey which most others have, and which is so unsatisfactory to the draughtsman, but particularly so to the artist. The manufacturer of them—Mr. Cohen, of 9, Magdalen Row, Goodman Fields, London—well deserves the patronage of those who seek for the above qualities in this indispensable article of every day use. At least such is the experience of them by the—EDITOR.

TO CORRESPONDENTS.

The despatch from Constantinople received. Also TASMAN'S voyage from abroad and others. Captain Heckford's letter received.

THE
NAUTICAL MAGAZINE

AND

Nabal Chronicle

DECEMBER, 1860.

WRECKS ON THE ANDAMANS.

The gallant barque the *Runnymede*, of 507 tons burthen, commanded by Captain William Clement Doutty, an experienced seaman, and the property of Messrs. Hall and Co. and Ingram, of Riches Court, Lime Street, London, being a remarkably staunch river built vessel, of the A1 or first class, left Gravesend on the 20th of June, 1844, bound for Calcutta. She had on board a general cargo, and a crew of twenty-eight persons including officers. She also carried out, on account of the Hon. East India Company, thirty-eight soldiers with two women and one child belonging to H.M. 10th regt. of foot, and also Captain Stapleton, Ensigns Venables, Du Vernett, and Purcell, and 105 soldiers, ten women, and thirteen children belonging to H.M. 50th regt. of foot. The whole of the military were under the command of Captain Stapleton, the medical officer was Mr. Bell, the surgeon of the vessel.

On arriving South of the tropics, the wind, instead of backing to the westward blew almost constantly from the N.E. and E.N.E., and when it occasionally got to the westward of North it always fell light, contrary to the usual course, and so it continued until it got to the westward, and then it freshened. In consequence of the delay occasioned by this state of things, and the near approach of the N.E. monsoon, the captain, on the 21st of October, resolved to call at Penang, for the purpose of taking in an additional supply of water and other necessaries. They accordingly steered their course thither.

On the 24th they saw the island of Sumatra. On the 26th in the forenoon they saw Pulo Rondo, and on the 29th the ship anchored in safety off Port Cornwallis in the roads of Penang. Penang is on the coast of Queda. Its capital is George Town. The East India Company first formed a settlement here in 1786.

At Penang they remained till Sunday, taking in water. They found lying here H.M.S. *Dido*, commanded by the Hon. Captain Keppel.

At nine o'clock a.m. of Sunday the 3rd of November, 1844, the *Runnymede* wayed from Penang Roads, with a light southerly wind, and made sail through the North channel. At noon the wind came in from seaward. At midnight on Monday the 4th she was abreast of the Ladda Islands, with a barque in company. On Friday the 8th the weather was unsettled with heavy rain. All the small sails were stowed, and the royal yards sent down. At noon the sun was obscured. Saturday the 9th the breeze increased with every appearance of bad weather. Took in the top gallant sails and reefed the topsails, took in the jib and spanker. At noon the sun was obscured. Sunday the 10th the barometer falling fast, with the gale increasing. Close reefed the topsails. At noon heavy gusts. The courses were taken in and furled. At six the fore topsail was taken in, and the ship hove to under the main topsail and the main trysail. All the sails were resecured, the top gallant yards sent down, and everything prepared for the storm, which it was evident was now approaching. At noon the sun was again obscured; the latitude being by log $11^{\circ} 6'$ N., and the longitude $96^{\circ} 0'$ E. The wind now blew a hurricane. The barometer was 29 inches and falling. The main topsail was taken in, and the ship left under the main trysail only. At half past three the fore and main top gallant masts were blown away. The wind was South, and so very severe that the main trysail was blown to atoms, and the ship was lying to under bare poles. The hurricane was accompanied with a deluge of rain.

At 4h. p.m. the wind shifted to the S.E., and was blowing so terrifically that all the hatches were obliged to be battened down, the sea making a fair breach over the vessel. The starboard quarter-boat was washed away. About half past six p.m. there was a lull, and it was nearly calm, the wind backing to the S.W., and the sea became comparatively quiet. The barometer having fallen as low as 28.45, the ship was kept away N.b.E., and the topsails resecured, portions of them having blown adrift. At 8h. p.m. the wind began to blow again, and within half an hour the hurricane was as severe as before. The larboard quarter-boat was torn from the davits and blown across the poop, carrying away the binnacle and crushing the hen-coops in its passage. At 9h. p.m., the hurricane still increasing, the fore-mast broke into three pieces, and carried away with it the jib boom, the main and mizen topmasts, the starboard cathead, and the main yard; the main and mizen masts alone standing. At 10h. p.m. the wind and rain were so severe that the men could not hold on upon the poop. The soldiers were engaged in baling the water out of their

quarters between decks, whither it had been forced down the hatches. In other respects the ship was quite tight and free from leak, proving herself to be a capital sea boat. The pumps being attended to, drew out the water which was forced down the hatches, mast coats, and topside forwards.

During the hurricane numbers of land birds were driven on board, a case not uncommon during storms, and an owl and a hawk were observed perched on the swinging table on the poop, without showing any alarm at the presence of the ship's company.

11th.—The hurricane was equally severe, the wind S.E., and the barometer as low as 28 inches. The gusts were so terrific, mixed with drift and rain, that none of the people could stand on deck. Advantage was therefore taken of the lulls to draw the ship out, and clear away the wreck of the masts. As the starboard bower anchor was hanging only by the shankpointer, and its stock, which was of iron, was working into the ship's side; the chain cable was unshackled, and the anchor was cut away from the bows. At noon, lat. per log $11^{\circ} 6' N.$, long. $95^{\circ} 20' E.$; the barometer rose a little. We had not been able to make any observation since the 7th. The hurricane was equally severe in gusts, and the ship perfectly unmanageable from her crippled state; but rode all the time like a sea bird on the waves, notwithstanding the sea appeared to be running from every point of the compass. The crew observed a large barque ahead of them, which had lost its topmast and mainyard. They feared at first that she would not go clear of them. Happily, however, she drifted past ahead of them. This vessel afterwards proved to have been the *Briton*, of which we shall presently have occasion to speak. They also saw a brig to leeward totally dismasted. From her appearance it was judged that she must soon have foundered, and every soul on board perished. At 4h. p.m. the barometer fell to 27.70, and Cummins' mineral sympiesometer left the index.

The hurricane was now most terrific; the part of the poop to leeward and the cabin doors and the skylights, were literally torn away, and every moment they expected the poop itself to be carried off. None but those who have witnessed so awful a tempest at sea, could form an idea of the weight and destructive power of the wind crushing and beating everything to pieces, as if it had been done with a heavy metallic body. At 8h. p.m. the soldiers and sailors could not stand at the pumps, but were obliged to bale out the water from between decks.

12th.—At the turn of the day the hurricane still continued and the rudder was gone. At 1h. a.m. they felt the ship strike, and gave themselves up for lost, expecting every moment to be engulfed in the depths of the ocean. But it pleased Him whom the winds and the sea obey, to decree otherwise; and at the moment of impending destruction, the ship and all her inmates were saved.

After a short time it was discovered that the ship was thrown on a reef of rocks and had bilged; and although the water entered her through the holes which the rocks had made, and filled her up to the

lower beams, yet that it soon smothered, and, the bilge pieces keeping her upright, she lay comparatively quiet. But being fearful that she might beat over the reef into deep water, they let go the larboard bower anchor, and shortly afterwards found the water leaving her. After this all hands tell asleep, being exhausted with fatigue and hardship. Captain Doutty and the military gentlemen were in Captain Stapleton's cabin, which was the only one habitable. Captain Doutty felt too anxious to rest long, but lay watching whilst all was still, except the beating of the waves and the rain on the poop. He then went out in front of the poop. He could discern nothing but the surf breaking heavily on and around his unfortunate vessel. He then lay down again, wishing earnestly for the break of day.

At length the morning broke, which was to introduce the ship's company, just rescued from a watery grave, to a new era in their existence. With the daybreak the hurricane also began to break, and, though it rained heavily, the barometer rose rapidly until it stood at 29.45. The captain then beheld, to his great joy, the loom or landmark of the shore to leeward, rising, like a black belt, above the breakers. The land was an island, off the East coast of the Great Andaman, in lat. $12^{\circ} 1' N.$, and long. about $93^{\circ} 16' E.$ The Andaman Islands, which are about eight in number, and covered with trees, form a group at the entrance of the bay of Bengal, and are near 750 miles from the Sand Heads at Calcutta, and twelve degrees from the equator. That on which the vessel was driven was in point of latitude about the centre, and may be easily known by a remarkable hill, somewhat resembling a puritan's hat, and being placed in a hollow of the land, with much higher hills, both on the North and South of it. The anchorage is good, and a ship may be sheltered from all points.

About sixty years ago an attempt was made on the part of the East India Company to form a settlement on the Andaman Islands for the convenience of shipping. Their first settlement was called Port Chatham, on the South Andaman. But after about a year or two it was removed thence, on account of its unhealthiness, to the North Andaman, where it was named Port Cornwallis, after Admiral Cornwallis, who recommended the removal, and not long after that was finally broken up, and the islands abandoned.

The ship being nearly dry aft, on the weather clearing, her crew to their great astonishment beheld, about a quarter of a mile inside of them, high amongst the trees, in a swamp of mangroves, whither she had forced herself a passage, a large barque with troops on board. In consequence of this discovery, Ensign Du Vernett was, as soon as possible, lowered with ropes from the *Runnymede's* stern, with twelve soldiers, to communicate with the barque. At 7h. a.m., the tide rising, orders were given to the men to prepare to land at next low water, and, if possible, get something cooked, as during the hurricane no fires could be kept in the ship, and, consequently, the crew and troops had not had anything but biscuit and a glass of spirits during the storm. At half past three o'clock p.m., the tide having fallen

sufficiently to enable the people to wade on shore, Ensign Du Vernett returned on board, and reported the vessel he had visited to be the *Briton*, from Sydney, bound to Calcutta, and which had sailed from the former place in company with the ships *Royal Saxon*, *Lloyds*, and *Enmore*, on the 12th of August, 1844, having on board H.M. 80th regt. 1,000 strong, under the command of Lieut.-Col. Baker. The companies two, three, and six, were on board the *Briton*, under the orders of Major, afterwards Lieut.-Col., Bunbury, and consisted of 311 soldiers, including twelve serjeants and four drummers, thirty-four women, fifty-one children, and the following officers, namely, Captains Best, Sayers, and Montgomery; Lieutenants Leslie and Freeman; Ensigns Hunter and Coleman; and Assistant-Surgeon Gammie, medical officer in charge. The *Briton* was commanded by Captain Alexander Hall. She had a crew of thirty-four, was a vessel of 776 tons A1, and was ascertained to be the same barque which had drifted ahead of the *Runnymede* in the storm, having parted with all her companions, which afterwards arrived safely at their destination. The *Briton* was so short of provisions that twelve men were obliged to be satisfied with the ordinary allowance of four.

By dusk, all hands, including soldiers, women, and children, had left the wreck of the *Runnymede* and were accommodated on board the *Briton*. They were received by Captain Hall, Colonel Bunbury, and the officers of the 80th with great kindness, although they were enduring very great privations themselves. The crew of the *Briton* were delighted to hear of there being a fair stock of stores on board the *Runnymede*, particularly as regarded biscuit and flour; which, if moderate weather continued, would be landed for the benefit of both ships' companies.

On the morning after the wreck a seaman of the *Runnymede* lost his life by the following piece of disobedience and foolhardy temerity. Captain Doutry was sitting in Captain Stapleton's cabin, consulting with the military officers as to the best mode of getting the women and children on shore, when it was perceived that one of the seamen had placed himself by the cabin windows, apparently dressed for a swim. Captain Doutry inquired what brought him there. He instantly replied, "We are all alike now." Captain Doutry told him he was mistaken if he thought so, for that whilst two planks of the ship held together he was determined to keep the command, and ordered him to leave the cabin. As he appeared unwilling to go, the chief-officer was desired to send him forward. Being called accordingly, he refused, with an oath, to go, and immediately threw himself from the cabin window and swam towards the shore, which he never reached, as the receding waves kept him out until he was exhausted, and the ship's company saw him sink without being able to save him. This man's fate had the effect of keeping the others quiet until the water had fallen sufficiently to enable them to wade through it to the shore. After the landing Colonel Bunbury took the chief command of all parties.

13th.—At daybreak, nearly low water, all hands returned on board

and commenced getting up provisions for landing: all more or less damaged. The *Briton* had lost all her boats, and the *Runnymede's* long-boat was the only one they had, and that was badly stove, so that the water had run through her, and thereby prevented her being washed off the deck by the waves; and she eventually became the means, by God's blessing, of obtaining that assistance which saved the sufferers from perishing on a desert island. The carpenters reported that it would take eight days to put this boat into a state fit to proceed to sea to seek assistance. After a personal communication, Captains Doutry and Hall received from Captain Sayers, of the 80th Regiment, the following order, putting their ships' crews under martial law, which was twice read to each crew:—

Troop ship Briton, 12th November, 1844.

Dear Sir,—In consequence of the wreck of the troop ships *Briton* and *Runnymede*, Major Bunbury calls on Captains Hall and Doutry to explain to the crews of their respective ships that they are from this moment under military law, and feeling it to be most essential for the well being of the service that the strictest order and discipline be preserved by every one under his command, declares it to be his determination to punish with the utmost severity any act of insubordination and drunkenness.

By Order, H. T. SAYERS, Captain, 80th Regiment.

To Captain Doutry.

This day were landed from the *Runnymede*, at low water, 37 bags and 6 half bags of biscuit, $3\frac{1}{2}$ bags of flour, and 9 baskets of plums.

On the 14th, 15th, and 16th, employed landing stores.

Sunday, 17th.—This day no business was done except by the carpenters, whose work was of the utmost importance to the saving the lives of upwards of 630 persons, with a scanty stock of provisions. Divine service was performed on board the *Briton* by Captain Sayers, in presence of the seamen and troops. Seven natives made their appearance on the shore to the southward. Some of them tried to surround two sailors who were gathering shell-fish, but the sailors were too nimble for them. An officer, with a small armed party, went in pursuit; but as soon as the savages saw them they put off from the shore in a canoe, leaving their fire and, close to it, a piece of drift-wood and some fish bones. And at night again some of the natives attempted to approach the *Runnymede*, but on being fired at they took themselves off. The natives appeared to be quite naked and black, and of a robust frame, with perfectly straight hair. This day a spring of fresh water was discovered. The commander regretted that the natives should have been fired at, as much benefit might arise from a conciliatory course, and much mischief from an opposite one.

18th.—The carpenter at work on the long-boat, and the crew repairing her sails. On shore, a court-martial sat for the purpose of trying men for stealing and drunkenness. The *Runnymede* was made into a hospital-ship, under the care of Dr. Gammie, whilst Mr. Bell

gave his medical attendance on shore to those whom it was not deemed necessary to send to the hospital. The *Briton* was to be considered as a store-ship, whence the provisions were to be issued daily, under the superintendence of Ensign Venables. The remainder of the troops were also ordered to disembark and encamp, the position of the *Briton* in a stagnant swamp of half salt, half fresh water, with mangrove trees crushed under it, being considered prejudicial to the health of the men.

20th.—Carpenters laying the deck of the long-boat. Five soldiers were corporeally punished, by sentence of court-martial, for stealing and insubordination.

21st.—The carpenters completed the deck of the long-boat. Four of the soldiers straggled a short distance to the South of the encampment in search of shell-fish. They were attacked by a party of natives, who speared the whole of them, two of them dangerously; one of them had three spears sticking in him. A strong party was sent in pursuit, but could not meet with them. Shortly after the return of the party, Captain Doutry saw fourteen of the natives issue from the jungle, armed with their fishing-spears and apparently quite unconcerned; but the tide being up, and having no boat, our people could not get at them. It was, however, deemed necessary to place advanced picquets round the camp; and a four-pounder was placed on the top-gallant forecastle and another on the poop of the *Runnymede*, in order to keep the natives off if they should prove aggressive. There appeared to be no chance of receiving any assistance from them. The island appeared to be wholly unproductive, neither fruit nor vegetables having been discovered; but several wild hogs were seen.

22nd.—The carpenters employed putting a false keel to the long-boat and caulking her. Landed forty-six casks of beer; also some preserved salmon and cheese. A board of survey assembled on board the *Briton* to examine the stores saved, and to report as to the rations to be issued, calculated for forty days. The court recommended the following scale for alternate days, namely,—first day, $\frac{1}{2}$ lb. bread, $\frac{1}{2}$ lb. beef, $\frac{1}{2}$ gill spirits, $\frac{1}{2}$ oz. tea, $\frac{1}{2}$ oz. sugar; second day, $\frac{1}{4}$ lb. flour, $\frac{1}{2}$ lb. pork, $\frac{1}{4}$ pint peas, $\frac{1}{2}$ oz. coffee, $\frac{1}{2}$ oz. sugar, $\frac{1}{2}$ gill spirits, and this even would only last thirty-six days,—that is, until 27th December. By this time, too, the coast for two miles round the island was cleared of shell fish. This day a private of the 80th regiment died in hospital of dysentery, most likely caused by the water, which had a disagreeable vegetable taste.

23rd.—More beer landed from the *Runnymede*, also a case of claret. These were now issued in lieu of spirits. This day the natives came close to the camp. A few soldiers were sent to parley with them, and took two red shell jackets, which were left on a bush as presents for them. They only trampled on them, and, at a given signal, sent a volley of spears at the soldiers in return, two only taking effect. Two armed soldiers who had been concealed then appearing, the natives set up a yell and ran to the bush, leaving part of a bow and a

bundle of arrows behind them. They appeared very treacherous. They seemed also to understand the effect of firearms, running away the moment they saw any.

25th.—The long-boat being finished, was launched from the deck of the *Runnymede* at eleven o'clock, amidst the hearty cheers of all hands. She was named the *Hope*. Her mast was then stepped and fitted, and an ample supply of provisions, water, and other necessaries put on board her. At half-past five p.m. she set sail, in charge of Captain Hall, of the *Briton*, with Mr. Skelton, chief-officer of the *Runnymede*, and the boatswain and five seamen. Lieutenant Leslie, of the 80th, went in her as bearer of despatches. The course proposed, at the suggestion of Captain Doutty, was to get into the track of ships proceeding to and from the Straits of Malacca; and then, being guided by the winds and other circumstances, either to cross to Moulmein or go on to Calcutta.

26th.—Weather moderate. The *Hope* was not in sight at day-break. The carpenters landed to make preparations for building another boat. Parties out getting shell-fish. Some trepang, beche-de-mer, or sea slug were brought to Captain Doutty, which he attempted to cure by cleansing, parboiling, and drying in the sun. This is reckoned a great luxury by the Chinese, and is sold in their markets. It abounds in the vicinity of coral reefs. A wild hog was shot weighing 80lbs.; had large tusks and his hide was half an inch thick. The meat was hard and tough, but still was acceptable as a change.

29th.—Cleaning and deepening the wells and making a road to them. Carpenters cutting a keel for the boat.

Monday, 2nd December.—The keel for the intended boat was brought in from the bush, where it had been cut. A carpenter, four sawyers, and a blacksmith from the 80th were ordered to assist in building the boat. The bellows were finished for the forge, with the pioneers' aprons for sides and part of a gun-barrel for the pipe. The tiller of the *Briton's* rudder was used for an anvil, and nails were made out of the copper bolts from her stern-posts. A sailor's canoe, which was nearly finished, took fire, and both her gunwales were burnt down.

3rd.—Regular morning parades on the beach at 7h. a.m. commenced this day, the guards mounting immediately afterwards. The bugle was sounded regularly, as in garrison; at daybreak for parade, for meals, and for bed at 8h. p.m. The road to the wells still in progress of burning. This, together with the tent fires and those of the picquets, had a very brilliant effect. Two officers went in search of water, and found a running stream under the hills, about a mile from the camp, which was very difficult to reach from the denseness of the jungle.

4th.—A couple of punts have been made out of rattans, covered with tarred canvas, and the canoe had plank sides put to it in lieu of the gunwales which were burnt.

7th.—The canoe was launched and answered better than was ex-

pected. Nearly the whole of the fallen trees on the island lay towards the S.W., so that the hurricane must have come from the E.N.E. or N.E.

Sunday, 8th.—Divine service as usual. The canoe brought in a cargo of fine oysters from the northward. The tracks of a number of hogs were seen. A soldier of the 80th died in hospital of brain fever.

9th.—The *Runnymede* got a spar over her quarter, lashed to the mizen mast, to shore her up, the heavy surf causing her to bump more than was agreeable. There was quite a fleet of canoes in the bay, fishing and paddling about.

12th.—The encampment looked quite gay, each tent having its distinguishing flag or number of the company hoisted; those of the officers had also their signals flying. Captain Stapleton's had the number of his regiment, 50th. The bay from the *Runnymede* had a very pretty effect. Two turtles were seen upon the water. There were only sufficient provisions to serve this month through.

Sunday, 15th.—Yesterday a party of officers went to the northward on discovery, attended by the canoe. They crossed over to the other island. Saw a wild beast in the bush of the panther kind. Found some bundles of pigs' heads, tied with cane, laid together in heaps, and stones suspended from the trees by rattans. They supposed this to be some religious ceremony of the natives. They found a quantity of excellent oysters on the rocks. They made a fire and dined off them. Divine service as usual. This was the twentieth day after the departure of the *Hope*. The present amount of ration to be reduced one-half from tomorrow, which will be little better than starvation. Very little shell fish now to be found within miles of the camp. About 11h. a.m. there were two smart shocks of an earthquake. The *Briton* shook so violently that all hands ran up from below, fearing that she would fall over.

The last shock had scarcely subsided, when the shout of "A sail, a sail!" issued from a look-out tree on the right of the camp, on which the people themselves had established a watch, relieved every hour. The welcome cry quickly resounded throughout the camp. The *Runnymede* immediately hoisted her ensign and fired a gun, which was a preconcerted signal. The camp was in great commotion, every one inquiring where the sail was, and straining their eyes to catch a glimpse of the stranger. Within a quarter of an hour afterwards she had rounded the point and was visible to all. At 1h. p.m. she came to anchor abreast of the *Runnymede*, in fifteen fathoms, the men cheering on shore, whilst the ship saluted her with twelve guns. She proved the Hon. Company's schooner *George Swinton*, of seventy or eighty tons, from Mergui, with supplies of provisions for the sufferers, and the *Hope* towing at her stern.

Our canoes went off and brought on shore Mr. Michael, an Ensign of the 17th Madras Native Infantry, the bearer of despatches from Mergui to the commanding-officer, to whom he communicated the news of the safe arrival of the *Hope* at that port, and of the welfare

of her crew. They had reached Mergui in eleven days from the time of leaving the island. They had suffered much from the heat of the sun and fatigue, because, having either foul or light winds, they were obliged to row the greater part of the distance, and to give up all idea of going to Calcutta. Having made their report, they were supplied with a lighter boat belonging to the American missionaries, in which they proceeded to Moulmein. The next day the commanding officer at Mergui despatched the *George Swinton*, under the command of Captain Daniels, to the relief of the sufferers, bringing, amongst other things, six young buffaloes. The arrival of this vessel at the exact moment of need caused great rejoicings, and an extra half pound of biscuit and glass of spirits were issued to each man to commemorate the event. In the afternoon a soldier of the 80th was unfortunately drowned in the surf whilst bathing. On the arrival of the *Swinton* the rations were increased, and comparative plenty was restored.

18th.—The *Runnymede's* mainmast was cut away, and she was shored up with it to make her ride easily, being much shaken by the surf. The *Hope* was brought on shore, and her deck and false keel taken off, that she might be used for landing provisions and stores. A brig appeared in sight to the southward. The *Runnymede* made signals, but she passed on without taking any notice. She was supposed to be a country ship.

20th.—The island is putting on a springlike appearance: verdant spots are here and there to be seen, and the trees are beginning to come into leaf. Even those which were thrown down by the hurricane are struggling for life with the few roots left in the ground; and some sixty feet high, without branch or top, have shot out small green twigs, forming a curious contrast with their scathed trunks. Melons, limes, and other seeds sown by the officers now coming up. Two native canoes took up a position near the North island, and afterwards their people passed along the reef, fishing. Captain Doutry counted twenty-four persons on the reef, besides those left in care of the canoes. A soldier of the 50th died in hospital this day of brain fever.

Sunday, 22nd.—Divine service as usual. The poop awning of the *Briton* was blown away, and the cuddy filled with water. The weather very rough.

24th.—The *Swinton's* jolly-boat was swamped in the surf whilst taking off water-casks. The long-boat went to their assistance, and towed them alongside the schooner. The East end of the North island was covered with natives in search of food; the poor creatures seemed to depend entirely on shellfish and sea slugs, picked off the reefs, for their subsistence, with occasionally a fish, caught with their spears. During bad weather they must suffer much from hunger.

25th.—Christmas Day. The *Swinton* left for Moulmein. Mr. Michael returned in her with despatches. The *Runnymede's* dingy was capsized in consequence of Thompson, a seaman, falling on one side of her, when Edmund Hutter, a seaman, was drowned, means

of resuscitation proving of no avail. Divine service was performed on board the *Briton*. The tents of the 80th looked very gay, being decorated with green boughs in honour of the day. There was no roast beef, but very good plum puddings were made without sugar.

26th.—Flies and mosquitoes came in myriads. They were very troublesome; there were none till now; the hurricane must have swept them away. Very beautiful periodical flowers appeared. Also snakes; several have been killed in the camp. A young pig was shot by a serjeant, the mother and the rest of the family escaped.

27th.—A wicker work pot was made to catch fish in deep water. A tablet was engraven on the rock, near the burial ground, with the names of the soldiers who had died on the island.

28th.—At 7h. a.m. a sloop of war brig, the *Pilot*, Captain Jervis, with two schooner boats in convoy, appeared. The latter ran into the anchorage, and the former went round the islands in search of other vessels. Sent our boat on board one of the former and landed the officer, Mr. White, of the Company's Marine, who stated that transports were at hand to relieve the sufferers; also, that the rest of the 80th regiment had arrived safely at Calcutta. The new six-oared boat, named *Andaman*, was launched at noon; she went through the surf beautifully. The *Pilot* sent her cutter round with Lieutenant Leslie, and also some fresh meat and vegetables.

Sunday, 29th.—At noon, the *Ayrshire*, of 250 tons, arrived from Moulmein, being one of three ships taken up by the Government there to convey the sufferers away from the island; the other two were called the *Agnes Lee* and the *Elizabeth Ainslie*. Captain Jervis and three of his officers dined on the island.

30th.—The first division of the 80th regiment commenced embarking on board the *Ayrshire*. At 3h. p.m. the *Elizabeth Ainslie* arrived for the remaining portion of the 80th, and anchored near the *Runnymede*.

31st.—The *Pilot* came round from the northward, and brought up in front of the camp. Commenced embarking the heavy stores on board the *Elizabeth Ainslie*. At 4h. p.m. the *Ayrshire* sailed with the first division of the 80th regiment.

1st January, 1845.—The second division of the 80th regiment embarked in the *Elizabeth Ainslie*, as also Captain Douty and the crew of the *Runnymede*. The officers dined on board the *Pilot*. There were numerous native fires on both islands.

2nd.—The *Elizabeth Ainslie* sailed. The natives collected in great numbers on both islands. The gunboat's gig, manned by Lascars, whilst pulling along the reef, was pursued by five canoes. The brig of war's cutter went to her assistance; when the canoes pulled back to the reef and made off. The 50th detachment strengthened their camp guard and posted extra sentinels.

3rd.—The transport *Agnes Lee* arrived from Moulmein. The invalid soldiers, women, and children, and heavy baggage were embarked in the course of the day. At night the natives came round

the camp in great numbers; there were fires in every direction. A picquet was sent out to drive them back; the picquet fired at a party moving in rear of the tents, who fled, and extinguished their fires in a most extraordinary manner, the whole, except a few scattered embers, disappearing almost as if by magic. The brig of war despatched two boats to pull along shore in front of the camp; and afterwards fired two shots and a shell amongst a large body of natives gathered round a fire a short distance to the left of the *Briton*. They took themselves off and did not appear again that night.

4th.—The remainder of the detachments of the 50th embarked in the *Agnes Lee*. At night the natives again assembling in and around the camp, the marines of the *Pilot* were landed to protect the wrecks. Several shots were fired during the night.

Sunday, 5th.—The last detachment of the wrecked troops, after a sojourn of fifty-five days, sailed this day for Calcutta in the *Agnes Lee*, and bid adieu to this inhospitable island.

The voyage was most prosperous, the several ships having arrived at their destination within a few days of each other; the only place of note they passed on the voyage being Barren Island. They had a full view of its volcano, which is a cone thrown up from a valley. It was then in partial action, and was ejecting volumes of smoke as they passed it.

13th.—Latitude, by observation, $20^{\circ} 59'$ N. A comet has been seen for the last ten or twelve nights in the South-West, about equal to a star of the second magnitude, with a tail of about eight or ten degrees.

The detachments of the 10th and 50th regiments, on arriving at Calcutta, proceeded on to Chinsmah by steam; and the detachment of the 80th landed at Calcutta, and took up their quarters in Fort William.

Thus terminated one of the most remarkable shipwrecks on record; remarkable in all its circumstances, when we consider the coincidence of the two ships,—each carrying troops, each sailing from a different quarter of the globe, both bound to the same port, and both thrown upon the same island in one night, within half a mile of each other; and the *Runnymede* possessing stores and necessaries which the *Briton* stood in need of, and without which her company would, in all probability, have perished; and each having the means of defence against a race of savages reputed to be cannibals, and so proverbial for their ferocity that they are greatly dreaded by the seamen of the country ships, by whom they are called “Wild Men of the Woods,” and who, but for the fire-arms, would have destroyed the whole of the party.

WRECK OF THE "SAPPHIRE,"—and Remarkable Recovery of the Wrecked Barque "Marina."

[In our last number allusion was made by Captain Kennedy to the wrecks of the *Sapphire* and *Marina* recently on the Barrier Reef,—the former indeed seems to have occurred from attempting to take the Barrier Reef by Raine Island opening. The wrecks in question afford some remarkable circumstances, as noticed by Captain Kennedy, which have suggested a preservation of the narrative in these pages from the Sydney paper where they first appeared. They will be found interesting in more than one particular, while they present a fearful tale of suffering, originating from the dangers of the Barrier and the fatal effects of prejudice in favour of the Raine Island Passage. Had these vessels adopted the Great N.E. Channel, or, as it might be termed, Bligh's Great Channel, with common ordinary care they might have been saved from figuring as wrecks. We trust, however, that the "Australian Navigator," who appealed to our opinion regarding the light of Jervis Bay in our last number, will observe the passage made by Captain Kennedy that appears in that number,—along with his very timely and apposite remarks on the *deviation* of his compasses. We trust that he will observe, and call the attention of those captains who could judge of the position of Jervis Light, to the fact which he there points out, that in consequence of that deviation, which he finds in a true seamanlike manner, had he not done so, but had followed his old friend's advice, and "*allowed the steering compasses the variation given on the chart, it is probable the Bellona or Bampton Shoals would have brought the ship up, and then if any had ever reached home again, [we should] most likely have heard that an extraordinary current had set the ship to the eastward sixty miles in a day and a half.*" There is too much reason for believing that *some currents* originate from such causes. But apart from this, let our "Australian Navigator," whose opinion we also respect, point out this fact to his friends the Sydney captains, and then tell them that their prejudice in favour of Raine Island opening is losing their ships to their discredit and discomfort, while a safe passage to the northward in Bligh's Great Channel has been long ago pointed out in this journal,—one so happily followed by Captain Kennedy,—one that is adopted again by any captain who has once taken it, and against which not a single wreck that we know of can yet be advanced. It is quite evident that the bad position of Jervis Light is clearer and plainer to them than that of the beacon of Raine Island with the wrecks of the Barrier; while the safety of Bligh's Great Channel is too far North for their vision. We recommend them to open their eyes to it, for we value them too much not to regret seeing that their *prejudice* leads to wreck and all its sufferings. But now to a specimen of them in the case of the *Sapphire*, the ship that would take the Raine Island opening, perhaps from their advice.]

On the 8th of September, 1859, we broke ground in Port Curtis

Harbour, on a voyage to Madras, with horses, the property of Captain Clone, Port Curtis. On the 10th the pilot left the ship. We proceeded on our voyage until the 23rd of September, without anything remarkable occurring. We were then within twelve hours run of Raine Island Passage; but night coming on before we could enter the passage, the ship was hauled off with the intention of entering Raine Island Passage next morning. At 7h. 45m. p.m. breakers were seen about a quarter of a mile to leeward of us. Tried to tack ship, but she missed stays, and went broadside on the reef, where the sea was breaking very heavy, so that in a few minutes the ship became a complete wreck.

Next day Captain Bowdin, Mr. M'Kinlay, and five men left the ship in the lifeboat, but returned on the morning of the 26th; when, that afternoon all hands left the ship in the lifeboat and pinnace—our only two remaining boats.

Ship *Sapphire*, wrecked on the Great Barrier Reef, about ten miles North of Raine Island Passage. From the wreck we proceeded to Sir Charles Hardy's Island, where we arrived on the 28th of September. Remained at Sir Charles Hardy's Island until the 6th of October, repairing the boats: then left to try and beat towards Port Curtis; lifeboat in charge of Captain Bowdin; pinnace, Mr. Beveridge, first mate. After beating two days and making but little progress, the lifeboat bore away for Booby Island. Next day I also bore away for Cape York or Booby Island. Arrived at Cape York on the 12th of October, and landed. The natives appeared very friendly at our first landing, and continued so for three or four days, when they began to be thievishly inclined, stealing many things in the presence of the crew.

On the 21st of October, it not being safe to remain any longer at Cape York, I left for Booby Island. Arrived at Booby Island on the 28th, and found the lifeboat there, crew all well. Found at Booby Island a quantity of provisions, which had been sent there by the British Government, and which we availed ourselves of, as our own were nearly done. Remained at Booby Island until the 31st of October, when we left, thinking to get towards Port Curtis with the N.W. winds. Both boats in company on leaving, but got separated the first night. On the 2nd of November saw the lifeboat about two miles to leeward of Good Island; pinnace under Friday Island. While beating through between Good and Friday Islands, a canoe with five natives came off from Friday Island. They appeared very friendly. Three men went in the canoe to go ashore, to try to get some turtle or fish. Stood towards Friday Island with the boat, and anchored about one cable's length off shore. About three quarters of an hour after the men went ashore, sent another man ashore to tell the others to come off. Meanwhile a canoe with five natives came from some of the other islands. The natives in this canoe seemed daring and hostile, and wanted to take many things out of the boat. The men had by this time come down to the beach, when I sent a second man ashore in this canoe to bring them off. Also got the boat under canvas, as I

had some suspicious of the natives; but the natives would not bring the men off. Upon this I kept calling for the men to get in the water and come on, which three of them did and got safe to the boat. I also had a musket and a pair of pistols loaded, in case of attack, when the natives, without any provocation whatever, attacked us, throwing showers of spears in the boat, many of them going right through the sail. The men in the boat were only saved by keeping the boat broadside on, so that they got under cover of the sails. A musket was fired and killed one of the natives, and wounded another, when they retreated behind some trees. This afforded time for one of the two men that were on shore to get off to the boat, after receiving some severe blows on the head with a piece of wood from one of the natives. The other man, (Mr. F. Schmalfus,) who was in charge of the horses that were on board the *Sapphire*, was murdered at the commencement of the attack, having received two or three spears through his body, which sunk and rose no more. Distance from the shore when the attack was made being about twenty yards.

Previous to this the lifeboat had proceeded on in the direction of Hammond Island, to which place I now commenced beating. About an hour and a half afterwards saw the lifeboat go round the N.W. point of Hammond Island, in a very suspicious manner. I still kept after the lifeboat, thinking to be in time to warn them to keep clear of the natives. In following them round the N.W. point of Hammond Island saw a great many things floating in the water which I knew belonged to the lifeboat. Also saw the lifeboat about a mile and a half ahead and apparently lying at anchor. From seeing the things floating in the water, and the position of the lifeboat, I had some doubts that she had also been attacked.

Tacked the boat and stood off shore, when we heard some one calling to us. Stood in the direction the voice came from, and after pulling and sailing about twenty minutes, saw a man floating in the water. Got him in the boat after having been about two hours in the water. He was one of the lifeboat crew; from him I received the following information:—

“About 1h. p.m. the lifeboat went into Hammond Island for the purpose of getting turtle, when the natives attacked them without any provocation whatsoever; and not a doubt remains but that every one was murdered, as the man that I saved only made his escape by getting in the water, and was picked up as mentioned above. Some of the lifeboat's crew were speared before he left. After getting the man in the boat, saw the lifeboat pulling out after us, being full of natives, who were paddling, and having native sails set. They followed for about one hour, and then ran in shore. That was the last we saw of the lifeboat.

Next day I was chased by three canoes, but got clear off from them all, and proceeded on through the straits until I was in latitude by observation $11^{\circ} 26'$ and longitude $143^{\circ} 31'$, when I found the barque *Marina* waterlogged and entirely abandoned. Went on board and

took charge of her, but found little or no provisions on board of her. After remaining on board six days, took four men and went back to the wreck of the *Sapphire* for provisions. Found the hull of the *Sapphire* lying on the reef just as we left her forty-one days previous. Got some provisions and returned to the *Marina*.

On the 26th of November, 1859, got underway with a light easterly wind, and commenced the passage towards the southward, but experienced great delay about the latitude of 13° S. where the S.E. winds continued to blow with great strength until the 12th of December, when the winds became variable, and I got slowly along to the southward until the 11th of January, when I was within fifteen miles of Cape Grafton. There I had a heavy gale from S.E., which lasted for eleven days. The allowance of provisions each man then was, 1 lb. of beef, and one third of a pound of bread.

On the 24th of January got a northerly wind, which carried us to the Palm Isles. There again did I get a heavy gale from the S.E., which continued for twelve days. Reduced the allowance of provisions each man per day to six ounces of beef and three ounces of bread. On the 9th of February got a northerly wind, which brought us to Port Curtis, which port I arrived at on the 17th of February, bringing with me ten men, the sole survivors of the *Sapphire's* crew and passengers, which was twenty-nine in number, eighteen being murdered and eleven saved. All the provisions that were left on my arrival at Port Curtis, were twenty-five pounds of bread. Among those that are saved is Captain Robert Western, of the 44th Madras Infantry.

WILLIAM BEVERIDGE,

Mate late ship Sapphire, at present Master barque Marina.

In addition to the above particulars, the following is extracted from a log kept by T. C. Clark, one of the seamen of the *Sapphire*.

Sailed from Port Curtis on the 9th of September, with horses, bound to Madras. All went well until making the reefs at the entrance of Torres Straits, on 23rd of September, when the ship missed stays and struck on the reef. Could not back her off, sea breaking heavily over her. Cut away the mainmast, which carried the mizen topmast with it. Proceeded to get the longboat ready for launching, but the foremast went over the side, and smashed in the port counter of the boat. At daylight on the 24th the lifeboat left the ship with the owner, captain, steward, and four men. The next day all hands reached Hardy Island, where we found plenty of fresh water. After remaining seven days, and repairing the boats, proceeded towards Port Curtis. Had great difficulty in crossing the reef, the crew having to get out and lift their boats in some places.

Arrived at Fair Cape, where we saw a native fishing, but when we landed we could not find his camp. The following day we beat up to Weymouth Bay. The lifeboat having turned back to make Cape York, a distance of 140 miles to leeward, we also found we could not

get to the southward, so ran as far as the Home Islands and brought up for the night. The allowance of food at this time was one biscuit per day.

Arrived at Cape York in three days, and found that the lifeboat had gone on to Booby Island, where we both arrived in safety. Here we remained three weeks, having found on our arrival three barrels bread, one cask of beef, and three casks of water. The wind still holding from the S.E., and provisions getting short, left again for the coast, and arrived at Friday Island. Went ashore in a canoe, with two others, to trade for turtle, some of which we obtained for tobacco. I soon saw the natives inclined to quarrel, upon which I prepared to swim to the boat, telling the others to follow my example. Shortly after I saw a native swimming under water with a bundle of spears, to a canoe lying close to the boat. Upon this I called to those on shore to swim off at once; but they were afraid, and the next moment I saw one of the men named Schmalfus speared to the heart. At the same time a cloud of spears came into the boat. We loaded a gun and two pistols, and Walker shot one native dead and wounded another. After some considerable difficulty we got the remainder of the men off, they having narrowly escaped the showers of spears that were sent after them. The last that we saw of poor Schmalfus was with a spear right through his body, which was in the water. We then hauled our wind and proceeded round Hammond Island, when we saw the lifeboat in the distance, but too far off to signal her. She was going out of sight round a point in such a peculiar manner that we thought all was not right. The natives burnt fires along the coast, as we imagined for the purpose of signaling. When we rounded the same point all appearance of the lifeboat was gone, but shortly after we picked up a broken oar, a tobacco-box, and some broken spears, by which we knew that the boat had been attacked, and as we knew they had no arms, we feared for the result.

In about an hour afterwards we heard a voice to windward, but could not see any one; however, we tacked several times, and at last saw a man named Richard Law swimming towards us, he having been in the water two hours; and we then learnt the terrible fate of the crew of the lifeboat, who, to the number of seventeen, had all been speared. By his statement it appears that after rounding the point a canoe came off to trade for a turtle, for which they received from a man named Bowden two plugs of tobacco. In the meantime two other canoes came off, one having a turtle in, and while the crew of the boat were getting the turtle out of the canoe, the natives, to the number of thirty, hauled off about the distance of a pistol-shot, and deliberately speared them all. Law and another being in the canoe handing out the turtle, heard the rattling of the spears, when, on looking up, they saw Mr. Bowdin hauling a spear out of his body. Law immediately took the water, and being a good swimmer, succeeded, with the assistance of a strong tide, in getting off safe. Heaving ahead, we made but little way, and were compelled to anchor, sur-

rounded by natives, who the next day gave chase to us with three canoes and the lifeboat, which they had manned; but we contrived to escape them, and made for Raine Island, where we knew the wreck of the *Sapphire* would be lying when one morning one of the men descried a sail, which proved to be the barque *Marina*, and, to our great delight, we found water and meat on board, of which we stood greatly in need.

After staying on board some time, it was agreed that we should try and save her. In the meantime we got our things out of the boat, and the ship having drifted into deep water, we let go the port anchor in 45 fathoms. The next day we sent down the topgallant mast and yards and cleared up the decks. But as we had nothing but beef to eat, we agreed to visit Raine Island, and myself and four others started in the boat.

On the third day we sighted the island, but got among the reefs that night, having missed the passage, and narrowly escaped being all lost, the tide sweeping the boat along at a fearful rate. The next morning we, through the mercy of Providence, landed in safety, when we found the old *Sapphire* still safe. On the beach we saw several turtle, two of which we secured; but found the tower in ruins, and neither water nor provisions of any kind, although, from the statement in the Directory, we fully expected to find plenty. Numbers of birds' eggs being about, we quenched our thirst by eating them, although we suffered much even with this relief. Next day started for the ship *Sapphire*, and got alongside at ten o'clock. The only living thing we found on board was a poor goat, who must have been eight weeks without a drop of water, no rain having fallen all that time. The scene on board was frightful, with the horses lying scattered about between decks, all dead. Having loaded our boat with bread, we left for the *Marina*, and arrived safe on the 9th of December.

The delight of all on board may readily be imagined, as from our long absence we were given up for lost. After recruiting for three or four days, a light breeze from the N.E. sprang up—the first sign of a fair wind we had for ten weeks; and we got underway, and found that she worked pretty well, considering she was full of water, so that in two days we got her clear of the reefs, and down as far as Piper Island. Getting short of water, we managed to rig a condenser, which kept us pretty well supplied. At Piper Island we lay at anchor with the wind at S.E. until the 17th of October, when we again got under way with a N.E. breeze, and made ten miles to the southward.

In consequence of light airs and calms, we only reached as far as Cape Weymouth by the 22nd. On the 24th reached Cape Direction, when unfortunately we ran on shore, and at low water we found that her bottom was knocked in. But still we did not despair, and our efforts to get her afloat were crowned with success, as she again floated on Christmas Day. On 28th passed Cape Flinders, where we saw two canoes pulling towards us; but we fired a gun, and they quickly disappeared. On 31st sighted Lizard Island, where we anchored with

the wind S.E. Wayed again on the 2nd of January, and were making a good progress, with a fine breeze at N.W., the ship going four knots, when at 6h. p.m., ran right on a sunken rock. We endeavoured to get her off by means of a kedge, but unsuccessfully; when, strange to say, she floated off herself on the 6th; being the third time she had stood our friend; and away we went once more, with a fine strong breeze. But on the 7th we missed the channel and got nine miles into a bight before we discovered our error. We had to anchor close to the head of the bight, with reefs all around us, and could not attempt to lift our anchor until the wind shifted.

On the 8th we got clear of the reef, passing through the channel between Hope Island and the main. That evening we set a watch at six o'clock, intending to run all night; but at 8h. p.m. we again struck a reef. Next day she again floated. On the 11th we were at anchor off Cape Grafton, distant sixteen miles. From this date up to the 5th of February, we experienced strong S.E. gales and calms, with a strong current setting North, which kept us at anchor the greater part of the time, with only one biscuit a day, and our stock dwindled down to 300 biscuits, and no sign of any change of wind. On the 6th we reduced the allowance to three quarters of a biscuit per day. On the 8th we had come to the determination that if we had no change of wind we should run back for Hardy or Raine Island, as we were almost starving.

On the 10th got a breeze from the N.E., and on the 12th were abreast of Cape Upstart. Providence still favoured us, and on the 17th we came to abreast of Curtis Island. We lowered the boat and proceeded to Port Curtis, where we received every kindness and attention, and when we heard of the unsuccessful search made for us by H.M.S. *Cordelia*. Being now safe from a fearfully lingering death, we all joined in humbly thanking God for the mercies extended towards us throughout the dangers that had beset us for the last five months.

The following letter relates to this sad event.

Sydney, February 26th, 1860.

My dear mother,—I write these few lines, hoping they will find you quite well, and I suppose you will feel very anxious about me, as you will have heard of the loss of the *Sapphire*. and likewise her crew.

I arrived here in good health, and stayed about two months. We then got a cargo of horses for Madras, and sailed from Sydney to Port Curtis, got the horses on board, and lay there for twelve days, and then proceeded to Madras. When we were about ten days out after having left there, a man from the mast-head reported "breakers ahead," and the ship was immediately put about. We lay off and on towards the reef till four o'clock that day, and then made a long stretch out to sea, intending to enter Torres Strait the next morning. It was about eight o'clock that night, as I was sitting on the deck

alongside the carpenter, that he immediately roared out,—“Breakers close on our lee bow!” All hands were called to 'bout ship, and tried to put her round, but she would not stay, and the next minute we were in among the breakers. The masts went over the side just at the first bump she gave, and I really thought she would have gone to pieces, she bumped so very heavily. However, she stood till we got our two boats fitted out and provisioned, having lost our other three boats.

We made for an island called Hardy Island, landed there, and found a well of rain water. We were then put on short allowance, a biscuit a day, but had plenty of good water, which is a great blessing on short allowance of grub. We staid there awhile until the water was done, and then determined upon what to do; we being nine hundred miles from any civilized port, with two small open boats, twenty-eight men and myself to go in them. It was then I thought of the advice that poor father used often to give me, and also of you, my dear Sarah, and mother; but I hope this has given me a lesson that I never shall forget.

Well, when our water was done at the island, we set sail for the mainland, which we reached that evening, and anchored there all that night. Went ashore and killed an eagle, roasted it on a fire, and ate it for supper; and although it hadn't a very sweet flavour, yet it was very acceptable at the time. We went on shore next day on the mainland, but could not find any water; so “squared away” for Cape York, which was 140 miles to the northward of where we were; then got there and found plenty of fresh water and numerous natives; lived with them for about a week on turtle and wild fruit, for which we bartered with them for tobacco.

After we left Cape York we went to Booby Island, and there found two casks of bread, a barrel of beef, and plenty of water. We then set out for Reign Island, but could not get there, on account of a very strong S.E. wind, so we landed on an island called Almond,—the life-boat being two miles to windward of us. The natives there were very numerous, hostile, and barbarous,—and indeed we found them so. We were bartering with them for turtle, when three of our men went on shore in one of their canoes to get some turtle; but afterwards they (the natives) would not bring them off again. Meanwhile a canoe came off to us, full of natives, and their spears stretched right across our bow, so that we could not move either one way or the other. We had no firearms in the boat except an old musket of the mate's and two pistols. We offered them three sticks of tobacco to go and fetch the men off to us; but they would not do it. Two of the men swam to us, but the other could not swim,—the two that swam off to us did so after the canoe went on shore in a great hurry. After they (the natives) landed, they gave a great howl, and at the same time sending no less than two hundred spears at our boat. We fired our gun off and killed one of them, and they all ran away as fast as ever they could. We looked about then for the man that was on shore; but saw him in the water with one spear in his back and another in his belly,

quite dead, poor fellow. We then went away to give the other boat warning; but after we got within three fourths of a mile from where she was, we saw a broken oar and some broken spears; at the same time heard a voice, but did not know where it came from. After beating to windward a little while, we heard it again, and then we knew it was the voice of a white man, but could not then see where he was. At last we saw his head above the water, got down to him, and took him on board our boat. He told us that they were all murdered in the other boat, having no firearms to defend themselves; and that he was the only one saved, for when their boat was attacked, he jumped overboard and swam as far as he could, the tide drifting him away out of their (the natives') reach. He had been good two hours in the water when we picked him up. He had taken off his shirt whilst in the water, but could not get his trousers off, so was forced to leave them on.

Poor Mr. Mackinley was in the other boat, and also murdered, as well as my other comrade—that gentleman's son from Cork (Twig). He was a very fine fellow indeed, and I am sure his parents will be in an awful way about him. I myself felt it very keenly then, and have ever since. Poor lad, his untimely and dreadful end; and, indeed, that of all of them was very heart-rending.

We went along still beating to windward, as stated in the book of directions, as to a former ~~to~~ there, with six months' provisions and also a tank holding three tons of water, which had been filled up by the rain. We were about thirty miles from the island we intended making, when our bowman cried out,—“A sail on the lee-bow.” We immediately put the boat's head towards the ship; but when we got a little nearer we saw she had her sails furled, and thought she was lying at anchor. We had very little water and bread in the boat, so turned to and ate it all; but when we got on board of her we found she was deserted, and about a quarter of a mile from a reef, on to which she was fast drifting. When we got on board of her, we at once ran forward and let go her anchor, gave her some chain, and made the boat fast alongside, then looked down her hold and found she had a cargo of very fine New Zealand spars on board, belonging to Government.

We stayed on board of her that night, and found it very comfortable compared to being in the little boat. Found plenty of salt beef and pork on board of her, and determined to take the boat, with four hands in her, and go to the island and fetch some more provisions to put on board of her, and take her to Port Curtis.

So to make a long story short, we at last got the provisions on board, and after a vast deal of trouble and starvation, we got her down here, and here we now all are.

I like the colonies very well, and I think they are fine places for working men to get on. Convey my love to James when you next write to him. I would have written to him from here, but have not been able to save his address, so do not remember it. Also to Malcolm, and tell him I will be home as soon as ever this business about

the ship we brought in is settled. Remember me also to all friends, and believe me,

My dear Mother,
Your most affectionate son,
JOHN CAMERON M'DERMID.

It will be remembered that on receipt of the intelligence of the wreck of the *Sapphire*, and the possibility of the crew and passengers being at some of the islands in Torres Straits or on the coast to the southward of the scene of the disaster, that the *Cordelia* was at once despatched to ascertain, if possible, their fate, or render assistance should she fortunately fall in with the crew. Unfortunately she has not been successful. She sailed from Port Curtis on the 28th of December, and diligently examined all along the coast as far as Cape Upstart, without falling in with the slightest clue. Light winds prevailed the whole time, she therefore returned to Moreton Bay, where she reached on the 10th of February. At Point Molle the remains of a vessel were found, evidently long since wrecked; also some coal bags. She also touched at Port Denison, and found the entrance to consist of an open roadstead, open to the force of the S.E. gales, inside of which was a bar, and but shallow water at the anchorage inside it. The *Cordelia* was forty days from Cape Upstart.

Sydney Morning Herald, 13th March.

THE SANDWICH ISLANDS.*

The Hawaiian (Cook would have written it Owhyheean) Archipelago consists of twelve islands, situated in the North Pacific Ocean, between $18^{\circ} 50'$ and $22^{\circ} 20'$ North latitude, and $154^{\circ} 55'$ and $160^{\circ} 15'$ West longitude from Greenwich, taking a direction W.N.W. and E.S.E. about 350 miles, and containing about 6,000 square miles.

The following is a general statement of their proportions, &c.:

<i>Names.</i>	<i>Length.</i>	<i>Breadth.</i>	<i>Feet High.</i>	<i>Sq. Miles.</i>	<i>Population.†</i>
Hawaii	88	68	18,958	4,000	24,447
Maui	48	29	10,200	600	17,574
Oahu	46	23	8,800	520	19,126
Kauai	33	28	4,800	520	6,990
Molokai	40	9	2,800	170	3,607
Lanai	17	9	1,600	100	600
Niihau	8	7	600	80	790
Kahoolawe	11	8	400	60	
Molokini					
Lehua					
Kaula					
Nihoa or Bird Island					
} Islets scarcely more than barren rocks.					78,134

* From a local paper, the *Commercial Advertiser*.

† By official census of 1853.

The average temperature in low southern and western parts, is 75° ; in northern and eastern, 72° . The lofty mountains are cool, their summits in fact cold. A summary of meteorological observations, made by the missionaries at Honolulu, from August, 1821, to July, 1822, shows the mean temperature to be 75° ; N.E. Trade winds prevail three fourths of the year; rain on forty days; highest heat observed in the shade 88° , lowest 59° . During the months of January and February, the thermometer sometimes falls to 53° and 54° during the night.

Hawaii.—This island consists essentially of the three mountains of Mauna Kea, (13,953 feet high,) Mauna Loa, (13,760 feet high,) and Hualalai, (about 9,000 feet high,) of the elevated plain between these mountains, and of the more or less gentle slopes from their bases to the sea. On the windward side, owing to the abundant rains, vegetation is luxuriant. Here is situated the fine harbour (the only one on that side) and pleasant village of Hilo, in the vicinity of which are four sugar plantations, three of which are managed by Chinese, and all at present doing well. The coffee shrub attains a large growth, and bears well on the N.E. side of the island, but the quality is not considered equal to that raised on the leeward side. From Hilo round to Kohala, facing the N.E. Trade winds, the land near the sea is composed of precipitous bluffs, broken frequently by enormous gulches or ravines, through which the mountain streams from the side of Mauna Kea fall into the ocean. Though bleak from its constant exposure to the strong Trades, this portion of Hawaii is rich in agricultural resources, and as a grazing country is unsurpassed. The Kona or leeward side of the island, which is formed by the S.W. slope of Mount Hualalai, seen from seaward has a very desolate appearance, and, in fact, from Kawaihae to Kealahou, and thence quite round to Kau, on the S.W., varying in width from a half to two miles from the beach, there seems to be little else than black lava rock, the debris of extinct volcanic action. But from Kailua to Kealahou, at an elevation of from 500 to 2,000 feet, the soil among the decomposing lava seems of inexhaustible richness. There are not far from 100,000 acres of arable land in the district, of which about one fifth, or 20,000 acres, are suitable for the cultivation of coffee. Its present produce, however, does not much exceed 100,000 pounds of coffee per annum in the most favourable seasons. The finest oranges on the island are grown here, and it is pretty generally conceded that this is the best fruit district on the islands. Good judges have pronounced the Kona coffee the best grown on the islands, and oranges, pineapples, grapes, mangoes, and a variety of other fruits, are said to attain to a perfection rarely found in other Hawaiian localities. The common castor-oil plant is frequently seen here with a trunk five or six inches in diameter, and spreading out like a tree, the lower branches several feet from the ground.

The following account of the district was written by a native, and published in the native newspaper, from which we translate it.

“The district of Kona lies on the West side of the island of Ha-

waii, and stretches from Puuanahulu to Kaulanamauna. It is about ninety miles long, measured by the government road. A large portion of its surface is rocky and unfit for cultivation. There are, however, very rich lands in some places, particularly on either side of the upper road from Lanihau to Hookena; but the best lands in Kona are situated between Kailua and Kainaliu. About every one of the productions of the Hawaiian Islands will grow well in this district, but those for which it is particularly suited are coffee, oranges, and sweet potatoes. There are about 100,000 acres of arable land, of which 20,000 acres are suitable for coffee, and if this amount were planted with that shrub, the product would be 20,000,000 pounds of coffee per annum. In our opinion, if it were not for the indolence, unskillfulness, and ignorance of the people, natives and foreigners, they would produce the above amount of coffee, worth the sum of 2,000,000 dollars every year.

"The orange is a valuable tree in Kona, and the fruit produced there is probably not excelled in flavour by any. We are glad to learn that more attention has been paid to the orange during the past five years than was formerly the case,—from three to five thousand young trees having been planted in that period. Under favourable circumstances these trees will bear plentifully in from five to seven years. The produce, however, is not uniformly the same in quantity; in some years there will be abundance, more than can be sold readily, and they will rot; and in other years there will be a failure in the crop, so that raising oranges cannot be certainly depended upon as a source of wealth. But the cultivation of coffee is of the most importance, and those who follow it with perseverance and industry, are sure to become wealthy."

The south-western side of the island, which forms the district of Kau, fifty-five miles in length, is, in most parts, like the Kona side, composed of barren rocks, from the sea to several miles inland to where the arable land commences. This spreads out into a broad plain, gradually ascending to the mountains, admirably fitted for pasturage. Latterly the cultivation of wheat has been introduced in the more elevated portions of Kau, and has been found to succeed well.

The active volcano of Kilauea, and the intermittent one of Mauna Loa, are well known. The crater of Hualalai has been quiet since about the beginning of this century. It has been rarely visited, though said to be well worth seeing. The crater is described as being large and irregular, from cones and chasms, but having near the centre a black-mouthed pit of no great diameter, but of immense depth, its sides as smooth as glass. Our informant (a respectable foreigner) says that he threw a large rock into it, and, if he noted the seconds correctly, the depth reached before it struck anything must have been considerably over 1,000 feet, while the stone was heard still falling at a much greater depth.

On the sides of Mauna Kea, at an elevation of from 6,000 to 11,000 feet, roam large herds of wild cattle, composed of the descendants of a number turned loose on the mountain in the times of Kamehamcha I.,

recruited largely, no doubt, by runaways from the tame herds of Waimea. This last is a level plain, about twenty miles wide, between the Kohala Mountains on the N.E., and the highlands of Mauna Kea on the S.W. It was formerly covered with a forest of kukui and obia trees, but the rapid increase of cattle there within the last thirty years has resulted in the utter destruction of the forest, and a consequent change of climate. Old residents speak of the climate of Waimea as having been moist and salubrious, whereas at present it is dry, but little rain falling the year round, and exposed to the full force of the cold Trade wind, which, at that elevation, about 4,000 feet, is quite chilling.

Maui.—This island, the next in size and position to Hawaii, being separated from the latter by a channel about thirty miles wide, consists of two mountain masses, separated by an isthmus some six miles in width from sea to sea, and from six to ten miles in length. Eastern Maui is much higher than Western, consisting chiefly of Haleakala, (House of the Sun,) 10,200 feet high, and its immense slopes. It also includes much the most arable land, and here are situated two fine sugar plantations, the East Maui Plantation, under the direction of A. H. Spencer, and the Brewer Plantation, L. L. Torbert, manager. Others are projected or in progress of planting. East Maui possesses some of the finest sugar lands of the group. Here also are situated the immense *hula* lands, or arable plains, which a few years ago supplied the Irish potatoes, with which a brisk trade was carried on with California, and from which at present the whalers are furnished with most of their supplies. At Makawao are the wheat lands of the group,—at least here is the spot where the cultivation of cereals has been a success. About 2,000 acres are under cultivation, with a product of 25,000 bushels per annum. The business is steadily increasing. The crater of Haleakala is a deep gorge, about sixteen miles in length, and open at the two ends. The bottom of it is 2,093 feet below the summit of its walls. The inside is bare of vegetation, and from its bottom arise many large hills of scoria and sand.

The isthmus of Waikapu lies but little above the level of the sea, and is composed of dry sand. Since the goats and cattle have been allowed to run there, they have destroyed the vines and bushes which served to confine the sand on the windward side, and the dunes have been driven nearly to the leeward beach, and will soon usurp the whole of the lower part of the isthmus. The wind here rushes across in fierce gusts between the two divisions of the island, and renders the navigation of the bay at times quite dangerous. On the western slope of the isthmus, and towards the windward side, are the cultivated portions of Waikapu and Wailuku, which, with the valleys behind them, are very fertile. The level plain of Lahaina, composed of the alluvial washed from the hills in the rear of the town, is remarkably rich, and capable of producing largely of most kinds of fruits and vegetables. Grapes grow rapidly, bear profusely, and are of a fine flavour. With these exceptions, most of West Maui not inaccessibly mountainous, is grazing land.

Kahoolawe—is situated about twenty-four miles W.S.W. from Lahaina, off the N.W. side of East Maui, about twelve miles. It is used at present as a sheep pasture. Formerly it was a penal settlement. Natives occasionally go over there for a few months for fishing purposes, or during the rainy season to plant melons and sweet potatoes. The island is said to contain 25,600 acres, of which about 3,000 are table land.

Molokini—is a small, bare, uninhabited rock in the channel about midway between Kahoolawe and East Maui.

Lanai—is opposite Lahaina, at a distance of from eight to twelve miles, and is about sixteen miles long by about eight wide. Though higher than Kahoolawe, it is too low to receive a large quantity of rain, and though there a few good lands upon it, the population is scanty. There is but one permanent stream on the island, that running down the valley of Maunalei, which opens to the N.E., directly facing Kaluaaha, on Molokai. The Mormons have tried to make Lanai their head-quarters in the group, but with indifferent success.

It is said that Lanai, if turned bottom up into the crater of Haleakala, would about fill it.

Molokai.—This island is long and narrow, the eastern end much the highest point, rising into mountains nearly 3,000 feet high, and sloping off gradually to the western point. The arable land on the windward side is narrow, and much of the windward coast is formed by bold precipices of bare lava rock, rendered wild and jagged in appearance by frequent frightful gulches and ravines. The natives, in speaking of Molokai, term it *ka aina pali*,—a land of precipices. Some of the windward portions for a large part of the year can be approached only by sea, and that in good weather, the footpaths over the mountains being often impassable. The leeward side presents a much more gentle slope to the sea, and contains some fine land both for culture and grazing. Some of the valleys towards the eastern end present scenery unsurpassed in magnificence. The western end of the island is too low and dry to be worth much, unless perhaps for sheep pasture. The population of Molokai is apparently more industrious and enterprising, and also healthier, than that of most of the other islands of the group. Since 1853 the population has been gradually increasing. There are one or two dairy farms on the island, from which an excellent article of butter is sent to the Honolulu market, and occasionally some very fine cattle. There is an indentation on the leeward side of the island at a place called Kalae, which, at a moderate expense, might be converted into a good harbour for coasters. At present only very small vessels can get over the bar.

Oahu.—Commercially, Oahu is the most important island of the group. It is formed by two ranges of mountains, the highest of which—Konahuanui, at the pass of Nuuanu—is about 4,000 feet above the level of the sea. One of these mountain ranges runs from Makapuu Point, at the eastern end of the island, along near the windward shore till it sinks into the low plain of coral rock at Kahuku. The other, or Wainae Range, commencing on the leeward side of Ewa, at Barber

Point, and running some ten or twelve miles towards the first range, with which it makes an angle, then turning with a sharp elbow and running down to Kaena Point, leaving Wailua on the right or windward side. The first range presents to windward for almost its whole range a perpendicular wall of rock several thousand feet high with comparatively level land extending from its base to the sea, varying in width from nothing, as at Makapuu pali, or ten rods, to six or seven miles opposite the pali of Nuuanu. Through this low land at intervals are thrown out from the main range several ridges or spurs of hills, usually ending at or near the sea with an extinct crater; as it were ribs from the back bone. The soil of the low land mentioned is generally good, and pretty well watered. The climate, as on the windward side of all the islands, is more moist and several degrees cooler than on the leeward side.

Honolulu, the seat of the Hawaiian government and the commercial emporium of the islands, is situated on the leeward or West side of the island, on a level plain directly opposite the beautiful valley of Nuuanu. The city has slowly but constantly increased in size during the past ten years, and its population amounts to between 8,000 and 9,000 inhabitants, of whom 1,500 are foreigners. It has a fine capacious harbour, formed by the coral reef, capable of accommodating 200 vessels at a time, and is perfectly safe in all weathers.

The leeward side of the mountains presents a gentle slope. The Kona or Honolulu district, is divided like the Koolau or windward district, by the spurs of the mountains, into three distinct divisions. The first is of some three or four miles extent, from Makapuu to Koko Head. Second from Koko Head to Diamond Head, ten or twelve miles; and third from Diamond Head to Moanalua ridge, including the city of Honolulu, some eight to ten miles. Had Punchbowl Hill extended further seaward, it would have made another division.

From Moanalua Ridge to Barber Point or Waianae Mountains, is the Ewa district. The most remarkable feature of this is the so called Pearl River, a large and irregular shaped lagoon, somewhat freshened at its inland extremities by the streams that run into it, but connecting with the sea by a number of navigable passages. It is incorrectly represented on the map, being in fact much cut up by points and islands. Its main channels and open spaces are, however, with the exception of the bar at the mouth, deep enough for any vessel, Jarvis is wrong in calling the adjacent land dry and barren compared with Honolulu. The extensive flats between it and the sea, and those that stretch off beyond it for seven or eight miles to Barber Point, with a width of five or six miles, are, it is true, barren enough, being great stretches of clinkers, broken masses of all sizes, with solid rock beneath of feldspathic lava, with here and there a deep pit or sudden crevice. Bushes and scattered tufts of grass keep fat the cattle that range there, and occasionally serve to conceal the mouth of a pit from unwary cattle or horses.

Along the inland shore of Pearl River is a strip of very fertile land, varying in breadth, some of which is now cultivated with taro and

bananas; but a large proportion is lying idle. Then the land rises gently to the elevated plain which extends between the two mountain ranges mentioned previously, towards Waialua, descending somewhat more steeply into the lowlands of Waialua at a distance of two or three miles from the sea. This plain is interrupted by several deep gulches,—something like the Californian canons, which yawn in the traveller's face with scarce any warning. Their courses are very irregular,—one runs from the main range of mountains zigzag across the plain towards the Wailua Mountains, until at about the elbow or angle, when it turns and follows along their base to the sea at Waialua.

The slopes of the mountains on the right from Moanalua to Waialua present much land in the valleys and on the small elevated plains, which, were the island fully peopled, would undoubtedly well repay cultivation. In some of the valleys large quantities of excellent oranges are already raised. Most of the plain, about nine miles by twelve, is grazing land. The heads of the valleys, and the ridge of the main range are heavily timbered with kukui, ohia, and some koa, and occupied now only by wild cattle and hogs. Turkeys and chickens too are numerous—estrays from domesticated stock. The Waialua flat, some two or three miles by about five, is very fertile, and the climate to many more agreeable than Koolau or Honolulu. From Waialua to Kahuku the surface is hilly, and merely a good pasture. Kahuku is quite a level plain, some five or six miles by two, extending from Waimea to Kahuku Point. It is but slightly elevated above the sea, and consists of soil-covered coral in position, evidently little disturbed by its upheaval. At many of the frequent holes and crevices in it may be seen streams of fine clear and cool fresh water, making their subterranean way three or four feet below the surface from the mountains to the outlets in the sea below low water mark.

The Waianae district, protected by its mountain range from the Trades, and exposed fully to the afternoon sun, is for the most part very warm, though a strong gust from the Trade wind will sometimes break over with violence. But a small portion of Waianae is arable land, by far the major part being devoted to grazing purposes, for which it is admirably adapted, producing probably the best beef on the island.

The main range of the Oahu Mountains has a break or passage through it at the Nuuanu valley, often described as the celebrated "pali of Nuuanu," and is passable for foot travellers at the heads of several of the valleys. The Waianae Mountains have but one path over them, that near the elbow at Lihue—other access or exit to or from the district is only by water or round the Ewa or Kaena ends of the range. This last is a difficult and at times a dangerous path.

Each of the above districts of Oahu has, even at the same elevation above the sea, its peculiar climate, perceptible to an ordinary observer. The difference is due to different degrees of moisture and of exposure to or shelter from the Trade winds. Those winds are also modified very much by the extent of land over which they have blown after

leaving the sea, and by the character of that land, as covered with verdure or bare rock and earth made scorching hot by the rays of the sun.

Oahu is more properly and naturally a grazing than an agricultural island, though the quantity of arable land scattered at intervals over its surface is amply sufficient to support a large population.

Kauai is generally called the oldest of the group, and is one of the pleasantest. It is separated from Oahu by a channel about eighty miles wide. The difference of latitude between *Kauai* and the southern part of *Hawaii* is enough to make a perceptible difference in climate. The shape of the island also, allowing one (as at *Lihue* and *Wailua*) frequently to take in a wide stretch of landscape without having his view bounded by the sea—allowing him to feel as if he were in a “great country”—makes the scenery, which is very beautiful in itself, much admired by those whose insulated vision has perhaps for years ranged only over the narrow strip of land between the *Honolulu* hills and harbour. The eye which for a long time has found every view bounded by the ocean (as is necessarily the case on most of the islands), making the observer aware of his insulated, almost imprisoned, life, finds great relief in a view which allows it to strain itself to see further into land stretching beyond its bounds, without finally resting on the white spray of the breakers. Consequently, the beauties of *Kauai*—*Hanalei* Valley, *Hanapepe* Waterfall, *Koloa* Spouting-Rock (there are many others on the islands), the *Mana Singing-Sands*, &c.,—have been written and printed about sufficiently. The last, which have seemed a puzzle to some tourists, are very easily explained. The piles of sharp, clear sea-sand on the beach, under a hot sun, when set in motion by the hand or the wind, or perhaps, sometimes, by their own expansion from heat, in their friction on each other give out a rather faint but clear and distinct tinkling sound. The peculiar shape of the sand particles, traceable to the original rock from which they have been separated, may account for the non-observance of the same phenomenon elsewhere. In the morning or after sundown, when moist with the dew, or after rain, they are silent.

The tract of arable land on *Kauai* adapted to grazing or planting stretches from *Hanalei* to *Hanapepe* Valley. Portions of this island appear better adapted to agriculture than the other islands. There are two coffee plantations in *Hanalei*, a sugar plantation at *Nawiliwili*, and one at *Koloa*. This portion of the island is well watered with frequent rains and streams. The principal ports of the island are *Hanalei*, on the North side; *Nawiliwili* and *Koloa*, on the S.E.; and *Waimea*, on the South. The *Waimea* district, being the lee of the island is dry, and adapted to cultivation only in the valleys. That part of the island stretching from *Mana* Point round the western side to *Hanalei* is rocky, dry, barren, and uninhabited. The same remark may be made of all the islands as of *Kauai*, that the want of capital, with an industrious population, is the only thing needed to develop resources now lying almost wholly idle.

Niihau.—This island, the last of the group which is inhabited, lies

in a S.W. direction from the Kona side of Kauai, distant about eight miles. It has a range of hills some 800 feet high, extending through it from the weather end, along near the eastern shore, nearly to the southern point. The land on the eastern side of these mountains is very narrow, with but a spare population; but on the western side there is a level plain of some four or five miles in width, excellent land for sweet potatoes, melons, &c. There is no fresh water on the island except rain water, preserved by the natives in some cisterns of rock near the South end.

Lehua.—About three-quarters of a mile off the western side of Niihau, is a high and somewhat broken peak, apparently two sides of a crater, of which the S.W. portion has fallen in, leaving the inside face exposed in that direction—a black and broken precipice. Jarves calls it 1000 feet high, but 500 feet would be nearer correct. The faces towards Kauai and Niihau are covered with scattered tufts of grass, among which numerous wild rabbits find a living. The most singular thing on the island is a small perennial spring of excellent fresh water, a few feet above high water mark. The rock itself is lower than the Niihau mountains, and neither of them receive water enough to supply any spring. Consequently, the water must come from the mountains of Kauai, the nearest shore of which is at least twelve miles distant.

Kaula is in sight from Niihau, and some seven or eight miles off its S.W. point. It is a barren rock, abounding in sea-fowl and their eggs, for which the natives occasionally visit it. A landing can be effected only in the calmest weather, as the surf breaks very heavily at all times.

Nihoa, or Bird Island, about 120 miles N.W. from Kauai, was always reckoned by the natives as belonging to the Hawaiian Group, and in ancient times was not unfrequently visited by the chiefs. Fish, birds, and eggs, as well as sea-lions and perhaps turtle, are obtained there, and these comprise the list of its productions. It is a precipitous rock, described by Captain John Paty, as 400 feet high, a mile and a half long, and half a mile wide. A landing can seldom be accomplished in safety with ordinary boats, though canoes might succeed better.

Animals.—While the human population of the Hawaiian Group has been gradually decreasing, the brute population seems to have as regularly increased. At the time when Captain Cook discovered the islands, dogs, swine, fowls, mice, and a few varieties of wild birds were the only representatives of the brute creation. Now “their name is legion.” Cattle are plentiful upon all the large islands. On Northern Hawaii, particularly, they roam wild through the forests, and are destroyed annually in great numbers, merely for the sake of the hide. Burdens which were once borne upon the shoulders of men are now consigned to the backs of horses, donkeys, and mules, which far out-number their masters; and horses have begun to be used, to some extent at least, as an article of food by the natives. There are now about two horses to every man on the islands. Hogs have mul-

tiplied so that they now run wild on all the large islands, and are hunted with dogs and guns by the sportsmen. Wild goats are abundant in some localities. In the vicinity of Mauna Kea, on Hawaii, and also in the interior of Kauai, dogs roam, sometimes in large packs, through the woods, subsisting upon such hogs and calves as they can kill, and upon the farmers' sheep. Wild cats are numerous on some of the islands, living mostly upon the mice which are indigenous to the group.

Of birds there are comparatively a small variety. Among the useful kinds that pick up a living in the forests are the goose, the duck, the snipe, the plover, the turkey, and the pigeon; the last two have been imported by foreigners, and the climate seems to agree with them capitally. On all the islands they have rapidly multiplied. The neighbourhood of Waimea, Hawaii, is particularly a favourite place of the pigeons. They generally fly there in large flocks, returning always at night to their regular roosts in one or two little mountain valleys, far removed from the settlement of man. Great numbers congregate in these places, and it is said that a visit to them, as a matter of curiosity, is well worth the trouble of a short journey and a night in camp.

The project of introducing deer upon the islands has, as yet, not been attended with success. The three deer which still remain at Kahuku seem to live very comfortably, but they do not increase and multiply as they ought. We trust that other importations will be made with a more successful result; for there seems to be no reason why our mountains and highlands should not be as well stocked with deer as any mountains and highlands in the world. A few terrapin turned loose together in some favourable locality would no doubt thrive, and in course of time make the group a second Galapagos; and the Alpaca or Peruvian sheep, too, would perhaps do well amid the higher mountain regions, and yield, in its silky fleece, a new store of wealth. There is plenty of room yet for the enterprise of the Royal Hawaiian Agricultural Society.

THE TEREDO.

This creature is one of the most determined enemies of man; and, of all others, the navigator. Its destructive power is absolutely prodigious; it not only attacks ships, but many a good and solid jetty has been perforated by it like a sieve, without mentioning its more audacious work, that of inundating Holland by sapping the foundations of its dykes. It is something more than a century ago that all Europe was persuaded that those united provinces were condemned to disappear from the surface of the earth, and that the teredo was the means selected by the Almighty to take down the pride of the Hollander. France and England were condemned no less than their neighbours the Dutch to suffer from it,—not by a sudden submersion,

like them, but in their docks and harbours, which the strongest chains could not resist. In order to protect wood that was submerged in the works of wet docks it was necessary to coat it with iron.*

Like the greater part of mollusca, the teredo, although in its shell when full grown, while in its infancy is without one, and therefore free to move about and to attach itself anywhere that it can do harm. It is thus that it attacks ships at sea, and no wood is hard enough to resist it. With remarkable instinct, the teredo forms its tunnel in the direction of the woody fibre whatever course it may take, and it works through it with wonderful rapidity. The tube by which it makes its passage is sometimes sixty or seventy centimetres long, and is not always straight, for if the creature finds an obstacle it will avoid it by turning, and while at work it never interferes with the labours of its brethren. Every passage made by it is so distinct that at last a piece of wood attacked by these creatures is converted into a collection of calcareous tubes. And yet the tube is not the real carapace, the shell of this destructive creature; this must be looked for at the end of the piece of wood, and will be found composed of two little valves, one curving over the other, united at one part, and magnificently serrated throughout their surface. The tube is a tunnel of calcareous matter, the object of which is to preserve a constant communication between the teredo and the element necessary to its existence, and serves as a shield for the protection of its tender and delicate body and its long siphon charnus. But how the creature makes the cavity in which it exists has long been a question with naturalists, and is not yet cleared up. There are many molluscæ gifted with the instinct of burying themselves in wood, in clay, or even in stone; but it is yet unknown whether this power on their part is obtained by mechanical means, by chemical agency, or by the combined means of boring and some kind of solvent possessed by them.

Destructive, however, as the teredo certainly is, its services cannot be dispensed with. Its ravages truly are committed on ships and on jetties, but at the same time it protects them both, for if the remains of wrecks and broken timbers continued under water in their solid condition, the entrances of our ports would be encumbered by them, and the mischief that might result would soon surpass that occasioned by the teredo itself.

This indefatigable workman belongs to the police of the ocean, which it clears and cleanses. It attacks every mass of wreck, floating or submerged, and soon reduces it to atoms. For one vessel destroyed by the teredo a hundred are saved by it, and in deploring the evil which it occasions it must at the same time be acknowledged that but for the teredo there would be many treasures lost in the sea, and many more sailors committed to the watery shroud of the waves. It is thus that in Nature apparent evils are compensated for by the good which attends them.

* The reader will no doubt remember the sheathing of plank covered with large-headed nails employed before the introduction of sheets of copper.—ED.

DOVER HARBOUR AND ITS WORKS.

That Dover Harbour should be something more than it is, we have always thought, and it was under this impression that our opinion was so given to a committee whose inquiries terminated in recommending it should be so, and to carry out the works which have been since in progress. Not that we ever anticipated it should become the rendezvous for our channel fleet; but that a sufficient force of H.M.'s ships should find safe anchorage there, to prevent those essays which were so successfully made from the opposite coast in former days. Besides the work undertaken there was novel in all respects—the perpendicular wall of a pier rising from the bottom to the surface was new, and we were glad to see the bold experiment adopted, after admiring the ingenuity displayed by Sir William Dennison in all his plans for the establishing and carrying on the works which have been since in progress. That they have been successful, but that their progress has been slow, every one knows; and also that their good effect has been to keep the mouth of the harbour from being clogged by shingle, which in our boyhood we have more than once run into when there was scarcely depth for the boat, and the trough of the wave filled the entrance—and threatened her destruction on the leeward pier. The shingle has now either disappeared in deep water or is “used up” in making the piers. This is as it should be. We see the piers preventing the shingle from travelling across the entrance, and why is not the same done at Harwich, a harbour which we are in a fair way of losing from the same cause—the travelling shingle. Its lights are no longer lights for the channel, and the sooner they are extinguished the better; a tongue of shingle stands six feet above water where a few years ago ships sailed—and gradually is this shingle closing that entrance until there will be barely sufficient left on the southern shallow shore for the exit of the sleepy river streams of the Orwell and the Stour.

But a good substantial pier begun from the end of the beach on the northern side of the entrance on which the fort stands, extending seaward on the Andrews Spit, would soon form that barrier to it which is wanted, and might be run out *ad libitum* into deep water as far as we pleased. The travelling shingle would then find its permanent resting place in the elbow which it would form with the shore. Until this is done, and the Cliff Beacon Pier carried out to the eastern edge of the Cliff Fort Rocks, the entrance will go on filling up, and farewell to Harwich. But we have run away from Dover! *revenons donc*. Here is what the *Dover Chronicle* says of it.

It is now upwards of twenty years since the question of the establishment of Harbours of Refuge on our south-eastern coast was vigorously pressed upon the attention of the Government and the Legislature, and in 1840 a Royal Commission, composed of eminent

naval and military officers and scientific men was appointed. After full and anxious investigation it reported that Dover Bay was the most eligible site for a deep water harbour, which should serve at once as a refuge haven for the merchant navy and as a station for ships of war. The importance of such a harbour to the national defence was strongly insisted upon by the Commissioners.

Time rolled on without any fruit springing from their labours. At length a second Commission was issued, as ably constituted as the one which preceded it. Its recommendations entirely accorded with those of its predecessor, with this single difference that it advised the adoption of a more extensive plan of operations. One or two passages in their report so well summarise and elucidate the Commissioners' views that we cannot do better than quote them. After referring to the importance attached from the earliest times to Dover as the advanced post of England on its S.E. coast, and recalling Mr. Pitt's project, when Lord Warden of the Cinque Ports, for enclosing our bay, the report observes:—

“Dover, situated at a distance of only four miles from the Goodwin Sands, and standing out favourably to protect the navigation of the Narrow Seas, is naturally the station for a squadron of ships of war. Its value in a military point of view is undoubted; but the construction of a harbour of refuge there is in our opinion indispensable to give to Dover that efficiency as a naval station which is necessary in order to provide for the security of this part of the coast and the protection of trade.”

“Without any except tidal harbours along the whole coast between Portsmouth and the Thames, and none accessible to large steamers, there is now an imperative necessity for supplying, by artificial means, the want of harbours throughout the narrow part of the Channel.”

Practical experiments made by Captain Washington, R.N., one of the Commissioners, on board H.M.S. *Blazer*, proved the anchoring ground in the bay to possess the requisite tenacity. Entertaining such strong opinions as to the necessity for a sheltered anchorage at Dover, the Commissioners urged that immediate steps should be taken to supply this great desideratum; and they suggested that if one harbour only was to be proceeded with at a time, Dover should have the preference, next to Portland.

Little could the distinguished men, who unanimously made these recommendations, have foreseen the leisurely and lukewarm spirit in which their earnest counsels have since been carried out. If such weighty reasons for the formation of a refuge harbour at Dover existed in 1840 and again in 1844, when these two reports were presented, has anything occurred in the interval to detract from their force? On the contrary those reasons have acquired redoubled strength. Unhappily, nobody can count on the permanence of European peace. The present attitude and temper of the nation bear unmistakable and only too eloquent testimony on that point. But whatever other preparations we may make for the security of the country, in the event of war the navy must still constitute our outer-

most and best line of defence. The changes in modern warfare neither supersede it nor even diminish its importance. But in order that our fleets may be effective for the service required of them, it is plain we must have suitable harbours for their reception. Such a harbour, strongly fortified, and forming a valuable auxiliary to the general system of land defences on our eastern and western heights, will be provided at Dover, where our whole channel fleet, besides the mercantile marine of the word, will be easily accommodated when the scheme of the Royal Commissioners has been—if indeed it ever should be—brought to final completion.

The great object, then, aimed at in the construction of the works at Dover, was to provide for the channel fleet in time of war a station from which no storm could drive it, and where it might be at hand whenever its services might be needed. Here, finding everything they required, ships of war would be under no necessity of periodically returning to Chatham or Portsmouth, the nearest dockyards at present in existence, for fuel and other supplies; and thus the temptation which might otherwise be presented by their temporary absence to hostile vessels to issue from the opposite ports for purposes of attack would be wholly removed. That this danger is no imaginary one was only too conclusively proved by the experience of the last French war, when sailing ships sallied out at every favourable opportunity, and, in defiance of the gunners on the heights, captured merchantmen off the very mouth of Dover harbour. If steam had then existed as a propelling power it is impossible to exaggerate the damage which an active enemy might have inflicted upon us. The great Napoleon, when from the heights at Boulogne he frowned a haughty menace to our shores, asked only for twelve hours' mastery of the Channel to enable him to throw his legions on our coast; and this, too, at a period when his transports must have been dependent on the caprice of wind and tide. Why, the time required for our fleet to run into Portsmouth for coal or water, might afford to a vigilant foe the opportunity for a descent on our shores. No such peril could assail us when the works at Dover are completed, inasmuch as by their aid, together with the advantages of steam by sea, and railways and telegraphs on land, both the naval and military resources of our island could in a few hours be easily concentrated upon any point of our island that might be threatened.

Besides the many national and defensive ends which this gigantic undertaking will answer, in times alike of peace and of war, its ultimate utility to our mercantile marine, now so much exposed to foul weather and baffling winds in these narrow seas, could hardly be overrated. Indeed, as a life harbour, such a safe and capacious roadstead as we are describing would possess advantages hardly if at all second in importance to those it would offer as a great naval station. It must be borne in mind that invaluable as the Downs are as an anchorage in ordinary weather, no shelter is found there for large vessels when a strong wind blows from the S.W., the prevailing wind in the Channel, which during the winter months often rages with great

violence. That safety which at such trying times the Downs would fail to afford to large ships and vessels of war, would be amply supplied by the proposed harbour in Dover Bay. It is impossible to estimate the saving of life and property which such a harbour, offering the tempest-tossed mariner a means of escaping the dangers of the fatal Goodwin Sands, would produce; but there can be no doubt that it would amount to a considerable per centage of the one and a half million sterling and the eight hundred seamen which constitute the average loss from shipwrecks on the coasts of this country every year.

One of the principal fears entertained when this great work was first resolved upon was that the harbour would be liable to silt up, so as to be rendered utterly useless for its purpose after an enormous outlay had been incurred in its construction. Experience seems to prove this hypothesis to be wholly groundless: for a recent Admiralty survey showed the existence of an increased depth of water in the bay since the works first commenced, while the quantity of mud removed from the harbour in consequence of the indraft of water being more and more from seawards as the pier advances, has gradually diminished from 16,600 tons in 1851 to 3,000 tons in 1859. It was once also apprehended that the shingle brought from the westward by the action of the westerly gales would accumulate at the entrance and inside of the new harbour to such an extent as to produce shoal water there. So far is this theory from deriving any support from what has actually happened since the Admiralty Pier was begun, the supply of shingle from the westward has not even been equal to the quantity required for the works, and a large establishment for making concrete blocks consequently had to be formed near Dungeness, whence the material is brought by barge to Dover.

The works were commenced in October, 1847, under the supervision of Messrs. Walker and Burges, the eminent engineers. The first portion undertaken was the present Admiralty Pier, which it was proposed should form the western half of the great breakwater by which the bay was to be enclosed, the eastern arm being intended to be afterwards run out from a point to the eastward of the Castle Jetty. That any man who saw the scheme begun will ever live to see it carried out in all its completeness seems now, judging from the present rate of progress, exceedingly problematical. But whether the bold and gigantic designs of the first and second Royal Commissioners are executed in their entirety or only in part, there can be little doubt that the public will reap the full benefit of the expenditure. If, however, the enterprise should stop short at the completion of the Admiralty Pier,—a departure from the original plan that obviously ought not to be made without the very gravest deliberation,—the money spent in its construction will not have been ill laid out.

This massive and colossal pier vies in stupendousness and in utility with the public works of ancient Rome; and this, even in these days of modern improvement, is, we venture to think, no slight commendation. For grandeur of conception and solidity of execution it will

long stand as a monument of the engineering genius of our times. By slow and almost imperceptible degrees it has stretched itself into deep water to a length of 1,800 feet. This autumn an additional 150 feet will be completed; while yet another 100 feet have been firmly laid under water, all ready to be brought to the requisite level in the ensuing spring. The width of the pier at the base is eighty-four feet, and at the quay level forty-five feet. The area to be enclosed will consist of 320 acres, having a depth of upwards of four fathoms at low water.

The system of construction which has been pursued may be briefly described. The bottom is first levelled and the loose materials excavated by the aid of diving-bells. The divers then apply themselves to laying the foundation course; after which the granite facing and backing of concrete blocks of the upper courses are placed, tier upon tier, until the structure is brought up to the level of low water, a height of about forty-five feet, whence the work is carried upwards to the requisite elevation. The accuracy attained in the operations of the divers, which are necessarily conducted under great difficulties, is something surprising. The extreme difference of level in the forty-five feet in height of submarine masonry from year's end to year's end rarely exceeds one inch,—a variation of course easily rectified when the structure appears above water.

The granite facing is composed for the most part of stones each weighing eight tons and upwards, the concrete blocks being also made of about the same weight, and it is deemed essential to the strength and compactness of the work that the material used should be as large as possible. How such unwieldy blocks of granite and concrete can be handled by the courageous diver is often an insoluble puzzle to the uninitiated, although, no doubt, to the practical engineer it is no mystery. To those brave men who, loaded with ponderous helmets and other cumbrous accoutrements, are let down into the deep to pursue their perilous avocations with their lives as it were in their hands, a debt of gratitude is due which we fear is seldom appreciated. And yet who can doubt that it is by the noiseless and unseen labours of the men who descend into the dark caves of ocean or the gloomy depths of the mine that the foundations of a nation's wealth and greatness are surely laid?

The concrete blocks are made of shingle, sand, and Portland cement, worked together in steam cylinders; which, by a peculiar rotatory motion and a fixed number of revolutions, ensure the due admixture of the materials. The concrete is then shot out into moulds of the required form, and left to harden for two or three days. The frames are then removed and the blocks lifted and stacked away, to undergo further induration before being used.

We have said that the rate of progress made upon the works is slow, and almost imperceptible from year to year. But the responsibility for this must be placed upon the right shoulders. It certainly does not attach to the Messrs. Lee, the eminent and energetic contractors, nor to Mr. Druce, the talented resident engineer; but to

those guardians of the public purse who by starving the works stint and postpone the full return to be derived by the nation from their execution. The real regulators of the speed with which the operations are pursued are those penny wise and pound foolish economists who dole out with niggardly hand the annual votes, which up to last year have never exceeded £32,000, or only about one-third of the grant to Portland; and this, too, although the second Royal Commission recommended that Dover should have the preference over the other places dealt with by their report!

It is satisfactory, however, to know that as far as they have already gone the works are not only justifying the views of the Commissioners but are producing many subsidiary advantages to the public which even they seem scarcely to have contemplated. To these advantages we must for a moment call attention. First, then, it should be stated that landing-jetties already exist with eight and sixteen feet of water at low water spring tides, which is sufficient for troop-ships of the largest size. Two other jetties are also in course of construction with forty feet of water at low tide. Troop-ships of the greatest draught have already repeatedly landed and embarked their troops and baggage with perfect ease and the greatest despatch at the Admiralty Pier. Indeed it is a marvel to all who know the convenience afforded by these works why troops are ever now sent all the way from Dover or Shorncliff to Portsmouth, to be there embarked at greater expense to the public and with needless discomfort to the men. The only probable explanation of this absurd neglect of the facilities existing at Dover is that the spirit of routine and red tape rampant in our government departments does not admit of any change in the old mode of chartering ships which prevailed long before our Admiralty Pier was even dreamt of.

Again, the continental, colonial, and Indian mails leave this pier with a certainty and regularity resembling the inland post; while passengers are able to land and embark at all times of tide. The Indian and Australian mails transmitted *viâ* Dover weekly are of a bulk sufficient to swamp the boats which, when we were dependant upon our tidal harbour alone, had so often to be used in conveying them to and from the shore. All who have experienced the miseries and perils attending embarkation or debarkation in small open boats on a dark, and it may be tempestuous night, will know how to appreciate the gain to the community from the conveniences of the Admiralty Pier. The usefulness of this accommodation to the travelling public may be conjectured from the fact that during the present summer no fewer than 1,000 passengers per day have landed at this pier. When the direct railway route between London and this port has been opened, it is only reasonable to suppose that this traffic will undergo a large expansion.

Lines of railway from the dockyards of Chatham and Portsmouth and the camps of Aldershott and Shorncliff already exist close up to the pier; and these lines will soon be carried down to the jetties. The importance of these facilities for the shipping of troops in case

of war, or for supplying coals, water, or other stores to the fleet in times when it may be necessary to keep the Channel closely watched, is too manifest to require lengthened statement. Gas and water pipes being also laid down along the whole length of the pier, merchant shipping will be enabled to water here with perfect ease at any hour of the day or night.

The last advantage which we shall now enumerate is one more exclusively local than the foregoing, although it is shared alike by visitors and inhabitants. A broad and spacious pier, which already stretches 1800 feet, or a full third of a mile, seawards, and commands so fine a panorama of heights and castle, cliff and promontory, bay and headland indenting each sinuous shore of these narrow seas, together with that sublime expanse of "glad waters" dotted with the homeward and outward bound argosies of a hundred nations, offers a marine promenade for the like of which the stranger to our town will elsewhere look in vain. Language would wholly fail to depict its magnificence when the hand of the artificer shall have given to its noble masonry the finishing touch.

[We do not agree with our advocate for Dover in the point of embarkation for troops going *westward*. The further that is *West* the better. Foul winds in narrow seas cost the country money and life! The proofs are too abundant.—ED.]

OCCASIONAL PAPERS OF THE NAUTICAL CLUB.—No. XIII.—
The Prince of Wales in the States.—Prince Alfred at the Cape.
—Sailors' Fees.—Proceedings in China,—The American Arctic Expedition,—Wrecks, &c.

The Chairman having opened the proceedings of the Club with a few remarks on the business before them, and made some observations which he was desirous should be brief, that their time might not be lost on less important matters (for some discussion had arisen on the length of the *Hero's* voyage*), he proposed that they should give attention to their friend, the Secretary, in reference to the happy return of our Royal Princes to their native land; at which event a deep feeling of heartfelt pleasure prevailed throughout the country, re-echoing the sentiments of warm affection which gladdened the halls of Windsor Castle. The event was new, and not only so, but the visit of the Prince of Wales to America had elicited feelings of a brotherly affection which did honour to both these lands and cemented those bonds of cordial esteem and friendship which so

* It was stated that the *Amazon*, packet-ship, left New York on the 6th of October and arrived off Falmouth on the 20th, at 8h. a.m.,—thirteen days and a half!

happily existed between two great nations. Nor was the visit of Prince Alfred less welcome to our Cape Colony. There he too had found a hearty reception from all, even from the "untutored Indians." But he would not anticipate what their Secretary should read from his paper, prepared from the New York journals, on the Prince's visit to that capital. And he was sure the Club would cordially agree in the noble sentiments in an extract, which he would first read from the same source. In fact, the event, as a whole, formed an era in the history of the two countries of the most gratifying description and exhibited a glorious display of friendship towards old England. Alluding to the Prince's visit, it said most truly,—

"The re-establishment of fraternal ties between the two nations will thrill the hearts of free men in every corner of the earth. It will pervade the labours of diplomacy, the enterprises of trade, the pursuits of the artizan, the pages of literature and the hopes of history with the confidence that hereafter the leaders of liberty in the old world and in the new are united in impulse and in aim for the perpetuation of freedom and the elevation of mankind. From such a confidence the best results must flow; for as long as Queen Victoria fills the throne, and after her Albert Edward wields the sceptre of England, the memories of this day will exercise their genial influence on the destinies of both nations. Herein lies the deep significance of the reception of the Prince of Wales in New York. The spontaneous enthusiasm of the people, the crush of a million of freemen to hail his coming, and the hearty blessings that were showered upon his head, must carry to his heart the conviction that he will bear back with him to England the affectionate love and the confiding hopes of thirty millions of kinsmen, to strengthen his throne and reunite the hearts of both peoples."

These, added the Chairman, are glorious words, and the Club would be proud to place them among their records. But they would now have a little history of the reception at New York, that would serve as a specimen of what had taken place in the other cities of the States which the Prince had visited:—

On Sunday, October 14th, the Prince attended Divine Service at Trinity Church. By nine in the morning a thousand persons had collected around the building. The mounted police occupied the centre of the roadway to prevent confusion. The seats in the centre aisle were all numbered, and apportioned to the holders of tickets. Long before the clock had tolled the hour of ten every seat was occupied, and yet one-half of the congregation had scarcely arrived. Three front pews in the centre aisle were reserved for the accommodation of the royal party. In one of them, and immediately in front of the Prince's seat, two magnificent prayer-books were deposited—the one a small octavo size, the other a small quarto. The large prayer-book was bound in bright red morocco, and was fastened by a golden clasp, chastely embellished with filigree work. The clasp

alone cost the sum of 250 dollars. On the outer cover it bore this inscription:—"To his Royal Highness Albert Edward, Prince of Wales, from the Corporation of Trinity Church, New York, in memory of the munificence of the Crown of England." The clasp of this book was finely worked with the Prince of Wales' plume and the motto "Ich Dien." The smaller prayer-book was bound in brown morocco, and clasped by two ornamental silver clasps. The binding was firm and tasteful. On the inner front cover was a beautifully inlaid representation of the crown and garter, and on the other side the following inscription:—"To his Royal Highness the Prince of Wales, from Francis Vinton, D.D., Frederick Ogilby, D.D., the Clergymen in charge of Trinity Church, New York, as a memorial of the nineteenth Sunday after Trinity, October 14th, 1860." The frontispiece is a very fine engraving of our Saviour.

About ten o'clock, the usual period before the commencement of morning service, the following chimes were rung out melodiously from the eight bells forming the chime, by Mr. Ayliffe, the experienced bellringer of the church:—1. Changes on eight bells. 2. Samson; from Handel's chorus, "Then round about the Starry Heavens." 3. Verona. 4. Sicilian Mariner's Hymn. 5. Hanover. 6. Old Hundredth. 7. Changes on eight bells. 8. Pleyel's German Hymn.

Just before the service commenced Dr. Vinton came from the vestry chambers, and requested that the congregation would not rise on the arrival of the Prince, but that all should keep their seats until the commencement of Divine worship. He expressed the hope that the some decorum that had always marked the conduct of the people in the house of God would be maintained to-day. Presently after the Prince and his suite, preceded by the sexton, bearing his mace or rod of office, walked up the aisle with some rapidity. His Royal Highness was dressed in a plain suit of black, and looked exceedingly well. The royal party were duly escorted to their pews by two members of Trinity Corporation. The Duke of Newcastle entered first, and was closely followed by Lord Lyons, and then the Prince. The Earl of St. Germans, the Hon. Mr. Eliot, and the other gentlemen who accompanied the Prince, took their places in the rear pews. At a short distance below the third pew the tall form of General Winfield Scott was seen towering up like Saul among his brethren. Despite the advice of Dr. Vinton, nearly the whole congregation arose as the Prince entered; but, without a word of any kind, they all sank back into their seats as soon as they had seen the Prince. While the party were ascending the aisle to their pews, the fine old organ of Trinity played an appropriate voluntary.

The honour of the first visit which the Prince may feel it his pleasure to make during his short sojourn in this city has, perhaps properly enough, fallen to the University, or rather to the principals of that institution. A large party of ladies were specially invited to meet the Prince, and all gentlemen applicants for admission not officers of the institution were strictly excluded, and long before the hour set forth on the notes of invitation (ten o'clock) the chapel of

the institution was literally crammed—so far as the word can be properly applied where hoops and crinoline are in question—by an expectant crowd of the fair wives, daughters, and sisters of all and every the superiors, officers, students, &c. The chapel was entirely devoid of any extra ornamentation or adornment.

It was a quarter to eleven when the Prince and suite alighted from their carriages and entered the building. At this time an immense crowd had gathered, filling up the breadth of the street for a considerable distance on either side of the building. A clear way was readily made for the carriages to pass through, and, though the crowd pressed forward immediately after, to get a close view of the Prince, yet their behaviour was marked with the utmost respect and deference for their city's young and royal guest.

Within the main door the students, in academic costume, were lined in double files stretching across the narrow hall, along the balustrades, and on through the corridor to the chapel door. As the Prince advanced the students respectfully saluted him by uncovering their heads, but no other demonstration whatever was made. The arrangements being under the superintendence of Professor Wedgewood, this gentleman insisted upon this order being observed, in order to guard against a too noisy manifestation from the more mercurial of the pupils. At the head of the marble staircase the Prince was received by Chancellor Ferris, in his robes, who welcomed him in a few words. Followed by his suite—the Duke of Newcastle, Earl St. Germans, General Bruce, Lord Lyons, Major-General Sandford, and a train of the officers and principals of the institution, the young Prince and his venerable companion entered the chapel, the band playing the English national anthem. There was a general buzz and stir and flutter among the fair audience, whose sympathies and natural predilections for the royal visitor must have been at the moment enhanced—beholding him for the first time—his slender, youthful figure and fair, bright, genial face, in contrast with the tall and aged man beside him. Two and two, the Prince and Chancellor leading, they ascended to the platform, on the right of which, sideways to the aisle, was placed the carved oaken high-back Chancellor's chair, to which the Prince was led, and invited by a bow to be seated. The suite, in the usual order of etiquette, ranged themselves on either side of the Prince; while the Professors and others occupied the opposite side of the platform. The Prince, by a peculiar action of the head, signified that he preferred to stand; which he did during the short time occupied by the proceedings.

Chancellor Ferris then read the following address:—

“Baron Renfrew.—Honoured Sir,—It is my privilege, in behalf of the Council and Faculties of the University of the city of New York, to welcome you to our marble halls, and to tender our gratulations that a kind Providence has been around, and over, and with you since you left your native country. We rejoice, and our successors will rejoice, that you were led to cross the broad Atlantic before the responsibilities of life were assumed, and become acquainted with the

condition of the Anglo-Saxon race in this great Western World. In our country you behold the eminently thriving state of a young branch of your own people. We are fond to trace our origin to the same source, and to claim the interest of sons in the arts, sciences, and literature of the land of our forefathers. Your Bacon, your Shakspeare, your Milton, and the whole galaxy of glorious names on the scroll of your country, we claim as ours as well—their labours furnishing the treasures on which we freely draw, and the models after which we mould our culture—while to their shrines we love to make a scholar's pilgrimage.

“While you see among us numerous illustrations of substantial material progress, we are proud to ask your attention to our expanded systems of education. Our admirable common school systems, now very extensively introduced in the States, carrying, as they do, the advantages of substantial intellectual culture to the doors of the great masses necessarily bound to labour, are telling happily on the intelligence of the people. Placed, as I have been, in circumstances to see their workings, I am astonished as I attempt to recount to myself the results secured in the lapse of my own life. Our higher institutions of learning have risen in rapid succession, and constitute the crowning stage in the preparation for life. They are not grouped in a few towns or cities. They are found in what may be called central points to large populations—no city, excepting New York, having more than one for the same curriculum of study. Our colleges and universities have risen to over one hundred and twenty; our theological schools to fifty-one; our law schools to nineteen; and our medical schools to forty-one—all these being schools for professional preparation.

“I am happy in making you welcome to this university—an institution founded and cherished by the liberality of the merchants of the city, a princely class of men in the magnitude of their plans and the munificence with which they sustain them. Here they have founded a practical institution where the means of preparation for life shall be as varied as the wants of society demand. Here, beside the college proper, we have six professional schools or colleges, and on our records, during the last study year, numbered 769 youths and young men. Our work has been pursued with a satisfactory degree of success for an institution founded twenty-eight years since, while it has been our privilege to see most important contributions made by our professors to the general fund of social benefits.

“You will pardon us, that we refer with gratified feelings to the fact that this edifice was the birthplace of the electro-magnetic telegraph, our Professor Morse having, within a few feet of where we stand, made his first successful experiment, and passed over his wires of twenty miles length the talismanic *eureka*. In this building, also, by Draper, one of our professors, photography was first applied to the taking of portraits from life. Here, by means he discovered, was made the first picture of a human face by the light of the sun, while the thing was looked upon as chimerical in Europe. And under this

roof, by the same Draper, were made all those experiments (now accepted by the medical profession all over the world) which first demonstrated the true cause of the circulation of the blood, your own immortal Harvey having demonstrated its course. Allow me, honoured sir, to tender through you our acknowledgments for the royal munificence of your government (first in the person of William IV., and after him in the person of your venerable mother, whose name we all pronounce with admiration, republicans as we are) in most valuable governmental records, and to your royal observatories for their publications.

“Lastly, I beg to convey through you to the British scientists our special thanks for the very kind attention and abundant courtesies shown to our Draper on his visit to the annual meeting of the British Association last summer, at Oxford, and at the several institutions of learning. These things indicate the feelings which should animate the brotherhood of science and literature, and will burnish to a brighter lustre the chain which binds the two branches of a great family. Soon you will have accomplished the great object which brought you to American shores. Our prayer is that the same gracious Providence which brought you here will, in perfect safety, reconvey you to your own land and the loved circle which will have noticed with the deepest intenseness of interest your progress among us. I respectfully ask your attention to the action of our Council in view of your visit.”

The address was handed to the Prince's equerry, the Prince himself acknowledging it by a slight bow.

The Chancellor then, addressing the Prince, begged his attention to the following resolutions, adopted at a meeting of the council.

The Secretary then read the following resolutions:—

University of the City of New York.

The Chancellor having communicated to this council that the Baron Renfrew has accepted the invitation to visit the university this day with his suite, therefore

Resolved—That the council of the university of the city of New York welcome every event calculated to cherish feelings of warm reciprocal regard, and to unite more closely in the ties of fraternal fellowship protestant England and these United States.

Resolved—That in view of the relation Baron Renfrew bears to the land which we still claim as “the mother country,” and of his connection with the classic seats of learning which we admire and seek to imitate, this council regard his visit to this country as eminently tending to promote objects so desirable, and we greet him with heartfelt welcome to our halls this day.

Resolved—That as we are bound to England by the threefold cord of ancestry, of language, and our “King James Bible,” we feel we are brethren, and may claim it as a right to rejoice in every testimony of respect paid by the sovereign people of this land to the representative and heir of England's model Queen.

Adopted in council this 12th day of October, 1860.

HENRY VAN SCHAICK, *Secretary.*

The Chancellor then introduced to the Prince the officers of the council and the various learned faculties of the university, the officers of the law and medical departments, &c. These latter named gentlemen occupied seats in front of the platform, and as they were referred to they rose in a body and bowed to the Prince.

The Chancellor then turned to the Prince, and, addressing him, said—"I beg the honour of introducing to you the wives, the daughters, and sisters, of the gentlemen just referred to." What a mantling and suffusion there was then of fair cheeks! what an increased palpitation of young bosoms! what a lightening up of bright eyes as these words struck on the ears of the younger portion of the galaxy above, in the galleries and everywhere in the aisles, and how their excitement was heightened when the Prince, himself blushing and smiling, turned round and bowed to all, is beyond the reporter's skill. The manner in which the Prince acquitted himself evidently increased his popularity among his fair audience. After this the Prince mingled with the gentlemen on the platform, shaking hands with many of them, and, arm in arm with the Chancellor, he left the chapel and visited the women's library.

Here he was met on the threshold by a few of the patrons of this young but very popular institution, and also by the ladylike and diligent manageress, Miss Powell. The Prince, after introduction, and having very cordially shaken hands with the young lady, was addressed by her in a few neatly turned sentences nearly as follows:—"Barcn, we are happy to welcome to a woman's library the noble son of a royal lady, whom the women of America regard as an honour and a friend to all womanhood." The Prince smilingly bowed his acknowledgments. He then bowed to the engraving upon the wall, no doubt attracted by a very fine engraving of his royal mother, which Miss Powell, with much taste and good feeling, had surrounded with a beautiful wreath of flowers.

From the women's library the Prince passed into the law library; and without delay thence through the corridors towards the staircase. At the same spot where he was received he bade the Chancellor farewell, and passing through the line of students, and attended by his suite, he once more regained his carriage, and was driven off, amid the lusty and hearty cheers of the people.

The Prince then made short visits to the Astor Library, the Cooper Institute, the Free Academy, and the Central Park, where he planted an elm for America and an oak for England. The *New York Herald* adds:—

The Prince and suite arrived at the rural cottage of the Hon. Fernando Wood about a quarter to one, and were received by his Honour the Mayor, who tendered the Prince an invitation to partake of his hospitalities. It is needless to state that extensive arrangements were made to receive the royal guest in a manner befitting the chief magistrate of the commercial metropolis of the New World. The company invited on this occasion was very select, embracing the leading representatives of the professional and commercial world.

Such a brilliant party of leading citizens of New York has rarely, if ever, before assembled at a private residence as that which met the Prince at the cottage of the Mayor. As soon as the Prince vacated his carriage he was ushered into the drawing-room, where he was cordially received by the Mayor, who introduced him to his daughter, and subsequently to the invited guests, all of whom had arrived before the Prince. The affability and agreeable demeanour of the youthful prospective sovereign were such that the ladies were captivated with him. The drawing-room presented a brilliant appearance, the varied costumes of the female guests blending with each other to give *éclat* to the scene; indeed, the ladies seemed to vie with each other in the richness and costliness of their dresses and costly ornaments.

After spending from half to three-quarters of an hour in social, unrestrained converse, lunch was announced: whereupon the Prince, accompanied by the Mayor, followed by the invited guests, repaired to the dining room, where an elegant repast was prepared, consisting of the delicacies of the season and the choicest wines.

The Prince was reconducted to the drawing-room by the host after he had partaken of the *déjeuner*, and joined in unrestrained conversation with the Mayor and the guests. At half past two the carriages were ordered, and the Prince, in company with Mayor Wood, the Duke of Newcastle, and Lord Lyons, took his seat, and drove down the lawn into the road, and proceeded to the Deaf and Dumb Institution.

The morning visitors to the Central Park formed an escort to the Prince on his way to the house of our chief magistrate, and so anxious were they to get another look at the Prince of Wales, that the carriages formed a line, and remained in that position until he took his departre; and, not content with looking at him as he passed through the gate, they followed in the royal train until its arrival at the Deaf and Dumb Institution.

Such have been the manifestations at New York of feelings for our Prince. On the day of his arrival a densely packed crowd of nearly a million spectators waited patiently for more than four hours to catch a glimpse of his Royal Highness in passing, and, after all, were well-nigh disappointed. The shadows of evening had fallen before his carriage appeared, but they welcomed the "Black Prince," as he was jocosely styled, with undiminished enthusiasm and good humour. Wherever the Prince appeared the same welcome awaited him. The *New York Herald* justly says that the real value of such a demonstration lies in its voluntary character—in the fact that the feeling which prompted it sprang spontaneously from the hearts of the people. "Everywhere they poured forth of their own accord, and not only New York, but the circumjacent cities and towns contributed their tens of thousands to the gathering of welcome. The streets, except in the immediate neighbourhood of the line of procession, were abandoned, the stores and places of business were closed, all the public and private offices were emptied of their wonted occupants, the la-

hours of the day were suspended by all classes, for all thronged to greet the welcome stranger. Yet he was not looked upon as a stranger. The bond of kindred was felt in every bosom, and its utterances welled forth from every lip." Nothing, in fact, was wanting on the part either of the authorities or the citizens to render the Prince's visit a civic and a popular triumph.

The Prince left New York on Monday morning, the 15th of October, embarking at the Hammond Street Pier for West Point, on his way to Albany, where the enthusiasm of the people seemed to know no bounds. Every demonstration capable of giving vent to the popular respect for the distinguished party was resorted to.

The royal squadron left Portland for England on the afternoon of the 20th of October, and while on his voyage, continued the Secretary, the following are some of the events which have taken place at the Cape, where Prince Alfred has been received with that affection which his youth and unaffected demeanour inspired.

The following refers to the native tribes, whose loyalty underwent a trial from which they came out with great credit.

As soon as it was ascertained that the Prince would really visit Queenstown, Mr. Warner, the government resident with the Tambookie Tribes, informed the chiefs of the interesting fact, and asked them whether they would like to assemble their people in order to salute him and do honour to the Queen's son. To this suggestion they responded most enthusiastically, and as the Prince was expected to arrive on Wednesday, they assembled about 1,500 of their people on Tuesday, at the boundary line near Birch's farm, on the direct route from Tilden to Queenstown, and about six miles from the latter place. His Royal Highness, however, not arriving until Thursday, about twelve o'clock, they had remained two nights in the open air, with very little to eat the second night, not having anticipated such a long campaign.

The first night they had to endure a cold drizzling rain, and the second night there was a severe frost, but not a man deserted his post. As the sun rose on Thursday morning (August 16th) they were all in high spirits when told that the Prince would most certainly pass by some time during the day. They were, however, nearly fated to undergo a sad disappointment, for, just when the excitement occasioned by the supposed near approach of the Prince was most intense, and all eyes were painfully strained to catch the first glimpse of his cavalcade, an express came to say that he had taken the nearer road past Mr. Fincham's farm. This being announced, the people were completely downcast, and when they were told by Mr. Warner that there would not be time for them to go round the mountain and meet him as he emerged from Fincham's Poort, and that consequently they had better return quietly to their kraals, they stood riveted to the spot for several minutes, so loth were they to depart without having seen the Queen's son. This hesitation was fortunate, for before they had made up their

minds to disperse, another express arrived to say that the Prince had altered his mind, and was after all coming by way of Birch's farm.

All was now life and animation again, and in an incredibly short space of time they had formed themselves into five dense masses or divisions, according to their tribes, and, with their respective chiefs at the head of each division, awaited at about 1,000 yards from the road the arrival of the illustrious party.

The Prince, attended by English and Dutch burghers, mostly armed, now appeared in sight. When his Royal Highness approached nearly opposite to where they stood, they charged down upon the party in first rate Kaffir style, shouting their war cry, and shaking their assegais in the most terrific manner, until they came within about forty yards of the spot where the Prince stood to receive them; they then suddenly halted, and pealed forth one of the most hearty but thorough Kaffir salutations ever heard.

It was really an exciting scene, and must have been a very novel one to his Royal Highness, who appeared highly interested in such an extraordinary sight. His Excellency the Governor then presented Mr. Warner, government resident, to his Royal Highness, after which the Prince and suite, accompanied by Sir George Grey, and conducted by Mr. Warner, (who also acted as interpreter for the occasion,) approached the Tambookies, who had by this time formed themselves into a compact column of about one hundred yards long, and six or seven yards deep. His Royal Highness closely inspected this mass of wild barbarians, taking particular notice of their dress, ornaments, weapons, &c.; and as the Prince passed down the column, the Tambookies again pealed forth a deafening shout of welcome, and then commenced a war song, which was improvised for the occasion, by the Chief Darala, and which consisted merely of two lines, viz. :—

“ We have seen the Child of Heaven,
We have seen the son of our Queen.”

The Governor then requested Mr. Warner to introduce the chiefs to his Royal Highness, and the Prince appeared particularly interested in the young Chief Baroti, the grandson of the faithful and loyal Queen Regent Nonesi, who being too unwell to be present herself, had deputed him as her representative. The prince also took considerable notice of young Mapasse, who is about his own age. Baroti, the grandson of Nonesi, then presented an assegai to the Prince, in the name of the Queen Regent and other chiefs, with a request that his Royal Highness would be pleased to present it to the Queen as a token of their entire submission to her rule and authority. The Prince accepted this token of their submission to her Majesty in a very graceful manner, and promised to fulfil their request.

His Excellency Sir George Grey conversed freely with the chiefs, exhorted them to continue firm in their loyalty to her Majesty, and took particular pains to impress upon them the great interest which our beloved Queen took in their welfare, as well as in that of all her

other South African subjects—a greater proof of which she could not have given than that of thus sending her son, whom she so dearly loved, to this distant country as her representative. The chiefs were loud in their promises of loyalty and expressions of gratitude which they felt at the return of Sir George Grey again to be their governor, calling him their father and their best friend, and promising implicit obedience to all his commands.

His Royal Highness then instructed Mr. York to take a photograph sketch of the whole scene, including the Europeans, who were drawn up in a parallel line to the Tambookies—the space at the lower end, between the two columns, being filled up by the Christian Tambookies belonging to the Wesleyan mission villages of Lesseyton and Glen Grey, who were all very respectably clothed in European apparel. The Prince stood beside his horse, with his hand on the pommel of the saddle, in the centre between the colonists and the Tambookies, Sir George Grey and the gentlemen of his suite standing at his side, and Mr. Warner, the government resident, standing between the Prince and the column of Tambookies.

On the royal party entering Lesseyton, and approaching the spot where the people, old and young, were assembled, a song of welcome broke at once from the crowd—men, women, and children singing as only natives can do. The effect was beautiful. We give the words sung as they have been kindly furnished to us.

Siyabulisa, Alfred, Iukosi, Yasebotwe.]
 Siyabulisa, Alfred, Inkosi, Yamanges'.
 Siyabulisa, Alfred, Inkosi, Yaselwandble.
 Siyabulisa, Alfred, Nyana, we-Kween yetu.

Translation.

We salute thee, Alfred, Prince of the Royal House.
 We salute thee, Alfred, Prince of the English.
 We salute thee, Alfred, Prince of the Sea.
 We salute thee, Alfred, Son of our Queen.

With the welcome to the Prince was joined the following welcome to Sir George Grey, which was sung not less heartily than the former.

Siyabulisa, nawe, otanawayo, Sir George Grey.
 Siyabulisa, nawe, U Gouvernour wetu.

Translation.

We salute thee, also, beloved Sir George Grey.
 We salute thee, also, who art our Governor.

As the last notes of the song died away, the Prince and his attendants came in front of the people. The song ceased, and was exchanged for cheering, such as for heartiness and goodwill has not been exceeded in the colony. Never did black faces beam with greater delight than did those of this people as they looked for the first time on the "Prince of a royal house," and as they greeted once more their venerated and much loved governor. On Sir George Grey they seem to look as upon a father.

At Aliwal North the scene was very exciting, in consequence of the

number of horsemen, some 4,000, riding to and fro. Here Moshesh, the King of Basatoland, was introduced to the Prince, amidst a deafening volley of applause.

From Aliwal the royal party proceeded to Smithfield, and from thence to Bloemfontein, the capital of the Grange River Free State. Continuing his course to the North, his Royal Highness passed through Winburg, and from thence, bending to the eastward, to Harrismouth, on the Natal boundary. From the latter place the *cortège* continued on its way through Colenso to Pietermaritzburg, where the party were received in the most enthusiastic manner.

The 85th regiment was presented with new colours by the Prince; Bishop Colenso offering prayer on the occasion, on a plain near Pietermaritzburg. About 4,000 Zulus performed a war dance—each tribe under its own chief, and with its own distinctive appendage. Exceedingly jealous and emulous of each others grandeur are these coloured legions. Here, for instance, is a group of several hundreds, busily rehearsing their subsequent performances. They are distinguished by a long tapering feather, stuck in the centre of their woolly wigs. They have a weighty complication of skin strips and cut tails hung round them. Hardly an inch of their sable figures can be discerned. Bands of long ox-hair adorn their limbs. Large oval shields of ox-hide reach above their chins, and almost hide their persons. At the present moment they are chaunting a long low kind of refrain, which gradually swells into a semi-roar as the dance proceeds. Now one little fellow rushes out of the ranks. He leaps in the air like a kangaroo; he tosses his arms about, rolls his eyeballs round until nothing but the whites are seen, gesticulates, and jabbors away some inconceivable nonsense with the rapidity of falling water; he executes semi-somersaults, bobs his head up and down, shakes his tails and shield about in the wildest way, and makes himself generally as savage and untamed a human animal as possible.

Such a man behaving in such a manner before a London audience would be at once set down as a cannibal, and avoided accordingly. Natalians know better. The poor creature is perfectly harmless, and would repeat the performance on any day of the week for a pinch of snuff.

On the morning of the 5th the party started at daybreak for D'Urban, and rode the fifty-six miles at a rattling pace, reaching their destination at dusk. At D'Urban the Prince was received most warmly, and was presented with addresses from the inhabitants and the different public bodies. In the evening there was a Kaffir dance, round an immense fire, by about 500 performers, under the management of Mr. Fynn.

After his return, the Prince, on the 15th of September, embarked in the *Euryalus*, and came round from Simons Bay to Table Bay. On Sunday the 16th, he attended St. George's Cathedral, when the Rev. Dean Douglas preached. On Monday he took part in the interesting ceremony of commencing the breakwater, attended the volunteer muster, and a grand ball. On Tuesday the 18th, he laid the founda-

tion stone of a new sailors' home, and attended a concert in aid of that institution; and on Wednesday, September 19th, took place the embarkation.

The Prince's progress through the eastern province, the Orange Free State and Natal was admirably conducted, and accomplished without accident. There, as in the more immediate Cape colony, an enthusiastic reception greeted him everywhere—Kaffirs, Hottentots, Tambookies, Zulus, Fingoes, Mantglees, and Basulus mustered in large numbers along his road and vied in giving utterance to an enthusiastic welcome to him with the Boers and English colonists.

The effect of the visit upon the native mind is considered to be most favourable. The following is an amusing incident from one of these reception scenes in Aliwal North, described by a colonial paper.

"A little further on the Prince came to where the footmen from the Native Reserve were drawn up on each side of the road, those dressed in European clothes being on one side, while the more savage looking ones in the native war dress kept on the other side. The former, as the Prince and his party passed, all bowed to the ground shouting out their greeting, while the line of savages gave a simultaneous shudder and shrunk behind their shields, against which they rattled their bundles of assegais. The gesture was a very horrid one, but was meant for a very respectful and dutiful greeting, and the Prince bowed from one side to the other as if they had been so many ladies and gentlemen in Hyde Park. Sandilla, the paramount chief of the Gaika tribes, with Mr. Brownlee, resident agent, a retinue of the chief's counsellors, and the Rev Tyo Soga, accompanied Prince Alfred in the *Euryalus* from the frontier to Cape Town. In a letter of thanks to Captain Tarleton, of the *Euryalus*, Sandilla and his companions said,—'We have seen what our ancestors heard not of. The might of England has been fully illustrated to us, and now we behold our madness in taking up arms to resist the authority of our mighty and gracious sovereign.'"

The inauguration of the Breakwater came off on the 17th of September, his Royal Highness tilting the first load of stone for the work into the sea, the elegant and richly traced trigger used for the occasion being presented to the Prince. This, with the inauguration of the Sailors' Home, the Public Library, and a long round of festivities given on the occasion of the Prince's visit, completed a series of brilliant affairs likely to form prominent points in the history of the colony for many years hence. The Prince's embarkation was also a gala scene, the colonists doing every honour to the occasion. The *Euryalus*, with his Royal Highness on board, left Table Bay for England September 19th; St. Helena, October 1st; Ascension, October 4th; to touch at Sierra Leone and the Cape de Verd.

The departure of Prince Alfred was characterised by a continuation of the unflagging interest which the inhabitants of Cape Town exhibited in the royal visitor during every moment of his stay. Shouts of enthusiasm died on the ear as nature exacted a short period of repose from the partaker in a day's festivity, and roused him in the morning

to some new demonstration. Up to the very moment of the Prince's departure this spirit was kept up, and on the morning of Wednesday the display of waving flags and the crowds collected in the streets, made one wonder at the amount of physical endurance which the Prince's visit had shown the Cape people to possess, when occasion calls for its exercise.

The embarkation took place at about a quarter to eleven o'clock, after breakfast at Government House, to which a select number of guests had been invited. On the way to the jetty the streets were again crowded by all classes of persons, anxious to wave a last adieu to the beloved son of her Majesty. In front was a detachment of the Cape Mounted Rifles. Then followed the carriage with the Prince and Sir George Grey, escorted by the Cape Volunteer Cavalry, "faithful to the last," and succeeded by other carriages with persons of distinction. The whole way down the crowd enthusiastically cheered; and at the South Jetty an immense throng greeted the arrival of his Royal Highness. The royal party stepped down before the arch, where they were joined by various dignitaries of the city, who proceeded with them down to the end of the jetty, which was lined on both sides by the 59th regiment. Before stepping into the boat, his Royal Highness shook hands with several ladies, who had, in spite of all obstacles, made their way so far to see the beloved youth depart. After he had descended into the boat of the *Euryalus*, a large number of people also took to boats, and soon a flotilla was on its way to accompany his Royal Highness as far as possible. Passing the Central Jetty, Du Prat's Volunteer Battery commenced to play, and fired with their accustomed precision and regularity. The numbers also collected on this wharf cheered and waved hats and handkerchiefs, by way of adieu. Afterwards salutes were also fired by the Amsterdam and Chavonne batteries. These salutes were answered by the men-of-war in the bay. The boats, some of which contained companies of the various volunteer corps as well as the band, were taken in tow by the *Albatross*, and demonstrations made in honour of the departing royal visitor, which were duly acknowledged.

Thus terminated the visit of Prince Alfred to the Cape, alluded to by the Prince Consort, as already noticed, and the *Euryalus* made a good voyage home. Not so the Prince of Wales in these days.

The royal squadron, with the Prince of Wales and suite on board, arrived at Plymouth on the 16th of November. At daylight nothing was visible in the offing likely to herald the approach of the royal squadron; but about eight o'clock a large steamer hove in sight steaming up Channel, which proved to be the *Himalaya*, returning to Portsmouth; and shortly after the *Hero* and *Ariadne* were seen steaming round Penlee. H.M.S. *St. George*, lying in the Sound, immediately dressed ship, and royal salutes were fired from her, the garrison, and the Admiral's ship in Hamoaze. About half past nine the *Hero* and *Ariadne* came to an anchor, when Major General Hutchinson, the general commanding the district; Vice-Admiral Sir Houston Stewart,

K.C.B., port admiral; Rear-Admiral Sir Thomas S. Pasley, Bart., superintendent of the dockyard; the General's staff, and a large number of naval officers, proceeded on board to pay their respects to his Royal Highness.

Shortly after ten o'clock the *Avon*, steam tender, went alongside the *Hero*, when the Prince of Wales, the Duke of Newcastle, the Earl of St. Germans, General Bruce, Colonel Teesdale, Captain Grey, Dr. Acland, Lord Hinchinbrook, and Mr. Engleheart, with General Hutchinson and Sir Houston Stewart, proceeded in her to the Victualling-yard.

On his Royal Highness landing at the Victualling-yard, he was received by the chief officers of that establishment; a guard of honour, composed of a detachment of the 12th regiment, and the 3rd battalion of Devon Rifle Volunteers, lining the steps. A large number of ladies and gentlemen were also present, among whom were the Countess of Mount-Edgcumbe and Lady Ernestine Edgcumbe. The Prince then proceeded in General Hutchinson's carriage to the railway station, where a guard of honour of detachments of the Royal Marine Light Infantry and the 61st regiment, and the Royal Marine band, were drawn up. On his arrival on the platform the Mayor and Corporation of Plymouth presented an address, which was most graciously received, and an answer promised on his Royal Highness's arrival in London. Mr. T. Woolcombe, the chairman, Mr. F. P. Cockshott, the traffic superintendent, and others of the principal officials of the South Devon Railway, were in attendance; a special train was got out, and at a few minutes after twelve o'clock his Royal Highness and suite left in a royal saloon carriage for London. At the Victualling-yard, along the Prince's route to the railway station and at the station, the large crowds assembled warmly greeted the royal youth's return to his native land.

It appears that the royal squadron left Portland, United States, at five o'clock in the afternoon of the 20th of October, and had head winds and bad weather nearly all the way. They left Portland in a strong easterly gale, which continued for the first three days of the passage. On the fourth day they had a westerly wind which blew very hard. The following day, the fifth, the wind again changed to the eastward. On the sixth the *Hero* was taken in tow by the *Ariadne*, but the breeze freshening from the S.E., they were obliged to cast off. On the seventh got a wind from the W.N.W., On the tenth wind veered to the eastward again, and moderated. On the eleventh, wind still continuing towards the S.E., the *Hero* was taken in tow by the *Ariadne*, but in the latter part of the day the wind veered to E.N.E., and the gale increasing, they were obliged to make sail. On the twelfth day strong, East and E.S.E. gale, up to the fourteenth day, November 3rd, breeze still blowing from the S.E., both ships under sail, but not making much progress. November 4th, wind blowing hard from E.S.E. and S.S.E.; in the afternoon moderated, when got up steam, and the *Hero* was taken in tow again by the

Ariadne, but after a short time the towing-cable parted through the heavy swell. November 5th, passed and signalled a Norwegian brig standing to the eastward, the only vessel the squadron communicated with on their passage until they arrived in the Channel. November 6th the squadron were only 347 miles from the Lizard, but the wind had increased to a heavy gale from the S.S.E., and continued to veer from that to the S.E., the squadron beating against it until the evening of the 13th, when the wind hauled round to the southward, and blew very heavily from that to the N.W.

The *Hero* struck soundings at noon on Wednesday the 14th on the outer edge of the bank, and made the Lizard Light about three o'clock in the morning of the 16th. About two o'clock the *Ariadne* communicated with the *Himalaya*. The squadron has been entirely delayed with the heavy weather they have experienced from the eastward. The *Hero* and *Ariadne* had an ample supply of coal, but were prevented from steaming by the gales. They parted company with the *Flying Fish* a few days after they left Portland, and have not seen her since. Their not having been seen may be accounted for by their having been rather out of the usual track, having run far to the southward with the expectation of picking up a westerly wind. They had only about another week's ship's provisions on board, and were run out of their sea stock, the royal party being obliged for the last few days to put up with salt and preserved provisions.

The Chairman congratulated the Club on preserving so fair a specimen of the happy events which had attended the proceedings of the Royal Princes in their foreign visits, and trusted that they were but the opening dawn of a glorious life before them; which, by the adoption of the happy measures of peace, love, and social science, whether abroad or at home, would shed a lustre on the British crown and on the name of Briton throughout the world. As a concluding episode to the little history they had just heard of the Prince of Wales's visit, he considered the following sentiments expressed by the Prime Minister of this country would form an appropriate addition:—

“Our cousins in the United States,” said Lord Palmerston, “have shown themselves indeed to be a noble and generous people; they have shown that they have not forgotten the common stock from which they and we have sprung; and, in spite of events which, if not buried in oblivion, might have produced some slight alienation between us, they received the eldest son of our gracious Sovereign, not as if he were a stranger belonging to another land, but as if he had been born in their own country, and had been a citizen of their own republic. I trust, gentlemen, that the remembrance of the generous kindness thus exhibited by the people of the United States will ever be cherished by the people of these kingdoms. I believe the memory of the Prince's visit will long survive in the breasts of the American nation, and that these mutual recollections will tend more closely than ever to knit together those two great branches of the same noble and, I will say, illustrious stock.”

**ATTACK
OF THE ALLIED ARMIES
ON THE FORTS AT
THE MOUTH OF THE PEI-HO.**

These are assurances of esteem and kindness,—a condition of relationship between the countries to which, in the name of the Club, he would add *esto perpetua*.

Our next business, observed the Chairman, is of a different cast, but it is to be hoped that it is only the prelude (severe even as that may be) to a peaceful trade with that extraordinary race of people—the Chinese.

The Secretary then read the following letters. First of the operations of the fleet:—

On the 14th August I received orders to prepare for shelling the works, and on the same day anchored H.M. ship as close to the bar off the Peiho as we could, and I proceeded in to obtain a plan of the river and works, so that by the time the Commander-in-Chief arrived we should be all ready with our ranges. We subsequently placed the gunboats, and gave them their range. The result was that not a single shell was thrown away when the bombardment took place.

During the night of the 19th Lieutenant Bullock and myself went into the river to have a nearer look at the barrier, and got well up between the forts before we were discovered. They were evidently expecting an attack in their rear, and to show they were wide awake kept up a continual fire of rockets and fireballs in that direction.

We had passed the piles, iron stakes, and lower chain, when suddenly we found ourselves alongside an armed junk, their guard boat. She had been lying by the bank, and as it was low water she was quite screened from observation until we heard them moving on deck. They saw us and immediately commenced blowing up their matches in a great state of excitement, and we of course expected a fire of gingalls from the junk, and as we were within a couple of hundred yards of the forts something pleasant from them. However, we had the ebb tide, a fast-pulling boat, and darkness all in our favour. The junk fired a rocket at us, but by some great good luck it became detached from its arrow, and, turning right back, struck the man who fired it in the face! A great deal of shouting took place between the junk and the forts, and numerous fire-balls were thrown at us, showing us out as clearly as if it were broad day; but not a matchlock or piece of artillery of any description was discharged at us.

A few minutes hard pulling removed us from any risk of being struck, and we could then enjoy a very pretty pyrotechnic exhibition, improvised on our account. For they continued amusing themselves with us until we got on board at 3h. a.m., throwing showers of fireballs at us over the parapets, lighting up the face of the works and everything for the space of two or three hundred yards in a most surprising manner, and we could well understand how it was they made such good practice at our unfortunate fellows in the mud last year.

On the 20th I rejoined the Commander-in-Chief—who had left Peltang and was with the main body of the fleet,—and in the afternoon accompanied him in the *Coromandel*, leading the English and French gunboats, &c. After anchoring, the Admiral communicated

the plan of attack, which was that the upper fort was to be captured by the land forces first, the light-draught gunboats in the mean time shelling two others below it. At high water I could take the forty horse power gunboats over the flat and place them so as to be out of range of the South forts, although they would ground as the tide ebbed, but that was of no consequence. Rear-Admiral Jones was to command the division of gunboats, and to fly his flag in the *Dove* if she could possibly get into the river.

At 5h. a.m. of the 21st we started. but, alas! the *Dove*, accommodating vessel though she be, declined to float in $6\frac{1}{2}$ feet water. We made several attempts to push her through the sand, but it was hopeless. The Admiral shifted his flag to the *Clown*, and I had to place them and give them and the rocket-boats the exact range. The inner fort had already awoke the echoes of the morning by opening fire on our troops in the rear. The shot from the South fort (treated to four or five rounds by the *Dove*) all fell short. Two or three guns were fired during the engagement at the gunboats, but nearly the whole of the fire was directed against the troops. The gunboats, four in number, opened fire at about six o'clock; they were by that time fast aground and their practice was beautiful, not a shell was thrown away.

At about a quarter after six an Armstrong shell found its way into a magazine at the inner fort and blew it up; and ten minutes later a shell from the *Clown* performed a similar operation on another large magazine,—the latter was a magnificent explosion! The Chinamen fought like furies, and we naturally thought the explosions would daunt them a little, but not a bit of it; while the black smoke and dust still canopied them, the flashes of their guns were just as rapid as ever. There were two guns in a bastion which were worked most vigorously, three gunboats endeavouring all the time to silence them. Shell after shell burst in and around the bastion, and their loss of life just there must have been something awful; but as fast as a gun's crew were cleared away by a shell it was immediately re-manned. In fact, after the fighting ceased two stretchers were engaged for over two hours in carrying their dead out of this bastion, and we saw numbers of poor wounded wretches limping or crawling away.

At about half past nine the inner fort was stormed by some of the 44th, Royal Marines, and 67th,—the garrison fighting to the very last moment. The first scaling ladder that was placed against the wall they made a prize of by hauling it up out of the hands of the French. They were at last regularly driven over the wall, and numbers of them were shot down while making their escape to the next forts. Shortly after the capture of the inner fort, and just as we were turning our attention to the others, they struck all their banners and hoisted white flags.

The only official account of these operations has appeared in the following letters addressed to the Secretary of the Admiralty:—

Coromandel, in the Pei-ho, Aug. 27th, 1860.

My Lord,—You will be pleased to acquaint the Lords Commissioners of the Admiralty that on the 12th inst. the allied troops moved out of the village of Pehtang, and occupied that of Sinho, driving back a considerable body of the enemy, and taking two entrenched positions on their march, and that on the 14th they attacked and captured the fortified village of Tang-kou, the enemy retiring across the river and into the forts on its northern bank. To the despatches of the Lieutenant-General in command I beg to refer their Lordships for the details of these and other purely military operations.

The Lieutenant-General in command having acquainted me with his intention of attacking these forts on the 21st, the French and English gunboats, with the rocket-boats of the fleet, were moved into the Pei-ho on the day previous, in order to shell the outer north fort with those of light draft, while those of larger size should be held in reserve for the purpose of checking the flank fire of the southern fort, should it open on the troops during their advance.

The attack of the troops on the inner fort commenced about daylight, and that of the gunboats, which had been delayed for want of water in the position assigned to them, about six; half an hour later the magazine of the inner fort exploded, as did that of the outer fort shortly after. At nine the allied flags were shown from the inner fort, and at eleven the firing ceased, flags of truce being displayed on all the remaining forts.

During the afternoon the outer north fort was taken possession of by the troops without further resistance. In the evening the south fort, being deserted by the enemy, was occupied, and the booms across the river were removed; but the iron stakes, of which there were two double rows, being fixed with much firmness, a passage through was not opened till noon of the following day, when the gunboats passed up and anchored off Tang-kou.

On the following day, a force of English and French gunboats* left for Tein-tsin, and, on their arrival next morning, finding that the town was destitute of troops, and the authorities anxious to make their unconditional submission, in concert with Admiral Charrier, I placed guards in the forts and on the city gates, hoisting the allied flags in token of its military occupation. It is the intention of the Lieutenant-General in command to place an adequate force in the town or its vicinity, the infantry and artillery portion of which are now being forwarded in the gunboats.

The fire of the gunboats and rocket-boats,† which I placed under the orders of Rear-Admiral Jones, to whose assistance on all occasions I have been much indebted, was well directed and serviceable; that of the French gunboats attracted attention by its precision. Being

* First squadron of gunboats, Captain McCleverty:—*Havoc, Staunch, Opossum, Forester, and Algerina.*

† Third squadron of gunboats, under command of Captain Lord J. Hay:—*Clown, Drake, Woodcock, and Janus.* Third squadron of rocket-boats, Commander Aplin. Fourth squadron of rocket boats, Commander Hire.

placed well in on the mud on the northern bank of the river, at high water, only one English gunboat was within long range of the south fort, and all being more or less out of the line of fire of that which they attacked, the enemy, after a few shot, which fell short, ceased to fire on them, and consequently they sustained no casualties whatever.

While, therefore, I have not on this occasion to draw their Lordships' attention to conduct such as that which distinguished both officers and men in the attack of last year, I yet gladly avail myself of this occasion to express the sense I entertain of their unwearied exertions, not merely in effecting the landing of the army here, an operation continued without intermission until it was completed, but also in the fitting out of the transport fleet; the embarkation at Hong Kong, as well as the disembarkation and embarkation at Talién-whan Bay, all of which, together with the keeping up the supplies of the army, has involved much heavy labour.

I am indebted to Commander Ward and the surveying officers under his directions for a chart of Talién-whan Bay, and the coast line of the extreme of the Gulf of Pechili, made early in the year, notwithstanding much bad weather, for accurate surveys of the Pehtang and Peiho Rivers, while still in the possession of the enemy, and for much zeal and ability displayed in subsequently buoying those rivers.

I am unwilling to conclude this despatch without acknowledging the cordial co-operation on all occasions of my colleagues, and more especially of Vice-Admiral Charnier, on whose suggestion the effective position assigned to the gunboats was adopted.

I have &c.,

J. HOPE,

Vice-Admiral and Commander-in-Chief.

To the Secretary of the Admiralty.

The undersigned, Hang-fuh, Viceroy of the province of Chi-li, addresses the following communication to the English and French (French and English) Military and Naval (Naval and Military) Commanders-in-Chief.

On the 5th day of the present month (21st August), the Honourable Commanders-in-Chief advanced upon the forts, both by sea and land, and took those on the northern bank; this success proves the efficiency of the troops of the Honourable Commanders-in-Chief, and the Chinese army being defeated tender their submission. The latter have accordingly withdrawn from all the forts on the southern bank, and are now willing to surrender into the possession of the Honourable Commanders-in-Chief all these forts, together with the whole of their munitions and any fortified camps or entrenchments. The undersigned further engages to depute officers to point out to officers on the part of the Commanders-in-Chief the position of any mines that may be in the forts, and of all secret defences placed in the river, in order that no injury may be occasioned thereby to the honourable allies. It is understood that the delivery of the forts as soon as effected shall be

followed by the cessation of hostilities in this locality, and also that no injury shall be done to the inhabitants, who shall be efficiently protected both in person and property.

A necessary communication, dated Heenfung, 18th year, 7th month, 5th day. (August 21st), 1860.

Translated by

HARRY PARKES.

Coromandel, in the Peiho, August 27th, 1860.

My Lord,—Herewith I forward, for the information of the Lords Commissioners of the Admiralty, the report I have received of the late operations from Lieutenant-Colonel Gascoigne, who is in command of the battalion of Royal Marines serving with the army; and should they prove to have been so fortunate as to have obtained the favourable notice of the Lieutenant-General in command, I feel assured their Lordships will feel pleasure in meeting any request which may be made in their favour by his Royal Highness the Commander-in-Chief.

I have, &c.,

J. HOPE, *Vice-Admiral.*

To the Secretary of the Admiralty.

*Battalion of Royal Marines (L.I.),
Tonku, August 24th, 1860.*

Sir,—I have the honour to report, for the information of the Lords Commissioners of the Admiralty, the proceedings of the battalion of Royal Marines under my command, serving by your order with the expeditionary force, and attached to the Fourth Brigade in the Second Division, since landing at Pehtang on the 9th instant.

On the 12th August the whole force (excepting the 99th regiment) moved out for Sinho. The Tartar cavalry showed themselves in great numbers during the advance, and made demonstrations of attack, but were repulsed with considerable loss, the casualties being few on the side of the allies—our own battalion, though engaged, having none.

On the 14th, at daylight, the artillery with the 3rd and 4th brigades and a French force were sent forward to take the strongly fortified village of Ton-ku. After a severe bombardment the 60th Rifles effected an entrance at the west angle upon the river, the casualties having been but few on the part of the allies. Two deep ditches encompassed the place, and the loss to the enemy was great.

On the 21st (having marched out of Ton-ku the previous evening), the Artillery, Engineers, Royal Marines, 44th and 67th Regiments, accompanied by about 1,500 French, moved to the attack of the strong North Peiho Fort. The right wing of the Royal Marines being sent forward under Lieutenant-Colonel J. O. Travers, to carry the pontoons and scaling-ladders; these companies were commanded by Captain J. C. Symonds, Brevet-Major J. C. D. Morrison, Captain J. B. Prynne, and Lieutenant T. H. A. Brennan, with No. 6 Company,

which, on account of the deep mud and heavy weight of the pontoons, was subsequently ordered to assist. These officers all distinguished themselves by endeavouring to surmount the difficulties that met them at every step. The pontoons being laid down by order of the commanding engineer, the ladders were immediately taken round to the right angle and put across the ditch. A rush of men upon them caused them to be used as bridges to cross the wide ditch, the men standing up to their armpits in water to support them.

An entrance was effected at the main gate about the same time as at the angle. This fort commanded the others, and in consequence of its fall, and some good practice from four gunboats (one shell exploding a magazine) the forts on both sides of the river submitted to the allies.

With regard to the operations, the remainder of the battalion was kept moving up in support, and during the assault was so placed as to command access to the gate or the angle, should either point have required further assistance.

The loss to the battalion was one private killed, five officers, one sergeant, two corporals, and twenty-one privates wounded. A list of them is enclosed, and all of them are doing favourably.

I have the satisfaction of reporting the good conduct of the battalion generally, Lieutenant-Colonel Travers, during these operations, supported his well known character for devotion and untiring energy. Assistant-Surgeon D. M. Shaw was well up to the front under fire, and gave instant attention to the wounded men; Dr. J. Little's arrangements for quickly passing them to the rear being most complete and satisfactory.

Captain Prynne was one of the first to enter the fort, followed by some men of his company, and shot down with his revolver a Mandarin of note, since ascertained to have been the General in command.

Captain Prynne speaks highly of Serjeant Teacle, of the 8th company, Serjeant Knapp, of the 88rd company, Corporal Kelly, of the 61st, Private Bray, of the 16th, and Private Bowerman, of the 8th companies. The conduct of Serjeant H. Trent, of the 88rd company, was deserving of all praise, as he continued his indefatigable exertions to get the pontoons up, although wounded, until another severe wound obliged him to be taken to the rear.

I have, &c.,

J. H. GASCOIGNE, *Lieut.-Colonel, &c.*

Vice-Admiral Hope, Commander-in-Chief, &c., &c.

A more detailed account of the proceedings will be found in the following:—

Peiho, August 26th, 1860.

My last to you was dated, I think, August 9th, when we were "pigging it" out in Pehtang, mid mud, filth, stench, crowding, confusion, and hubbub, that forcibly recalled to memory, and, if anything, surpassed that of Balaclava in its worst days. But two short weeks

have elapsed, and already the whole of the Taku Forts are in our possession, the entrenched camp of the Tartars at Sing-ho has been taken, and their cavalry totally dispersed, the fortified town of Tong-ku has been captured, a formidable fortress stormed, and an army of 15,000 men, with all their baggage and equipment, has been marched across some fifteen miles of mud and swamp, and brought to bear upon the mouth of the Peiho, which is now opened for ever to our ships. Ere this, some of our troops are safely quartered in Tien-tsin, and our gunboats are lying quietly at anchor off it—and in a few days more, I doubt not, “the Chinese difficulty,” will have been satisfactorily solved, by the submissive reception of our Plenipotentiary at Peking, by the Brother of the Sun and of the Moon.

On the 12th inst., the entire force (with the exception of her Majesty's 99th Regiment, and a corresponding force of French, who remained to garrison Pehtang) marched out from that town to attack the enemy's camp at Sing-ho, the whole of our first division, with the French, advancing by the causeway which extends from Pehtang to Sing-ho, to attack the enemy in front, while our second division struck across the plain, or rather swamp, to turn their left. After about four hours' toiling, splashing, floundering, and panting through mud and water, from ankle to knee deep, the two divisions halted on some comparatively dry ground, about two miles from the enemy's camp, and also from each other—advancing again, after an hour's rest, to the attack.

The first division and French were received with a very hot fire, I believe; but, advancing at the charge, and under cover of their artillery, sustained little damage, and speedily drove the enemy from all their entrenchments. Meanwhile, the Tartar cavalry, to the number of about 3,000 or 4,000, galloped out into the plain, and threatened our second division on every side, but our Armstrong batteries made such havoc among them at ranges which must have appeared to them miraculous, that only in two instances did they venture at all close—once making a bold dash at one of our batteries, when they were repulsed with heavy loss by a charge of, I believe, Fane's Horse, in which Lieutenant M'Gregor of that corps was severely wounded; and again, when some seven or eight hundred of them bore down upon our 4th Brigade (consisting of the 67th Regiment and Royal Marines), doubtless with the mild intention of exterminating it, when they got such a peppering, however, from our Enfield rifles that they were sent scampering off in great dismay, and feeling horribly sold, I have no doubt, as it has somehow or other been discovered that they imagined our men were suing for quarter, when they saw them form into “squares” (or what doubtless seemed to them small crowds of frightened and bewildered men) with the front ranks all kneeling, and that therefore they had only to ride boldly and put them all to the sword.

The King's Dragoon Guards and Probyn's Horse also managed to get them within reach somewhere or other in the field (though where or how I have not been able to ascertain exactly), and cut them down “like taps o' thistles,” to the number of about a hundred, I believe.

Apropos of the King's Dragoon Guards, the style in which they turn out here is perfectly marvellous. While the infantry and artillery have always a more or less travel-stained appearance (as they well may, considering the sort of work they have had to go through), they turn out as if they were on parade in Hyde Park, and did we not know that they have done as much hard work, and have had to rough it as much as any of the other troops, we might imagine that their whole kit consisted of brushes, pipe-clay, and patent polish, and that their sole duty was to keep up a smart appearance by these means. Fane's and Probyn's Horse also turn out in wonderful style, and present a most dashing and picturesque appearance, compared to which that of the French *Spahis* (as I think they are called) is simply ridiculous.

Most unworthy foes, too, are the Tartar cavalry, although physically fine enough men, and by no means wanting in pluck—as, indeed, the mere fact of their daring to come out against such troops as ours at all is sufficient to prove. But they are wretchedly mounted, poor fellows, on meagre looking ponies, and still worse armed, their only weapons being either clumsy and not very sharp lances, still more clumsy and blunter swords, matchlocks, or old-fashioned pistols, nearly harmless to all but their owners, and bows and arrows. The uniform of most of those who were killed consisted of a black or purple silk hat, shaped not unlike the now fashionable "Jim Crow," but of stiffer construction, and decorated with a brass ball and a pair of squirrels' tails, and yellow cotton jacket, with black facings, and dark blue cotton trousers, tucked into black silk boots, reaching nearly to the knee. They must have lost at least three or four hundred killed and wounded during the day; whereas our casualties amounted to only twenty-five, not including, however, an unfortunate party of eighteen coolies, two English orderlies, and a Madras sapper, who were cut off and taken prisoners by the enemy, while bringing commissariat rum from Peh tang.

The enemy dispersed, our army took up a position for the night in and around the captured camp. Probyn's Horse, however, first making a grand foray into the country, and bringing in some 700 or 800 sheep, which enabled most of the exhausted soldiers to make a tolerably comfortable supper, before "turning in" for the night between the damp ground and the canopy of heaven. During the whole of the following day the troops rested in the same position, while stores were being brought up from Peh tang and a reconnaissance was made in the direction of Tong-ku, the next place to be attacked.

Tongku is a fortified town, situated on the northern bank of the Peiho, about three miles from its mouth, and two miles above the Taku Forts. It is about a mile and a half in circumference, and is surrounded by a crenellated wall, about twenty feet in height, of immense thickness at the base, and pierced for about a dozen big guns on the side on which it was attacked. The wall is fronted by two wet ditches, both about eighteen feet in width, and from five to eight feet in depth, in crossing which, troops would at most points be exposed to

a flanking as well as a front fire, so that, altogether, the fortifications might be considered very strong.

Within three hours after we opened fire upon it, however on the morning of the 14th, it was ours; our artillery, more especially the Armstrong batteries, making such magnificent practice, that it was impossible for the Tartars to stand to their guns. Our 1st Royals and the 60th Rifles, with the French, then advanced in extended order, and after some "heavy exchanges" (to use the language of the P.R.) with the Tartar matchlock men, succeeded in crossing both ditches, and storming; the Rifles, followed closely by the Royals, getting in about a quarter of an hour before the French, who attacked some 500 yards off. As soon as our men got in the Tartars fled through the town, and endeavoured to make their escape either across the river or down towards the northern Taku Forts, and they were shot down in great numbers while doing so. They must have lost at least 200 killed and wounded, I should think, while our casualties did not exceed a dozen wounded.

Having cleared the town of the enemy, the French and the 1st Division then retired to encamp and rest, about two miles outside the place, while our 2nd Division marched in to occupy it for the night. But now I approach a truly heart-rending part of my narrative. No sooner did our savage soldiery find themselves in full possession of the town, with nothing but a few old men, women, and children left, than they let loose their evil passions, and a horrible "massacre of the innocents" began. Rushing into the houses, they dragged out their defenceless victims, bayoneted them, nay, even—will your fair and gentle readers permit me to chronicle the revolting fact without falling into hysterics?—even ripped them open, and the air was rent with the dying shrieks and screams of at least 500 fat porkers and twice as many fowls and ducks. Down one lane, up another, through ponds, across courtyards, nay, even over house-tops, they chased their curly tailed and feathered prey, and, in less than two hours, what had been a scene of human strife and bloodshed terrible to witness, was transformed into one of jollity and feasting. Such is war. All the old men, women, and children left in the place, to the number of about three hundred, were taken care of, and on the following day were given over to their own people under a flag of truce. A few of the poor women tried to commit at once suicide and infanticide, by rushing with their children in their arms into the river, but, with one or two exceptions, they were all prevented by our soldiers, who dashed in after them and dragged them out. They probably fancied we were all cannibals, if not worse.

Having got so far with barely more than the men could carry in their havresacks, and the next point of attack being the formidable, and now far-famed Taku Forts, the General wisely determined to remain quietly where he was until he had stores enough of everything at the front to meet any contingency that might occur. Until the 20th, therefore, our troops remained in the same position they had taken up on the afternoon of the 14th. Meanwhile, stores of every kind were

got up in abundance, though under difficulties of want of transport, and heavy road, that would have driven many generals, and was well nigh driving many minor "authorities" to despair. The French could not manage to "hold on" at all, I believe, both their transport and commissariat breaking down completely, so a large number of them crossed the river to a large village, where, I fancy, they subsisted chiefly by looting—though I suppose it is wrong to hazard such conjecture. However, the fact is indisputable that a large body of the French did cross the river, and take up their position among the numerous villages there, at least two or three days before any of our troops moved from the position that was taken up on the 14th, and that without any other apparent object than merely to subsist themselves on what they could pick up over there; it not being any part of Sir Hope Grant's plans, as far as I have been able to discover, that they should so advance.

However, I must now come to the grand attack of the 21st, and here I must give a large meed of praise to "our gallant allies," who certainly did their part bravely in it. The honour of the hard fight that I have now to describe is due entirely to those of them who were engaged in it, and to our own Artillery, Engineers, 44th Regiment, Royal Marines, and 67th. By the victory of the 21st the key of the whole of the enemy's strong position at the mouth of the Peiho was gained, and such terror was struck into the souls of our enemies that within three hours after they surrendered unconditionally the whole of the rest of the Taku Forts, and have since, I believe, abandoned all their defences between this and Peking, and have declared themselves ready to do anything we want. Seldom, if ever, have such great results so speedily followed a hot forenoon's fighting. But "to begin at the beginning." The plan of attack for the 21st, I believe, was that the 1st division of English, with the rest of the French, should cross the river and threaten the southern forts, while the 2nd division should assault the nearest of the northern forts.

Accordingly, on the evening of the 20th, the 2nd division moved out and took up a position in front of the said fort, but just out of range, while working parties were thrown out to erect batteries for the siege train, and reconnoitring parties examined the intervening ground as closely as possible, in order to select the most favourable points for attack. The Chinese evidently had some inkling of what was going on, for they threw out showers of fire-balls from the walls of the fort, in order to discover where our men were and what they were about; but whether it was that they either could not make them out, or did not consider the work they were engaged in as affecting them at all seriously, they only fired one or two guns during the night. At daybreak next morning the division then advanced, some four or five of our batteries having got into position, and pouring in a tremendous fire upon the fort with precision; while the infantry, that is to say one wing of the 44th, Royal Marines, and 67th, and 102nd regiment of French, advanced; the Buffs, the other wing of the 44th, and a Punjaabee regiment remaining in reserve. The Chinese replied

with great spirit, but little apparent skill, almost all their shells bursting short, and their round shot falling everywhere but in the right places. On arriving at a long low embankment, about 1,500 yards from the fort, the infantry were halted, and made to lie down, while the batteries were all advanced to ranges varying from 500 to 1,000 yards, and opened a still more telling fire, exploding two immense magazines inside the fort, and in about an hour nearly silencing the enemy's big guns.

The infantry then advanced again—half of the French regiment, and the wing of the 44th being thrown out as sharpshooters, while one wing of the Royal Marines advanced with scaling ladders and pontoons, and the other wing with the rest of the 67th followed in support. As the storming party got close, the fire poured into the fort from our batteries became absolutely terrific. Five or six shot or shell went flying into it every minute, and the enemy could not show themselves above the parapet at all. Through the loopholes, however, they kept up a heavy fire of gingalls, which was briskly responded to by our sharpshooters. Occasionally, too, a big gun from the South side sent a round shot plump in among the storming party, but the tremendous explosions that had taken place inside the fort, and the terrific fire they were subjected to, had probably paralysed them to a great extent, and their shots were, consequently, few and far between. This fort, like the wall at Tongku, I must tell you, was also fronted by two wet ditches, both about eighteen feet in width, and about eight or ten feet deep, the first one defended, moreover, by a strong abattis, the second by sharp stakes on both sides.

On arriving at the first ditch great difficulty was of course experienced in laying the pontoons, the men being knocked over here by the dozen. The Engineers, under Colonel Mann, and the Royal Marines under Colonel Travers, stuck to their work, however, and at last got the pontoons over the first ditch; and shortly after made a bridge over the second, I believe with the strongest of the scaling ladders. The lighter ladders were then planted against the wall, and over they went, some of the French, and some of the 67th getting in first, I believe, closely followed, however by some Marines, and these by the rest of the storming party. The French adopted a very novel mode of getting in. They got up some of their Chinese coolies, and made them stand in the ditch holding scaling ladders up over their heads against the wall, and so at once crossed the second ditch and got to the top of the wall. The Tartars fought bravely even after our men got in, using spears and swords as well as matchlocks, and were shot and bayoneted in hundreds. They finally fled, however, through the embrasures on the southern side of the fort, and endeavoured to make their escape to the next fort, about half a mile off—few with success, however, the greater number being shot in the attempt.

Our loss in killed and wounded amounted to 201—19 men being left dead on the field; 21 officers and 161 men wounded. Of these 6 officers and 65 men belonged to the 44th, 5 officers and 25 men to the Royal Marines, 7 officers and about 90 men to the 67th, and the rest

to the Royal Engineers and Artillery. The French left about 30 dead on the field, I believe, and had upwards of 100 wounded. The Tartars must have lost, I should think, at least three thousand. Their dead bodies were lying three deep in some parts of the fort, and where they attempted to escape the ground was covered with their bodies. One "pink buttoned" or No. 1 Mandarin was shot by Captain Prynne, of the Royal Marines, who was one of the first officers into the fort. I have since heard that it was the mandarin "second in command," a certain "Lieutenant-General I," or some such name.

Among the officers who particularly distinguished themselves I may mention Captain Gregory and Lieutenant Rogers, of the 44th, Lieutenants Burslein and Chaplin, of the 67th, and Lieutenant Kempson, of the 99th, who is aide-de-camp to Brigadier Reeves, of the 4th brigade. Some of these officers, I believe, have been recommended for the Victoria Cross, and certainly well deserve it. The gallant old Brigadier Reeves was wounded in four places, I hear, but refused to be removed to the rear, and still remains with his brigade. Colonel Travers, of the Royal Marines, Colonel Mann, and Major Graham, it is superfluous to mention, as the despatches will doubtless do them all justice. Young Lieutenant Pritchard, of the Royal Engineers, also behaved with conspicuous bravery. To Sir Robert Napier and his staff we are chiefly, however, indebted for the success of the day. They were always where they were wanted, and conducted the operations with an amount of coolness and intrepidity that called forth the admiration of all who saw them. Sir Robert Napier had his spy-glass struck out of his hand by one shot, and the heel of his boot carried away by another. Lieutenant Brook, his A.D.C., was shot through the thigh, and all must have had numerous hairbreadth escapes, for they were greatly exposed. I must not forget to mention, too, the conduct of the Chinese Coolie corps. A few of them were attached to each regiment to carry stretchers and dhoolies for the wounded. They kept close to their respective regiments throughout the whole day, and never flinched even when they were close under the fort, and subjected to a very heavy fire.

I must now really (both in pity to myself and to your readers, if any of them have been persevering enough to have waded thus far through this long scrawl) shut up, or I shall be the death of both them and myself. I have only to add that, within a quarter of an hour after the English and French flags were planted in the forts, flags of truce were put up in all the other forts, and a parley was held, which ended, as I have already told you, in their unconditional surrender, and not a moment too soon either, as a terrific thunder-storm shortly came on, which drenched every one to the skin, converted the plain into a perfect swamp again, and would have rendered any further operations that day exceedingly unpleasant, to say the least. A wing of the 3rd Buffs, the Punjaubee Regiment, and some Artillery, were therefore left in possession of the fort, and the rest of the division were marched back to Taku for the night. And such a march! through mud again ankle deep, and water, in many places, over the

knee. However, it's all over now, and in a few days more every one will be comfortably housed either on board ship or in Tien-tsin. The natives are already quite at their ease with us, and are bringing in fowls, eggs, fruits, &c., in abundance. So that the campaign may be said to be fairly over, I hope, and a happy return to dear old England at hand for most of the brave fellows who have now so enduringly as well as successfully fought her battles in this filthy country.

Some animated discussion followed, in which opinions were speculated as to the Chinese being really ready to concede all we required, and free comments were made on the anomaly presented by our troops in one part of the country fighting for and in another part against the present dynasty,—when Albert claimed attention to an additional objectionable feature in the Mercantile Marine Act to those which he had already pointed out.

He had often pointed out the great injury which has been done to the merchant shipping generally by the laws relating to them being framed by persons who had not the necessary experience in maritime affairs; and yet there was another reason for the difficulty of obtaining good seamen in these days that has not been pointed out. It must be admitted that the Admiralty has used every possible exertion to obtain good men for the navy; but the success of their efforts has been materially impeded by those unfair and ill considered laws relating to merchant seamen that have driven a very large portion of them either into foreign service or to emigration.

Without dwelling on the effect of the £36,000 per annum withdrawn from them which was formerly returned in small pensions, seamen have been subjected at the shipping offices to the exaction of fees on their entries and discharges as well as many petty annoyances as to their production of papers which few of the men are even competent to take care of. It would seem almost incredible how any one in office, in a maritime country, could be found to originate such a system as the exaction of fees from the most ill paid although the most valuable portion of the labouring classes, to be applied to a purpose from which they, the seamen, derive no benefit. It is not likely, however, that there are twenty persons in the House of Commons, which sanctioned that measure, who are aware that such an act as the following has been authorised by them:—"Art. 126 (page 892) says that every owner or master of a ship engaging or discharging any seaman or seaman in a shipping office or before a shipping master, shall pay to the shipping master the whole of the fees hereby made payable in respect to such engagement or discharge, and may, for the purpose of in part reimbursing himself, deduct in respect of such engagement or discharge from the wages of all persons (except apprentices) so engaged or discharged and retain any sums not exceeding the sums specified in that behalf in the table marked Q in the schedule hereto. Provided that in any cases the sums which the owner is so entitled to deduct exceed the amount of the fee payable by him, such excess shall be paid by him to the shipping master in addition to such fee."

This table Q (see section 126) says, "Sums to be deducted from wages by way of partial repayment of fees in table P.

"1. In respect of engagements and discharges of crews upon each engagement and discharge.

From wages of any mate, purser, engineer, surgeon, carpenter, or steward, 1s. 6d.

All others (except apprentices), 1s.

"2. In respect of engagements and discharges of seamen separately upon each engagement or discharge, one shilling."

It has been urged that the seaman derives a benefit from these shipping offices, and therefore should pay part of the expense; but, on referring to the recent Report upon Merchant Shipping, it will be seen that any benefit derivable from these offices is very questionable; the evidence for and against being about equal, though no doubt they have provided some old masters of ships with employment, but for which *Jack has no right to be taxed*. Previous to the formation of these offices men were shipped on board the vessels they had chosen (a far better plan), they could then see the sort of ship she was as to berths, &c., whereas some are so thoughtless they now enter without seeing her.

This he considered a serious evil,—in fact, taking money from Jack for every time he joined and left a ship from which *he* derived no benefit, and which he would naturally avoid by the means he had pointed out.

Leaving this subject, it was with regret he had to allude to the reported loss of one of H.M. ships. It was reported that H.M.S. *Perseverance* was totally wrecked on the 21st of October off N.W. end of Mayo, Cape Verdes. All hands saved. Five hundred troops sent to Gambia by hired barque. One hundred men and officers of *Perseverance* arrived in Portuguese steamer *Africa*, under charge; the remainder of troops and crew left at Mayo in charge of Major and Senior Naval Lieutenant. Captain is expected here by mail on the 14th from St. Vincent.

He was well acquainted with those islands and the long low sandy flats which project far outside the high land of which they are formed, so dangerous, and requiring a wide berth from passing ships.

Another unhappy shipwreck was reported also in a telegram received from Gibraltar communicating the total loss of a Brazilian vessel of war, with fearful loss of life. It is stated that the vessel was on her way from Marseilles to Lisbon, and was wrecked at Cape Spartel, on the coast of Barbary. It is also reported that the captain and 135 persons were drowned, and 115 saved in a deplorable condition. These were conveyed to Tangier by an English steam frigate. The Brazilian corvette had a great number of naval cadets on board for education and instruction in practical navigation. The loss will throw a gloom on Rio, and plunge many of the most respectable families into grief and mourning.

This indeed, added Albert is an unhappy commencement of a young navy. There must, however, have been want of information in re-

spect of pilotage. for the inshore set about Cape Spartel and its coast is notorious, having been fatal to merchant ships within memory without going back to the days of Alexander Selkirk, converted into Robinson Crusoe by the ingenious De Foe!

There has been, he regretted, a continuation of that series of wrecks among our merchant ships which is a prolific source of the loss of our seamen, although, thanks to the glorious system of insurance it was not so to their more fortunate owners, who know very well that it is better to be a shipowner insured on shore, than to be a sailor, even insured, afloat; for such was no insurance either of the safety or the profit of the latter, while the former was, as Sam says, "All right." Yet, in spite of this dead weight on the country, ships spring up like mushrooms; but the drain on our seamen is thinning the stock fast, and foreigners, he regretted to say, were supplying their places. Among the recent losses are stated the *Cleveland* and *Asia*, with all hands, one of about 500 tons and the other over 1,300. A long list of passengers is given of each,—as consolation to their relations, concluded with the statement that both ships and cargoes were insured, so that the owners can do the same again; they can supply their places with two more ready made for being lost like these, with all on board, and repeat the operation, losing ships and losing men, but making money!

There was one calamity, however, that of fire at sea, in which insurance was most wholesome, and a case had just occurred in the *Connaught* which had given opportunity for a display of that genuine stuff of which seamen of real British stamp are made. He was right glad to find that a testimonial of English gratitude and respect is to be presented to Captain John Wilson, of the American brigantine *Minnie Schiffer*. The gallant manner in which Captain Wilson brought his little vessel to the rescue of the hapless passengers of the steamship *Connaught* was only surpassed by the coolness and devotion with which he held his dangerous position of close proximity to the burning steamer, refusing to leave until every individual on board the latter (nearly six hundred in number) had been safely transferred to his own decks.

He would add that the scene of this nobly accomplished rescue is to be the subject of a picture to be painted by Mr. O. W. Brierly, the marine artist, and presented to Captain Wilson as a permanent memorial of his invaluable services in this terrible emergency. Captain Leitch, of the *Connaught*, has furnished Mr. Brierley with all the details necessary to secure accuracy in the representation of a scene at once so impressive and so picturesque.

He would conclude his remarks on this subject for the present by adding that the wrecks reported by the *Shipping Gazette* for the present year stand as follows:—

January	229	April	133	July	60
February	164	May	124	August	98
March	166	June	146	September	103

Making a total for the year thus far of 1,847; from which many a scene of sorrow and protracted suffering might afford a picture for all the artists of the kingdom, but would require more powers than this world can exercise to prevent.

There was one more subject to which, with the permission of the Chairman, he would allude before he resumed his seat. The subject of navigation had been his peculiar charge by their unanimous consent, and it was with feelings of pride and satisfaction that he could point to the admirable lesson given by Captain Kennedy, of the ship *Medway*, to his brother officers in the last number of their adopted periodical the *Nautical Magazine*. He had sounded his brother officers at Sydney on a subject of which he soon found that he knew more than they did,—nay he even found them imbued with prejudice in favour of an evil to their profession, which, from requiring some little trouble to remove, induced them to cry it down as of no consequence whatever! He followed the choice which was justified by his own experience; he had good hold of Truth, and for her own sake he followed her path; and what was the result? His proceedings were crowned with success; he navigated his ship, the *Medway*, with safety, and showed his brother captains how they too might do the same, and how if he had followed their advice his ship would have been inevitably lost, and would have added another sacrifice to the shrine of ignorance that tends to increase the evil of sea risk, and to keep up that bane of the Merchant Service—sea insurance. He hoped that their brother officers at Sydney would scann well the account of that voyage and profit by the lesson he had given them, and open their eyes to their own interests and that charge which they had of the lives of seamen under their command; for they may be assured that their employers have their eyes open to their own interests. They resort to insurance, and there are those who thrive by it at the expense of those who by their own apathy and want of knowledge, by losing their ships, are tending to keep it up; in fact, by showing the risk to be greater (which it really is not), to raise the premium of insurance.

The Chairman observed that since we must have wrecks the laudable exertions of the Royal National Lifeboat Institution was well entitled to their attention, displaying repeated acts of gallantry in saving life as well as munificent charitable gifts for the same object. He proposed that the following should be placed among their papers:

At the proceedings of the ordinary monthly meeting of the institution,

The Third Service Clasp was voted to Captain Wasey, R.N., for putting off in the Fleetwood lifeboat, and saving sixteen persons from the *Vermont*, of Halifax, N.S., wrecked on Barnett Bank, on the 20th October. £10 were also voted to pay the crew and other expenses. During the present year 27 lives have been saved by this boat.

A reward of £4 10s. was also voted to the crew of the lifeboat at Appledore, for saving five persons from the *Druid*, of Aberystwith, wrecked on Bideford Bar on the 9th October.

Rewards amounting to £66 to the crews of the lifeboats at Margate, Yarmouth, Fraserburgh, Sillioth, Holyhead, Portmadoc, Barmouth, and Tyrella, for putting off, during the recent heavy gales, in reply to signals of distress from various vessels.

It was reported that the cost of the new lifeboat stations now in course of formation at Thurso, Margate, Buckie, Portrush, St. Ives, Selsey, Llandudno, Southport, Llandwyn, and Penarth, amounted to upwards of £3,000. To meet this outlay the Society earnestly appealed to the public for help, otherwise it would be compelled to in-trench on its small funded capital, the interest on which is essential to keep its numerous lifeboat establishments in an efficient state.

Payments amounting to upwards of £800 were made on various lifeboat establishments.

Arion would then call the attention of the Club to the fact of two expeditions being now absent in the Arctic regions,—one on new ground between Frobisher Strait and Parry's Strait of the Fury and Hecla, and the other in the direction of Smith Sound. They would find his former communication on the subject in their *July Nautical*, to which he would now add the following:—

Information has been obtained from the American expedition in search of Franklin. The captain of a whaler writing from Cumberland Inlet on the 30th of August, says,—I saw Captain Buddington, of the *George Henry*, about a week ago. All well on board. John Cud-la-jah, the native Esquimaux who was returning with him, died of quick consumption three days before the ship made the land. This Cud-la-jah was a native of the West side of Baffin Bay, about thirty-five years of age, and had been in the employ of American whalers about eight years, and was regarded as a noble specimen of his race,—manly in his deportment, quick, and intelligent. He engaged the friendship of all with whom he was brought in contact. His knowledge of the geography of these icy regions made him useful as a pilot, while his dexterity with harpoon or lance made him an expert seal-fisher and whaler. He was chosen by Mr. Hall to be his guide and companion in the boat journey he proposes to make westward towards Boothia and King William Land.

It was the intention of Mr. Hall, if he found any difficulty in making up his boat's crew on arrival, to stay by the ship all the winter, inuring himself to the climate and learning the language and habits of the Esquimaux, and starting early in the spring with a picked crew, push on his journey. The death of Cud-la-jah may make this intention a fixed determination; and, after wintering with the ship, he will leave her and go towards the pole, exploring as he advances the unknown region lying between Cape Willoughby and the entrance to Fury and Hecla Straits. Thence he will go westward, through the straits to Boothia and King William Land, where the relics of Franklin's expedition were discovered by Captain M'Clintock, R.N. At that point Mr. Hall hopes to obtain more information in regard to portions of that expedition.

Mr. Hall's intentions are no doubt excellent, but those who are acquainted with the subject anticipate more from his exertions in the subject of discovery in the "Arctic Fox" Channel than any new light on Franklin's followers.

The other expedition is that of Dr. Isaac Hayes, who left Boston on July 7th for the purpose of completing the coast-line of Grinnell Land and proceeding North from Smith Sound. The following contains some further particulars of the intended proceedings:—

Dr. Isaac J. Hayes' expedition to the Polar Sea, sailed from the port of Boston, July 7th, for the purpose of completing the survey of the northern coasts of Grinnell Land, "to determine important questions relative to the magnetism, the meteorology, the natural history, and the general physics of the unexplored region North of Smith Strait." The doctor is accompanied by several of his former companions. He was to proceed direct to the coast of Greenland, possibly touching at St John. On arriving on the coast of Greenland, the expedition would stop at Upernavick, the most northern outpost of civilization, to procure dogs and furs. They were to leave that port about the 28th of July and proceed northward through the *middle ice*, and would reach Smith Strait about the middle of August. The remainder of the season, until the 10th of September, would be occupied in reaching a secure winter harbour on the West coast of Smith Strait.

In the spring of 1861 they will proceed northward, with the boats on sledges drawn by Esquimaux dogs, the vessel being left in charge of one-half of the crew. The exploring party will be in the field during the summer season, and should Dr. Hayes be successful in accomplishing his purposes, he will return to the vessel before the close of the summer, and in August will set sail for New York. If, however, the explorations are continued into the second winter he will not be liberated from ice until the following autumn, prolonging his absence to two years and a half.

Twenty gentlemen of Albany furnished to the Arctic expedition the sum of 200 dollars, and have agreed to pay the wages of one sailor, 500 dollars. The officers of the expedition accept no pay; but for each of the men the sum of 500 dollars is deposited in one of the banks of Boston, to be paid on the return of the expedition. The whole expedition is to cost about 20,000 dollars.

TO CORRESPONDENTS.

Although the papers of the Nautical Club have encroached much on our space, we find much of their discussion necessarily reserved for our next.

Captain Macdonald on Japan shall also then appear.

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